Computer algebra independent integration tests

Summer 2022 edition

3-Logarithms/62-3.3-u-a+b-log-c-d+e-x-^n-^p

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September 27, 2022 Compiled on September 27, 2022 at 5:24am

Contents

Chapter 1

Introduction

Local contents

This report gives the result of running the computer algebra independent integration test.

The download section in the appendix contains links to download the problems in plain text format used for all CAS systems.

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

1.1 Listing of CAS systems tested

The following are the CAS systems tested:

1. Mathematica 13.1 (June 29, 2022) on windows 10.
2. Rubi 4.16.1 (Dec 19, 2018) on Mathematica 13.0.1 on windows 10.
3. Maple 2022.1 (June 1, 2022) on windows 10.
4. Maxima 5.46 (April 13, 2022) using Lisp SBCL 2.1.11.debian on Linux via sagemath 9.6.
5. Fricas 1.3.8 (June 21, 2022) based on sbcl 2.1.11.debian on Linux via sagemath 9.6.
6. Giac/Xcas 1.9.0-13 (July 3, 2022) on Linux via sagemath 9.6.
7. Sympy 1.10.1 (March 20, 2022) Using Python 3.10.4 on Linux.
8. Mupad using Matlab 2021a with Symbolic Math Toolbox Version 8.7 on windows 10.

Maxima and Fricas and Giac are called using Sagemath. This was done using Sagemath `integrate` command by changing the name of the algorithm to use the different CAS systems.

Sympy was called directly from Python.

1.2 Results

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

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

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

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

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

System	% solved	% Failed
Rubi	99.27 (543)	0.73 (4)
Mathematica	99.27 (543)	0.73 (4)
Maple	58.87 (322)	41.13 (225)
Maxima	40.95 (224)	59.05 (323)
Fricas	40.40 (221)	59.60 (326)
Giac	39.31 (215)	60.69 (332)
Mupad	38.21 (209)	61.79 (338)
Sympy	30.71 (168)	69.29 (379)

Table 1.1: Percentage solved for each CAS

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

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

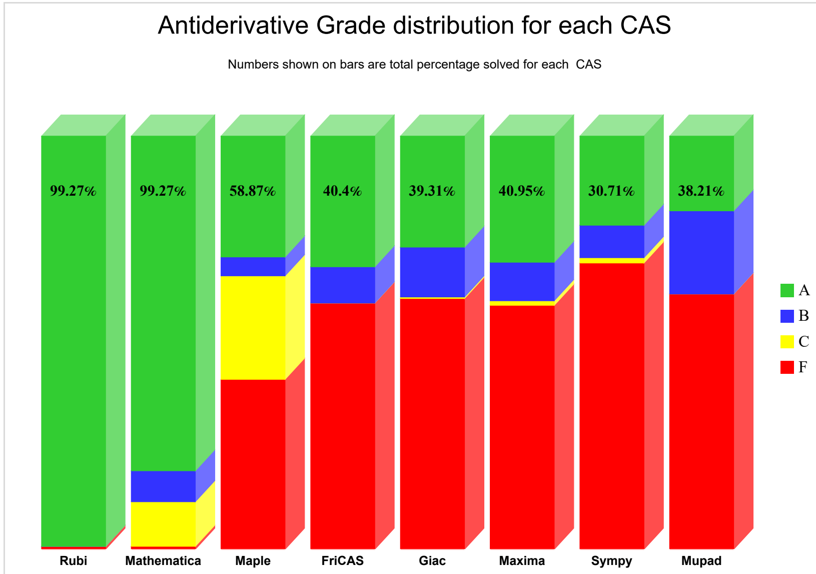
Table 1.2: Description of grading applied to integration result

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

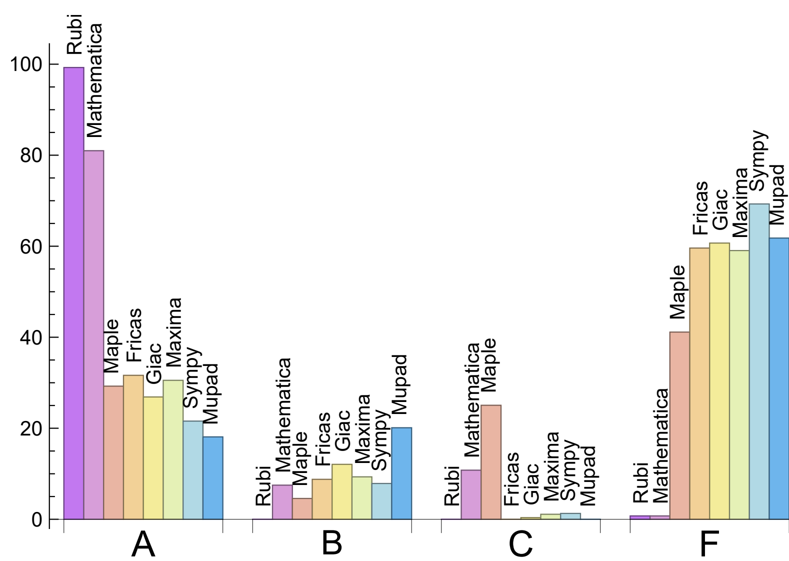
System	% A grade	% B grade	% C grade	% F grade
Rubi	99.27	0.00	0.00	0.73
Mathematica	80.99	7.50	10.79	0.73
Fricas	31.63	8.78	0.00	59.60
Maxima	30.53	9.32	1.10	59.05
Maple	29.25	4.57	25.05	41.13
Giac	26.87	12.07	0.37	60.69
Sympy	21.57	7.86	1.28	69.29
Mupad	N/A	20.11	0.00	61.79

Table 1.3: Antiderivative Grade distribution of each CAS

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



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



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

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

The third is due to an exception generated. Assigned **F(-2)**. This most likely indicates an interface problem between sagemath and the CAS (applicable only to FriCAS, Maxima and

Giac) or it could be an indication of an internal error in CAS. This type of error requires more investigations to determine the cause.

System	Number failed	Percentage normal failure	Percentage timeout failure	Percentage exception failure
Rubi	4	100.00 %	0.00 %	0.00 %
Mathematica	4	100.00 %	0.00 %	0.00 %
Maple	225	100.00 %	0.00 %	0.00 %
Fricas	326	73.01 %	0.00 %	26.99 %
Giac	332	97.89 %	1.20 %	0.90 %
Maxima	323	78.33 %	0.00 %	21.67 %
Sympy	379	54.88 %	35.62 %	9.50 %
Mupad	338	100.00 %	0.00 %	0.00 %

Table 1.4: Failure statistics for each CAS

1.3 Time and leaf size Performance

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

Mean size is the average leaf size produced by the CAS (before any normalization). The Normalized mean is relative to the mean size of the optimal anti-derivative given in the input files.

For example, if CAS has **Normalized mean** of 3, then the mean size of its leaf size is 3 times as large as the mean size of the optimal leaf size.

Median size is value of leaf size where half the values are larger than this and half are smaller (before any normalization). i.e. The Middle value.

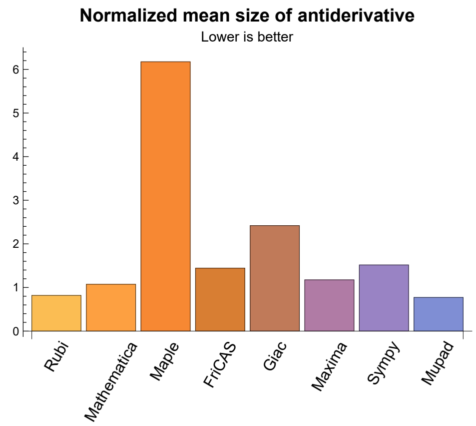
Similarly the **Normalized median** is relative to the median leaf size of the optimal.

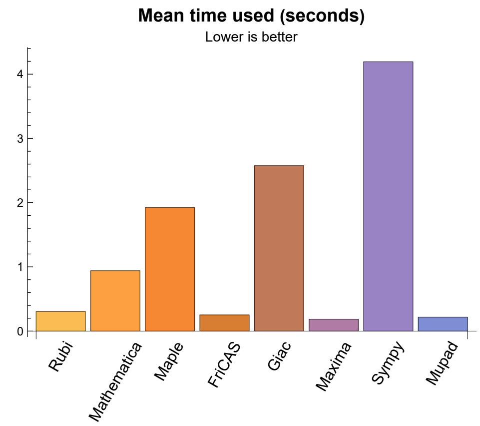
For example, if a CAS has Normalized median of 1.2, then its median is 1.2 as large as the median leaf size of the optimal.

System	Mean time (sec)	Mean size	Normalized mean	Median size	Normalized median
Rubi	0.31	215.72	0.82	156.00	1.00
Mathematica	0.94	298.86	1.07	164.00	0.96
Maple	1.92	1355.76	6.17	104.50	1.29
Maxima	0.19	150.36	1.18	30.00	0.94
Fricas	0.25	247.54	1.44	56.00	1.14
Sympy	4.19	225.98	1.52	48.00	1.07
Giac	2.58	536.10	2.42	44.00	1.06
Mupad	0.22	119.22	0.77	16.00	0.79

Table 1.5: Time and leaf size performance for each CAS

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


Normalized mean size of antiderivative
Lower is better
6
5
4
3
2
1
0
Rubi
Mathematica
Maple
FriCAS
Giac
Maxima
Sympy
Mupad


Mean time used (seconds)
Lower is better
4
3
2
1
0
Rubi
Mathematica
Maple
FriCAS
Giac
Maxima
Sympy
Mupad

1.4 list of integrals that has no closed form antiderivative

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

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

Rubi {}

Mathematica {}

Maple {}

Maxima {}

Fricas {}

Sympy {}

Giac {}

Mupad {}

1.6 list of integrals solved by CAS but failed verification

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

Rubi $\{\}$

Mathematica $\{198, 199, 200, 202, 203, 204, 205, 208\}$

Maple Verification phase not implemented yet.

Maxima Verification phase not implemented yet.

Fricas Verification phase not implemented yet.

Sympy Verification phase not implemented yet.

Giac Verification phase not implemented yet.

Mupad Verification phase not implemented yet.

1.7 Timing

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

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

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

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

1.8 Verification

A verification phase was applied on the result of integration for `Rubi` and `Mathematica`.

Future version of this report will implement verification for the other CAS systems. For the integrals whose result was not run through a verification phase, it is assumed that the antiderivative was correct.

Verification phase also had 3 minutes time out. An integral whose result was not verified could still be correct, but further investigation is needed on those integrals. These integrals were marked in the summary table below and also in each integral separate section so they are easy to identify and locate.

1.9 Important notes about some of the results

1.9.1 Important note about Maxima results

Since tests were run in a batch mode, and using an automated script, then any integral where Maxima needed an interactive response from the user to answer a question during the evaluation of the integral will fail.

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

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

Such integrals can be identified by looking at the output of the integration in each section for Maxima. The exception message will indicate the cause of error.

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

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

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

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

```
maxima_lib.set('extra_integration_methods', '[]')
```

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

1.9.2 Important note about FriCAS result

There were few integrals which failed due to SageMath interface and not because FriCAS system could not do the integration.

These will fail With error `Exception raised: NotImplementedError`.

The number of such cases seems to be very small. About 1 or 2 percent of all integrals. These can be identified by looking at the exception message given in the result.

1.9.3 Important note about finding leaf size of antiderivative

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

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

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

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

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

  except Exception as ee:
        leafCount =1
```

1.9.4 Important note about Mupad results

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

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

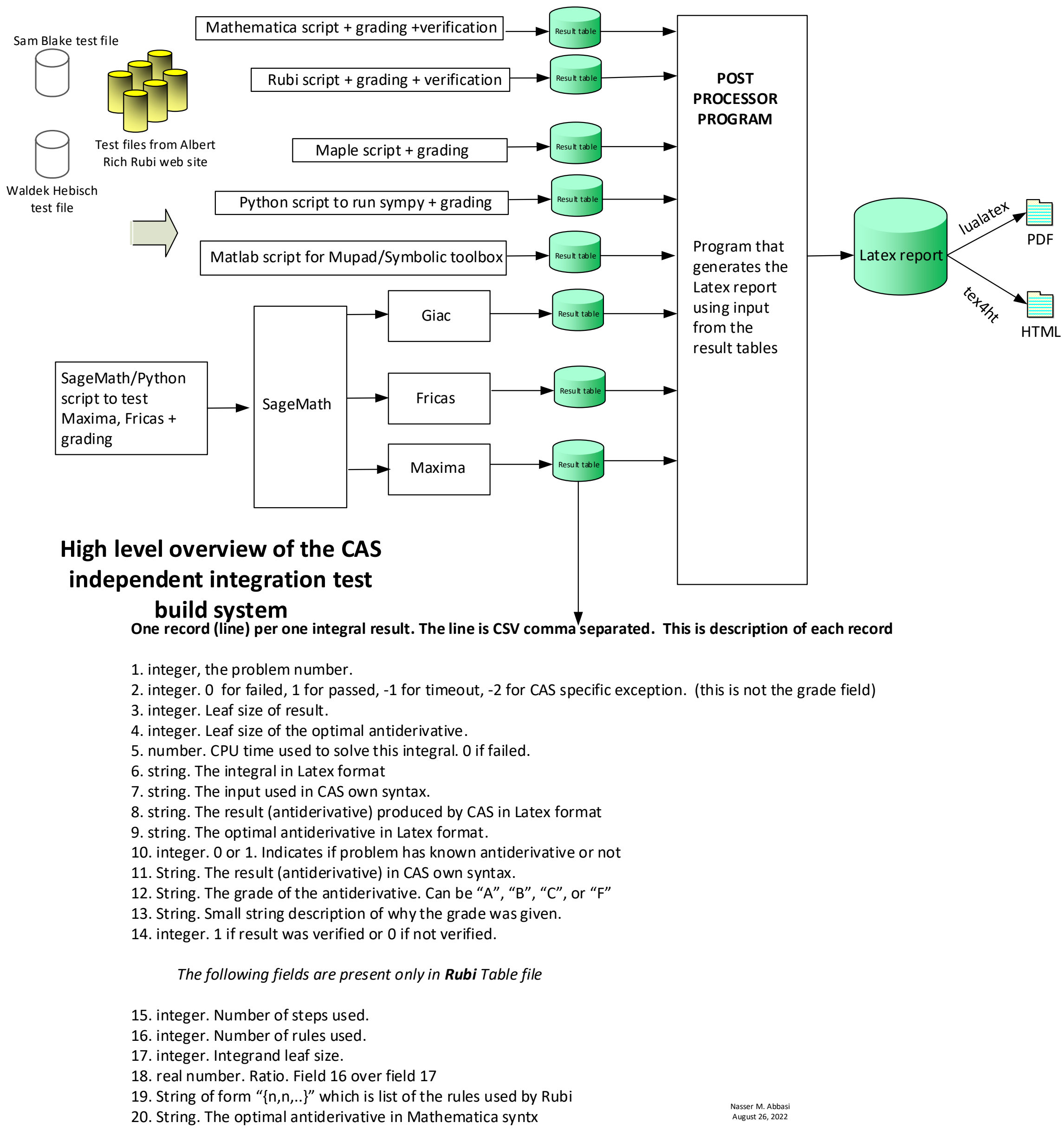
The following is an example of using Matlab's symbolic toolbox (Mupad) to solve an integral

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

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

1.10 Design of the test system

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



Chapter 2

detailed summary tables of results

Local contents

2.1 List of integrals sorted by grade for each CAS

Local contents

2.1.1 Rubi

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

B grade: { }

C grade: { }

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

2.1.2 Mathematica

A grade: { 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 53, 54, 55, 58, 59, 60, 61, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 130, 131, 132, 135, 136, 137, 138, 139, 140, 141, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 201, 206, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 227, 228, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 268, 271, 272, 273, 274, 275, 277, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 300, 302, 303, 304, 305, 306, 307, 308, 309, 331, 332, 333, 334, 335, 336, 337, 338, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 369, 370, 371, 372, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 395, 396, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 433, 434, 435, 436, 437, 440, 441, 444, 445, 446, 447, 448, 449, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 475, 476, 477, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 521, 523, 524, 525, 526, 527, 528, 529, 530, 534, 539, 540, 541, 542, 543, 544, 545, 546, 547 }

B grade: { 52, 56, 57, 62, 63, 94, 95, 128, 129, 133, 134, 225, 226, 229, 230, 231, 278, 339, 340, 341, 342, 343, 394, 397, 398, 432, 438, 439, 442, 443, 450, 474, 478, 522, 531, 532, 533, 535, 536, 537, 538 }

C grade: { 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 198, 199, 200, 202, 203, 204, 205, 207, 208, 266, 267, 269, 270, 293, 294, 295, 296, 297, 298, 299, 301, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 489, 490, 491, 492, 493, 494, 495 }

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

2.1.3 Maple

A grade: { 1, 2, 3, 4, 5, 6, 7, 8, 19, 20, 33, 38, 39, 47, 64, 65, 66, 67, 68, 69, 70, 71, 72, 75, 76, 77, 78, 81, 82, 83, 84, 92, 93, 98, 99, 103, 104, 108, 109, 110, 114, 115, 116, 120, 121, 122, 127, 132, 137, 140, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 163, 164, 165, 166, 167, 168, 169, 174, 178, 179, 193, 194, 195, 196, 197, 209, 213, 214, 215, 216, 234, 235, 236, 237, 238, 239, 240, 241, 279, 280, 281, 303, 309, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 346, 350, 354, 375, 376, 377, 381, 395, 396, 399, 400, 402, 403, 407, 423, 444, 448, 449, 453, 454, 458, 459, 463, 464, 468, 469, 473, 477, 481, 484, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 507, 508, 509, 510, 511, 512, 513, 517, 540, 541, 542, 543, 544, 545, 546, 547 }

B grade: { 73, 74, 79, 80, 175, 176, 177, 180, 181, 182, 183, 184, 185, 186, 187, 188, 191, 192, 282, 351, 352, 353, 355, 356, 357 }

C grade: { 17, 18, 21, 22, 23, 35, 36, 37, 40, 41, 42, 43, 44, 45, 46, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 60, 61, 62, 63, 85, 86, 87, 88, 89, 90, 91, 94, 95, 96, 97, 100, 101, 102, 217, 218, 219, 220, 221, 222, 223, 226, 227, 231, 232, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 304, 305, 306, 307, 308, 322, 331, 343, 344, 345, 349, 358, 359, 360, 361, 362, 363, 364, 365, 366, 379, 380, 382, 383, 384, 385, 386, 387, 388, 389 }

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

2.1.4 Maxima

A grade: { 3, 4, 5, 6, 7, 8, 13, 14, 15, 16, 20, 32, 37, 38, 39, 41, 42, 45, 46, 64, 65, 66, 67, 68, 69, 70, 73, 74, 76, 77, 78, 79, 80, 82, 83, 84, 85, 86, 87, 92, 93, 98, 99, 103, 104, 108, 109, 110, 114, 115, 116, 120, 121, 122, 127, 132, 137, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 163, 164, 165, 166, 167, 168, 195, 196, 197, 209, 213, 214, 215, 216, 234, 235, 236, 237, 238, 239, 240, 241, 252, 268, 303, 304, 307, 308, 332, 345, 346, 350, 358, 359, 360, 361, 363, 364, 365, 366, 375, 376, 379, 380, 381, 395, 396, 399, 400, 402, 403, 406, 407, 419, 421, 422, 423, 425, 426, 429, 430, 431, 444, 448, 449, 453, 454, 458, 459, 463, 464, 468, 469, 473, 477, 481, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 507, 508, 509, 510, 511, 512, 540, 541, 542, 543, 544, 545, 546, 547 }

B grade: { 1, 2, 17, 18, 19, 35, 36, 43, 44, 47, 52, 53, 54, 55, 60, 61, 71, 75, 81, 175, 176, 177, 178, 179, 182, 183, 184, 185, 186, 187, 188, 189, 190, 279, 280, 305, 337, 338, 339, 340, 341, 342, 404, 405, 420, 427, 428, 435, 436, 437, 441 }

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

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

2.1.5 FriCAS

A grade: { 1, 2, 3, 4, 5, 6, 7, 8, 16, 20, 21, 22, 31, 33, 34, 37, 38, 39, 41, 46, 64, 65, 66, 67, 68, 69, 70, 71, 72, 75, 76, 81, 82, 85, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 103, 104, 138, 139, 140, 141, 142, 152, 153, 154, 155, 163, 164, 165, 166, 167, 168, 169, 173, 174, 175, 176, 177, 178, 179, 183, 184, 185, 186, 191, 192, 193, 194, 195, 196, 197, 209, 212, 213, 214, 215, 216, 234, 235, 236, 237, 238, 239, 240, 241, 252, 268, 279, 281, 303, 304, 307, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 346, 350, 375, 376, 377, 379, 380, 381, 395, 396, 399, 400, 402, 403, 407, 408, 409, 418, 422, 423, 425, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 458, 459, 483, 484, 485, 496, 497, 498, 499, 507, 508, 509, 510, 511, 512, 513, 516, 517, 540, 541, 542, 543, 544, 545, 546, 547 }

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

C grade: { }

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

2.1.6 Sympy

A grade: { 1, 2, 3, 4, 5, 6, 7, 8, 10, 16, 20, 38, 39, 64, 65, 66, 67, 68, 69, 70, 76, 79, 80, 82, 83, 84, 85, 87, 92, 93, 98, 99, 103, 104, 108, 109, 110, 114, 116, 127, 138, 139, 141, 142, 143, 153, 154, 155, 157, 158, 160, 161, 163, 167, 174, 176, 177, 178, 179, 186, 195, 196, 197, 214, 234, 235, 236, 237, 238, 239, 240, 241, 303, 332, 346, 375, 376, 379, 380, 381, 402, 403, 407, 422, 423, 444, 448, 449, 453, 454, 458, 459, 463, 464, 468, 473, 477, 482, 483, 485, 486, 498, 499, 501, 502, 504, 505, 507, 511, 517, 540, 541, 542, 543, 544, 545, 546, 547 }

B grade: { 11, 12, 13, 17, 18, 19, 33, 35, 36, 37, 44, 45, 46, 47, 52, 53, 54, 55, 60, 61, 140, 175, 183, 184, 185, 187, 304, 305, 404, 405, 406, 420, 421, 427, 428, 429, 430, 431, 435, 436, 437, 441, 484 }

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

F grade: { 9, 14, 15, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 34, 40, 41, 42, 43, 48, 49, 50, 51, 56, 57, 58, 59, 62, 63, 71, 86, 88, 89, 90, 91, 94, 95, 96, 97, 100, 101, 102, 105, 106, 107, 111, 112, 113, 115, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 144, 145, 146, 147, 148, 149, 150, 151, 152, 156, 159, 162, 164, 165, 166, 168, 169, 170, 171, 172, 173, 180, 181, 182, 188, 189, 190, 191, 192, 193, 194, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 377, 378, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 424, 425, 426, 432, 433, 434, 438, 439, 440, 442, 443, 445, 446, 447, 450, 451, 452, 455, 456, 457, 460, 461, 462, 465, 466, 467, 469, 470, 471, 472, 474, 475, 476, 478, 479, 480, 481, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 500, 503, 506, 508, 509, 510, 512, 513, 514, 515, 516, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539 }

2.1.7 Giac

A grade: { 1, 2, 3, 4, 5, 6, 7, 8, 20, 21, 33, 39, 41, 64, 65, 66, 67, 68, 69, 70, 76, 82, 85, 88, 89, 90, 91, 92, 93, 98, 99, 103, 104, 108, 109, 110, 114, 115, 116, 120, 121, 122, 127, 132, 137, 140, 141, 142, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 163, 164, 165, 166, 167, 168, 174, 176, 177, 178, 179, 186, 195, 196, 197, 213, 214, 216, 234, 235, 236, 237, 238, 239, 240, 241, 252, 268, 307, 332, 346, 350, 375, 376, 377, 381, 395, 399, 402, 403, 407, 408, 423, 425, 444, 445, 446, 447, 448, 449, 453, 454, 458, 459, 463, 464, 468, 469, 473, 477, 481, 484, 485, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 507, 508, 509, 510, 511, 512, 513, 517, 540, 541, 542, 543, 544, 545, 546, 547 }

B grade: { 17, 18, 19, 22, 23, 35, 36, 37, 38, 42, 43, 44, 45, 46, 47, 52, 53, 54, 55, 60, 61, 87, 94, 95, 96, 97, 100, 101, 102, 175, 183, 184, 185, 187, 303, 304, 305, 308, 379, 380, 404, 405, 406, 409, 410, 420, 421, 422, 426, 427, 428, 429, 430, 431, 435, 436, 437, 441, 450, 451, 452, 455, 456, 457, 486, 487 }

C grade: { 11, 12 }

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

2.1.8 Mupad

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

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

C grade: { }

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

2.2 Detailed conclusion table per each integral for all CAS systems

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

In this table,the column `N.S.` in the table below, which stands for **normalized size** is defined as $\frac{\text{antiderivative leaf size}}{\text{optimal antiderivative leaf size}}$. To help make the table fit, **`Mathematica`** was abbreviated to **`MMA`**.

Problem 1	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	81	81	74	99	205	86	88	92	119
N.S.	1	1.00	0.91	1.22	2.53	1.06	1.09	1.14	1.47
time (sec)	N/A	0.023	0.007	0.149	0.285	0.343	0.120	4.446	0.364

Problem 2	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	61	61	57	78	134	66	68	71	88
N.S.	1	1.00	0.93	1.28	2.20	1.08	1.11	1.16	1.44
time (sec)	N/A	0.018	0.005	0.155	0.280	0.342	0.099	3.680	0.245

Problem 3	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	41	41	40	57	75	46	46	50	57
N.S.	1	1.00	0.98	1.39	1.83	1.12	1.12	1.22	1.39
time (sec)	N/A	0.012	0.005	0.128	0.269	0.326	0.083	4.192	0.217

Problem 4	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	21	21	21	36	33	27	26	33	25
N.S.	1	1.00	1.00	1.71	1.57	1.29	1.24	1.57	1.19
time (sec)	N/A	0.007	0.004	0.094	0.273	0.343	0.058	3.364	0.062

Problem 5	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	15	15	17	22	17	16	12	16	15
N.S.	1	1.00	1.13	1.47	1.13	1.07	0.80	1.07	1.00
time (sec)	N/A	0.008	0.016	0.209	0.329	0.341	0.339	4.101	0.211

Problem 6	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	36	36	37	45	20	50	29	38	36
N.S.	1	1.00	1.03	1.25	0.56	1.39	0.81	1.06	1.00
time (sec)	N/A	0.011	0.027	0.245	0.328	0.335	0.355	3.920	0.227

Problem 7	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	63	63	48	66	21	72	48	60	64
N.S.	1	1.00	0.76	1.05	0.33	1.14	0.76	0.95	1.02
time (sec)	N/A	0.017	0.035	0.312	0.321	0.333	0.374	4.652	0.281

Problem 8	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	85	85	57	87	20	97	71	81	67
N.S.	1	1.00	0.67	1.02	0.24	1.14	0.84	0.95	0.79
time (sec)	N/A	0.022	0.015	0.237	0.330	0.340	0.441	6.281	0.192

Problem 9	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	C	F(-2)	F(-2)	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	98	98	75	0	84	0	0	0	96
N.S.	1	1.00	0.77	0.00	0.86	0.00	0.00	0.00	0.98
time (sec)	N/A	0.038	0.011	0.051	0.286	0.000	0.000	0.000	0.212

Problem 10	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	C	F(-2)	A	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	74	74	63	0	70	0	105	0	82
N.S.	1	1.00	0.85	0.00	0.95	0.00	1.42	0.00	1.11
time (sec)	N/A	0.030	0.008	0.032	0.271	0.000	74.034	0.000	0.169

Problem 11	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	C	F(-2)	B	C	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	50	50	50	0	53	0	90	53	46
N.S.	1	1.00	1.00	0.00	1.06	0.00	1.80	1.06	0.92
time (sec)	N/A	0.023	0.007	0.021	0.280	0.000	1.136	3.335	0.178

Problem 12	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	C	F(-2)	B	C	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	25	25	25	0	25	0	63	25	45
N.S.	1	1.00	1.00	0.00	1.00	0.00	2.52	1.00	1.80
time (sec)	N/A	0.016	0.003	0.029	0.263	0.000	1.123	2.894	0.153

Problem 13	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	A	F(-2)	B	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	49	49	58	0	47	0	92	0	67
N.S.	1	1.00	1.18	0.00	0.96	0.00	1.88	0.00	1.37
time (sec)	N/A	0.023	0.058	0.028	0.328	0.000	16.970	0.000	0.155

Problem 14	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	A	F(-2)	F(-1)	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	77	77	72	0	47	0	0	0	113
N.S.	1	1.00	0.94	0.00	0.61	0.00	0.00	0.00	1.47
time (sec)	N/A	0.028	0.059	0.028	0.323	0.000	0.000	0.000	0.180

Problem 15	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	A	F(-2)	F(-2)	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	101	101	85	0	47	0	0	0	140
N.S.	1	1.00	0.84	0.00	0.47	0.00	0.00	0.00	1.39
time (sec)	N/A	0.036	0.063	0.031	0.329	0.000	0.000	0.000	0.189

Problem 16	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	A	A	A	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	45	45	45	0	55	26	54	0	45
N.S.	1	1.00	1.00	0.00	1.22	0.58	1.20	0.00	1.00
time (sec)	N/A	0.021	0.021	0.025	0.082	0.106	3.949	0.000	0.179

Problem 17	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	B	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	131	131	112	15871	528	611	495	778	275
N.S.	1	1.00	0.85	121.15	4.03	4.66	3.78	5.94	2.10
time (sec)	N/A	0.055	0.041	1.449	0.308	0.393	1.014	1.971	0.362

Problem 18	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	B	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	99	99	85	4872	294	326	294	409	172
N.S.	1	1.00	0.86	49.21	2.97	3.29	2.97	4.13	1.74
time (sec)	N/A	0.040	0.010	0.549	0.296	0.345	0.550	3.898	0.256

Problem 19	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	65	65	59	130	136	142	146	178	94
N.S.	1	1.00	0.91	2.00	2.09	2.18	2.25	2.74	1.45
time (sec)	N/A	0.026	0.008	0.301	0.270	0.398	0.277	3.451	0.203

Problem 20	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	29	29	29	36	40	42	41	46	35
N.S.	1	1.00	1.00	1.24	1.38	1.45	1.41	1.59	1.21
time (sec)	N/A	0.011	0.007	0.197	0.295	0.372	0.138	3.575	0.154

Problem 21	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	63	63	63	311	0	46	0	49	-1
N.S.	1	1.00	1.00	4.94	0.00	0.73	0.00	0.78	-0.02
time (sec)	N/A	0.039	0.051	0.671	0.000	0.349	0.000	3.077	0.000

Problem 22	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	96	96	123	456	0	124	0	307	-1
N.S.	1	1.00	1.28	4.75	0.00	1.29	0.00	3.20	-0.01
time (sec)	N/A	0.045	0.049	0.683	0.000	0.372	0.000	2.717	0.000

Problem 23	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	B	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	135	135	144	734	0	277	0	1322	-1
N.S.	1	1.00	1.07	5.44	0.00	2.05	0.00	9.79	-0.01
time (sec)	N/A	0.058	0.071	0.702	0.000	0.377	0.000	3.327	0.000

Problem 24	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	179	179	152	0	0	0	0	0	-1
N.S.	1	1.00	0.85	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.115	0.149	0.048	0.000	0.000	0.000	0.000	0.000

Problem 25	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	143	143	127	0	0	0	0	0	-1
N.S.	1	1.00	0.89	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.088	0.049	0.036	0.000	0.000	0.000	0.000	0.000

Problem 26	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	111	111	106	0	0	0	0	0	-1
N.S.	1	1.00	0.95	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.068	0.034	0.028	0.000	0.000	0.000	0.000	0.000

Problem 27	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	80	80	80	0	0	0	0	0	-1
N.S.	1	1.00	1.00	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.058	0.012	0.023	0.000	0.000	0.000	0.000	0.000

Problem 28	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	116	116	139	0	0	0	0	0	-1
N.S.	1	1.00	1.20	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.078	0.086	0.033	0.000	0.000	0.000	0.000	0.000

Problem 29	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	156	156	163	0	0	0	0	0	-1
N.S.	1	1.00	1.04	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.094	0.121	0.026	0.000	0.000	0.000	0.000	0.000

Problem 30	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F(-2)	F(-2)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	192	192	203	0	0	0	0	0	-1
N.S.	1	1.00	1.06	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.110	0.152	0.024	0.000	0.000	0.000	0.000	0.000

Problem 31	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F(-2)	A	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	103	103	103	0	0	59	0	0	-1
N.S.	1	1.00	1.00	0.00	0.00	0.57	0.00	0.00	-0.01
time (sec)	N/A	0.040	0.080	0.034	0.000	0.086	0.000	0.000	0.000

Problem 32	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	A	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	88	88	88	0	60	0	0	0	-1
N.S.	1	1.00	1.00	0.00	0.68	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.049	0.041	0.039	0.052	0.000	0.000	0.000	0.000

Problem 33	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	A	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	20	20	21	26	0	23	42	23	20
N.S.	1	1.00	1.05	1.30	0.00	1.15	2.10	1.15	1.00
time (sec)	N/A	0.033	0.028	1.588	0.000	0.359	3.415	4.513	0.200

Problem 34	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	A	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	42	42	43	0	0	28	0	0	-1
N.S.	1	1.00	1.02	0.00	0.00	0.67	0.00	0.00	-0.02
time (sec)	N/A	0.054	0.026	0.179	0.000	0.372	0.000	0.000	0.000

Problem 35	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	B	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	178	178	315	1105	395	427	568	1224	526
N.S.	1	1.00	1.77	6.21	2.22	2.40	3.19	6.88	2.96
time (sec)	N/A	0.073	0.214	0.412	0.280	0.425	2.454	5.837	0.422

Problem 36	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	B	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	149	149	226	836	287	304	410	780	352
N.S.	1	1.00	1.52	5.61	1.93	2.04	2.75	5.23	2.36
time (sec)	N/A	0.051	0.155	0.380	0.284	0.399	1.279	4.247	0.345

Problem 37	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	A	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	120	120	150	585	190	195	252	430	212
N.S.	1	1.00	1.25	4.88	1.58	1.62	2.10	3.58	1.77
time (sec)	N/A	0.040	0.100	0.374	0.276	0.356	0.689	4.135	0.268

Problem 38	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	91	91	101	101	104	105	134	186	104
N.S.	1	1.00	1.11	1.11	1.14	1.15	1.47	2.04	1.14
time (sec)	N/A	0.027	0.039	0.239	0.280	0.385	0.396	3.751	0.248

Problem 39	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	29	29	29	36	40	42	41	46	35
N.S.	1	1.00	1.00	1.24	1.38	1.45	1.41	1.59	1.21
time (sec)	N/A	0.011	0.007	0.049	0.296	0.347	0.165	5.523	0.002

Problem 40	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	63	63	62	261	0	0	0	0	-1
N.S.	1	1.00	0.98	4.14	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.038	0.011	0.368	0.000	0.000	0.000	0.000	0.000

Problem 41	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	A	F(-2)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	74	74	57	354	90	99	0	111	84
N.S.	1	1.00	0.77	4.78	1.22	1.34	0.00	1.50	1.14
time (sec)	N/A	0.025	0.046	0.379	0.306	0.366	0.000	5.806	1.139

Problem 42	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	B	F(-2)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	112	112	83	633	174	258	0	302	173
N.S.	1	1.00	0.74	5.65	1.55	2.30	0.00	2.70	1.54
time (sec)	N/A	0.047	0.082	0.410	0.276	0.392	0.000	4.262	0.666

Problem 43	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	B	B	F(-2)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	141	141	110	950	302	475	0	565	283
N.S.	1	1.00	0.78	6.74	2.14	3.37	0.00	4.01	2.01
time (sec)	N/A	0.061	0.110	0.495	0.302	0.382	0.000	3.834	0.937

Problem 44	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	B	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	365	365	612	6770	839	1127	1241	2385	1051
N.S.	1	1.00	1.68	18.55	2.30	3.09	3.40	6.53	2.88
time (sec)	N/A	0.358	0.380	1.019	0.300	0.393	2.549	3.381	0.741

Problem 45	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	287	287	400	4597	567	709	774	1339	591
N.S.	1	1.00	1.39	16.02	1.98	2.47	2.70	4.67	2.06
time (sec)	N/A	0.278	0.254	1.003	0.318	0.379	1.315	6.157	0.554

Problem 46	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	A	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	186	186	144	2616	324	369	394	595	268
N.S.	1	1.00	0.77	14.06	1.74	1.98	2.12	3.20	1.44
time (sec)	N/A	0.119	0.060	0.613	0.297	0.479	0.706	4.092	0.351

Problem 47	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	65	65	59	130	136	142	146	178	94
N.S.	1	1.00	0.91	2.00	2.09	2.18	2.25	2.74	1.45
time (sec)	N/A	0.026	0.012	0.078	0.280	0.346	0.368	5.249	0.002

Problem 48	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	111	111	194	2018	0	0	0	0	-1
N.S.	1	1.00	1.75	18.18	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.080	0.066	0.746	0.000	0.000	0.000	0.000	0.000

Problem 49	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	132	132	126	1092	0	0	0	0	-1
N.S.	1	1.00	0.95	8.27	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.064	0.062	0.398	0.000	0.000	0.000	0.000	0.000

Problem 50	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	202	202	204	1473	0	0	0	0	-1
N.S.	1	1.00	1.01	7.29	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.226	0.140	0.456	0.000	0.000	0.000	0.000	0.000

Problem 51	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	317	317	302	1815	0	0	0	0	-1
N.S.	1	1.00	0.95	5.73	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.375	0.240	0.468	0.000	0.000	0.000	0.000	0.000

Problem 52	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	C	B	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	598	598	1241	30495	1720	2694	2594	5282	2133
N.S.	1	1.00	2.08	50.99	2.88	4.51	4.34	8.83	3.57
time (sec)	N/A	0.388	0.826	3.487	0.353	0.411	5.208	3.983	1.212

Problem 53	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	B	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	432	432	809	20417	1172	1676	1578	2992	1157
N.S.	1	1.00	1.87	47.26	2.71	3.88	3.65	6.93	2.68
time (sec)	N/A	0.272	0.526	2.616	0.318	0.394	2.646	4.131	0.859

Problem 54	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	B	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	265	265	201	11547	687	859	836	1351	511
N.S.	1	1.00	0.76	43.57	2.59	3.24	3.15	5.10	1.93
time (sec)	N/A	0.156	0.100	1.624	0.301	0.382	1.359	6.180	0.567

Problem 55	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	B	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	99	99	85	4872	294	326	294	409	172
N.S.	1	1.00	0.86	49.21	2.97	3.29	2.97	4.13	1.74
time (sec)	N/A	0.039	0.017	0.116	0.299	0.368	0.584	4.081	0.002

Problem 56	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	C	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	158	158	335	9538	0	0	0	0	-1
N.S.	1	1.00	2.12	60.37	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.126	0.114	0.894	0.000	0.000	0.000	0.000	0.000

Problem 57	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	C	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	190	190	410	5626	0	0	0	0	-1
N.S.	1	1.00	2.16	29.61	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.112	0.226	1.406	0.000	0.000	0.000	0.000	0.000

Problem 58	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	342	342	620	0	0	0	0	0	-1
N.S.	1	1.00	1.81	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.385	0.477	0.167	0.000	0.000	0.000	0.000	0.000

Problem 59	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	564	564	843	0	0	0	0	0	-1
N.S.	1	1.00	1.49	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.706	0.723	0.191	0.000	0.000	0.000	0.000	0.000

Problem 60	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	B	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	340	340	258	37938	1217	1635	1372	2548	823
N.S.	1	1.00	0.76	111.58	3.58	4.81	4.04	7.49	2.42
time (sec)	N/A	0.199	0.152	3.079	0.338	0.401	2.647	6.445	0.801

Problem 61	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	B	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	131	131	112	15871	528	611	495	778	275
N.S.	1	1.00	0.85	121.15	4.03	4.66	3.78	5.94	2.10
time (sec)	N/A	0.053	0.023	0.275	0.299	0.357	1.088	4.123	0.002

Problem 62	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	C	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	205	205	503	33189	0	0	0	0	-1
N.S.	1	1.00	2.45	161.90	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.165	0.105	1.415	0.000	0.000	0.000	0.000	0.000

Problem 63	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	C	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	248	248	531	21740	0	0	0	0	-1
N.S.	1	1.00	2.14	87.66	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.159	0.469	1.701	0.000	0.000	0.000	0.000	0.000

Problem 64	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	19	19	19	25	23	22	24	23	23
N.S.	1	1.00	1.00	1.32	1.21	1.16	1.26	1.21	1.21
time (sec)	N/A	0.004	0.004	0.103	0.273	0.346	0.052	2.930	0.071

Problem 65	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	37	37	36	40	27	36	42	44	48
N.S.	1	1.00	0.97	1.08	0.73	0.97	1.14	1.19	1.30
time (sec)	N/A	0.010	0.004	0.104	0.276	0.347	0.075	2.818	0.288

Problem 66	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	55	55	51	55	37	51	63	62	73
N.S.	1	1.00	0.93	1.00	0.67	0.93	1.15	1.13	1.33
time (sec)	N/A	0.013	0.005	0.129	0.278	0.358	0.096	5.488	0.245

Problem 67	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	25	25	25	33	34	30	36	34	31
N.S.	1	1.00	1.00	1.32	1.36	1.20	1.44	1.36	1.24
time (sec)	N/A	0.012	0.006	0.109	0.275	0.318	0.086	5.777	0.078

Problem 68	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	49	49	48	52	38	48	63	65	94
N.S.	1	1.00	0.98	1.06	0.78	0.98	1.29	1.33	1.92
time (sec)	N/A	0.019	0.006	0.145	0.287	0.360	0.119	4.562	0.359

Problem 69	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	73	73	67	71	51	67	95	91	138
N.S.	1	1.00	0.92	0.97	0.70	0.92	1.30	1.25	1.89
time (sec)	N/A	0.024	0.007	0.137	0.277	0.382	0.149	4.799	0.367

Problem 70	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	24	24	24	36	35	35	36	40	29
N.S.	1	1.00	1.00	1.50	1.46	1.46	1.50	1.67	1.21
time (sec)	N/A	0.006	0.006	0.179	0.284	0.347	0.130	4.674	0.064

Problem 71	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	F	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	24	24	24	35	109	30	0	0	23
N.S.	1	1.00	1.00	1.46	4.54	1.25	0.00	0.00	0.96
time (sec)	N/A	0.020	0.006	0.367	0.292	0.352	0.000	0.000	0.394

Problem 72	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	A	C	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	15	15	15	19	0	15	17	0	15
N.S.	1	1.00	1.00	1.27	0.00	1.00	1.13	0.00	1.00
time (sec)	N/A	0.015	0.004	0.164	0.000	0.381	3.240	0.000	0.079

Problem 73	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	F	C	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	16	16	16	33	23	0	87	0	18
N.S.	1	1.00	1.00	2.06	1.44	0.00	5.44	0.00	1.12
time (sec)	N/A	0.012	0.003	0.101	0.281	0.000	1.452	0.000	0.034

Problem 74	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	F	C	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	16	16	16	33	23	0	87	0	18
N.S.	1	1.00	1.00	2.06	1.44	0.00	5.44	0.00	1.12
time (sec)	N/A	0.011	0.003	0.107	0.288	0.000	1.390	0.000	0.029

Problem 75	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	C	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	8	8	8	9	22	8	10	0	18
N.S.	1	1.00	1.00	1.12	2.75	1.00	1.25	0.00	2.25
time (sec)	N/A	0.005	0.002	0.086	0.306	0.357	1.318	0.000	0.029

Problem 76	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	10	10	10	9	9	9	7	9	8
N.S.	1	1.00	1.00	0.90	0.90	0.90	0.70	0.90	0.80
time (sec)	N/A	0.004	0.002	0.052	0.289	0.356	0.024	4.147	0.168

Problem 77	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	F	C	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	20	20	20	17	22	0	60	0	16
N.S.	1	1.00	1.00	0.85	1.10	0.00	3.00	0.00	0.80
time (sec)	N/A	0.014	0.003	0.106	0.299	0.000	1.833	0.000	0.030

Problem 78	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	F	C	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	25	25	27	19	23	0	102	0	18
N.S.	1	1.00	1.08	0.76	0.92	0.00	4.08	0.00	0.72
time (sec)	N/A	0.015	0.003	0.098	0.282	0.000	1.987	0.000	0.032

Problem 79	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	F	A	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	21	21	22	46	30	0	94	0	25
N.S.	1	1.00	1.05	2.19	1.43	0.00	4.48	0.00	1.19
time (sec)	N/A	0.016	0.004	0.175	0.316	0.000	2.003	0.000	0.084

Problem 80	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	F	A	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	21	21	22	46	30	0	94	0	25
N.S.	1	1.00	1.05	2.19	1.43	0.00	4.48	0.00	1.19
time (sec)	N/A	0.016	0.004	0.153	0.307	0.000	2.061	0.000	0.069

Problem 81	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	C	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	14	14	14	17	29	14	15	0	14
N.S.	1	1.00	1.00	1.21	2.07	1.00	1.07	0.00	1.00
time (sec)	N/A	0.014	0.003	0.181	0.304	0.357	1.946	0.000	0.056

Problem 82	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	17	17	16	17	16	18	14	14	14
N.S.	1	1.00	0.94	1.00	0.94	1.06	0.82	0.82	0.82
time (sec)	N/A	0.009	0.004	0.061	0.287	0.356	0.036	3.575	0.147

Problem 83	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	F	A	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	26	26	27	26	29	0	66	0	23
N.S.	1	1.00	1.04	1.00	1.12	0.00	2.54	0.00	0.88
time (sec)	N/A	0.016	0.003	0.162	0.327	0.000	2.346	0.000	0.161

Problem 84	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	F	A	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	31	31	34	28	30	0	109	0	25
N.S.	1	1.00	1.10	0.90	0.97	0.00	3.52	0.00	0.81
time (sec)	N/A	0.017	0.004	0.188	0.310	0.000	2.789	0.000	0.163

Problem 85	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	187	187	131	1300	131	179	173	342	116
N.S.	1	1.00	0.70	6.95	0.70	0.96	0.93	1.83	0.62
time (sec)	N/A	0.134	0.067	0.411	0.293	0.347	0.916	6.194	0.240

Problem 86	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	177	177	186	1102	150	0	0	0	-1
N.S.	1	1.00	1.05	6.23	0.85	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.203	0.045	0.282	0.275	0.000	0.000	0.000	0.000

Problem 87	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	A	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	285	285	216	5345	215	341	269	626	172
N.S.	1	1.00	0.76	18.75	0.75	1.20	0.94	2.20	0.60
time (sec)	N/A	0.155	0.096	0.907	0.284	0.357	1.573	3.050	0.264

Problem 88	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	299	299	266	3160	0	303	0	582	-1
N.S.	1	1.00	0.89	10.57	0.00	1.01	0.00	1.95	-0.00
time (sec)	N/A	0.327	0.560	1.123	0.000	0.356	0.000	5.133	0.000

Problem 89	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	219	219	197	1889	0	192	0	337	-1
N.S.	1	1.00	0.90	8.63	0.00	0.88	0.00	1.54	-0.00
time (sec)	N/A	0.209	0.249	0.933	0.000	0.349	0.000	3.660	0.000

Problem 90	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	139	139	126	937	0	108	0	159	-1
N.S.	1	1.00	0.91	6.74	0.00	0.78	0.00	1.14	-0.01
time (sec)	N/A	0.119	0.112	0.819	0.000	0.381	0.000	5.455	0.000

Problem 91	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	63	63	63	311	0	46	0	49	-1
N.S.	1	1.00	1.00	4.94	0.00	0.73	0.00	0.78	-0.02
time (sec)	N/A	0.032	0.014	0.055	0.000	0.399	0.000	2.702	0.000

Problem 92	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	27	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.04
time (sec)	N/A	0.025	0.129	0.198	0.000	0.000	0.000	0.000	0.000

Problem 93	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	27	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.04
time (sec)	N/A	0.023	0.361	0.158	0.000	0.000	0.000	0.000	0.000

Problem 94	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	C	F	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	339	339	1674	9517	0	676	0	3475	-1
N.S.	1	1.00	4.94	28.07	0.00	1.99	0.00	10.25	-0.00
time (sec)	N/A	0.568	0.621	1.230	0.000	0.409	0.000	5.700	0.000

Problem 95	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	C	F	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	259	259	1015	5123	0	433	0	2041	-1
N.S.	1	1.00	3.92	19.78	0.00	1.67	0.00	7.88	-0.00
time (sec)	N/A	0.370	0.348	1.007	0.000	0.394	0.000	6.245	0.000

Problem 96	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	177	177	208	2300	0	244	0	984	-1
N.S.	1	1.00	1.18	12.99	0.00	1.38	0.00	5.56	-0.01
time (sec)	N/A	0.182	0.189	0.701	0.000	0.376	0.000	3.296	0.000

Problem 97	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	96	96	123	456	0	124	0	307	-1
N.S.	1	1.00	1.28	4.75	0.00	1.29	0.00	3.20	-0.01
time (sec)	N/A	0.046	0.036	0.055	0.000	0.353	0.000	5.629	0.000

Problem 98	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	27	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.04
time (sec)	N/A	0.023	0.345	0.005	0.000	0.000	0.000	0.000	0.000

Problem 99	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	27	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.04
time (sec)	N/A	0.022	2.436	0.033	0.000	0.000	0.000	0.000	0.000

Problem 100	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	B	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	351	351	351	6545	0	1088	0	8396	-1
N.S.	1	1.00	1.00	18.65	0.00	3.10	0.00	23.92	-0.00
time (sec)	N/A	0.613	0.946	1.029	0.000	0.367	0.000	5.698	0.000

Problem 101	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	B	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	261	261	256	3114	0	594	0	4114	-1
N.S.	1	1.00	0.98	11.93	0.00	2.28	0.00	15.76	-0.00
time (sec)	N/A	0.260	0.270	0.803	0.000	0.397	0.000	5.275	0.000

Problem 102	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	B	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	135	135	118	734	0	277	0	1322	-1
N.S.	1	1.00	0.87	5.44	0.00	2.05	0.00	9.79	-0.01
time (sec)	N/A	0.061	0.084	0.049	0.000	0.365	0.000	4.864	0.000

Problem 103	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	27	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.04
time (sec)	N/A	0.023	0.606	0.033	0.000	0.000	0.000	0.000	0.000

Problem 104	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	27	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.04
time (sec)	N/A	0.022	3.210	180.000	0.000	0.000	0.000	0.000	0.000

Problem 105	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	404	404	374	0	0	0	0	0	-1
N.S.	1	1.00	0.93	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.511	0.352	0.129	0.000	0.000	0.000	0.000	0.000

Problem 106	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	255	255	235	0	0	0	0	0	-1
N.S.	1	1.00	0.92	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.255	0.198	0.023	0.000	0.000	0.000	0.000	0.000

Problem 107	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	111	111	106	0	0	0	0	0	-1
N.S.	1	1.00	0.95	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.073	0.032	0.020	0.000	0.000	0.000	0.000	0.000

Problem 108	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	F(-2)	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	29	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.030	1.943	0.172	0.000	0.000	0.000	0.000	0.000

Problem 109	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	F(-2)	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	88	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.069	0.189	0.175	0.000	0.000	0.000	0.000	0.000

Problem 110	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	F(-2)	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	79	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.145	0.205	0.178	0.000	0.000	0.000	0.000	0.000

Problem 111	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	526	526	446	0	0	0	0	0	-1
N.S.	1	1.00	0.85	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.591	0.701	0.162	0.000	0.000	0.000	0.000	0.000

Problem 112	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	330	330	282	0	0	0	0	0	-1
N.S.	1	1.00	0.85	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.316	0.286	0.034	0.000	0.000	0.000	0.000	0.000

Problem 113	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	143	143	127	0	0	0	0	0	-1
N.S.	1	1.00	0.89	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.087	0.006	0.028	0.000	0.000	0.000	0.000	0.000

Problem 114	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	F(-2)	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	29	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.037	1.067	0.164	0.000	0.000	0.000	0.000	0.000

Problem 115	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	F(-2)	F(-2)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	88	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.071	0.566	0.165	0.000	0.000	0.000	0.000	0.000

Problem 116	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	F(-2)	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	79	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.139	0.549	0.175	0.000	0.000	0.000	0.000	0.000

Problem 117	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	660	660	511	0	0	0	0	0	-1
N.S.	1	1.00	0.77	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.714	1.134	0.146	0.000	0.000	0.000	0.000	0.000

Problem 118	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	413	413	326	0	0	0	0	0	-1
N.S.	1	1.00	0.79	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.382	0.452	0.024	0.000	0.000	0.000	0.000	0.000

Problem 119	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	179	179	152	0	0	0	0	0	-1
N.S.	1	1.00	0.85	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.103	0.122	0.025	0.000	0.000	0.000	0.000	0.000

Problem 120	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	F(-2)	F(-1)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	29	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.037	1.055	0.174	0.000	0.000	0.000	0.000	0.000

Problem 121	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	F(-2)	F(-1)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	88	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.077	4.194	0.167	0.000	0.000	0.000	0.000	0.000

Problem 122	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	F(-2)	F(-1)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	79	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.157	3.743	0.171	0.000	0.000	0.000	0.000	0.000

Problem 123	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	383	383	331	0	0	0	0	0	-1
N.S.	1	1.00	0.86	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.532	0.293	0.115	0.000	0.000	0.000	0.000	0.000

Problem 124	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	283	283	252	0	0	0	0	0	-1
N.S.	1	1.00	0.89	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.379	0.173	0.178	0.000	0.000	0.000	0.000	0.000

Problem 125	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	181	181	164	0	0	0	0	0	-1
N.S.	1	1.00	0.91	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.206	0.104	0.035	0.000	0.000	0.000	0.000	0.000

Problem 126	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	80	80	80	0	0	0	0	0	-1
N.S.	1	1.00	1.00	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.055	0.013	0.025	0.000	0.000	0.000	0.000	0.000

Problem 127	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	F(-2)	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	29	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.033	0.060	0.161	0.000	0.000	0.000	0.000	0.000

Problem 128	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	422	422	1667	0	0	0	0	0	-1
N.S.	1	1.00	3.95	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.960	5.483	0.173	0.000	0.000	0.000	0.000	0.000

Problem 129	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	325	325	901	0	0	0	0	0	-1
N.S.	1	1.00	2.77	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.641	2.164	0.144	0.000	0.000	0.000	0.000	0.000

Problem 130	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	220	220	338	0	0	0	0	0	-1
N.S.	1	1.00	1.54	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.300	0.628	0.032	0.000	0.000	0.000	0.000	0.000

Problem 131	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	116	116	139	0	0	0	0	0	-1
N.S.	1	1.00	1.20	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.074	0.058	0.024	0.000	0.000	0.000	0.000	0.000

Problem 132	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	F(-2)	F(-2)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	29	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.039	0.176	0.185	0.000	0.000	0.000	0.000	0.000

Problem 133	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	520	520	1990	0	0	0	0	0	-1
N.S.	1	1.00	3.83	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.691	4.492	0.114	0.000	0.000	0.000	0.000	0.000

Problem 134	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	421	421	1044	0	0	0	0	0	-1
N.S.	1	1.00	2.48	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.011	2.247	0.146	0.000	0.000	0.000	0.000	0.000

Problem 135	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	311	311	353	0	0	0	0	0	-1
N.S.	1	1.00	1.14	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.425	1.266	0.030	0.000	0.000	0.000	0.000	0.000

Problem 136	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	156	156	163	0	0	0	0	0	-1
N.S.	1	1.00	1.04	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.090	0.114	0.024	0.000	0.000	0.000	0.000	0.000

Problem 137	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	F(-2)	F(-2)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	29	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.037	0.329	0.149	0.000	0.000	0.000	0.000	0.000

Problem 138	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F(-2)	A	A	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	163	163	137	0	0	479	469	0	-1
N.S.	1	1.00	0.84	0.00	0.00	2.94	2.88	0.00	-0.01
time (sec)	N/A	0.116	0.157	0.143	0.000	0.429	30.764	0.000	0.000

Problem 139	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F(-2)	A	A	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	132	132	118	0	0	303	139	0	-1
N.S.	1	1.00	0.89	0.00	0.00	2.30	1.05	0.00	-0.01
time (sec)	N/A	0.064	0.093	0.147	0.000	0.419	2.304	0.000	0.000

Problem 140	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	A	B	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	97	97	83	140	0	180	326	110	-1
N.S.	1	1.00	0.86	1.44	0.00	1.86	3.36	1.13	-0.01
time (sec)	N/A	0.040	0.057	0.965	0.000	0.415	16.742	5.866	0.000

Problem 141	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F(-2)	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	81	81	80	0	0	216	85	92	-1
N.S.	1	1.00	0.99	0.00	0.00	2.67	1.05	1.14	-0.01
time (sec)	N/A	0.037	0.116	0.170	0.000	0.393	7.320	2.804	0.000

Problem 142	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F	F(-2)	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	114	114	85	0	0	414	117	188	-1
N.S.	1	1.00	0.75	0.00	0.00	3.63	1.03	1.65	-0.01
time (sec)	N/A	0.059	0.029	0.132	0.000	0.406	34.242	5.997	0.000

Problem 143	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F	F(-2)	B	A	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	145	145	78	0	0	745	141	0	-1
N.S.	1	1.00	0.54	0.00	0.00	5.14	0.97	0.00	-0.01
time (sec)	N/A	0.090	0.034	0.182	0.000	0.381	123.272	0.000	0.000

Problem 144	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F	F(-2)	B	F(-2)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	176	176	78	0	0	1177	0	0	-1
N.S.	1	1.00	0.44	0.00	0.00	6.69	0.00	0.00	-0.01
time (sec)	N/A	0.115	0.035	0.157	0.000	0.402	0.000	0.000	0.000

Problem 145	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F	F(-2)	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	590	590	1143	0	0	0	0	0	-1
N.S.	1	1.00	1.94	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.536	4.287	0.182	0.000	0.000	0.000	0.000	0.000

Problem 146	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F	F(-2)	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	510	510	351	0	0	0	0	0	-1
N.S.	1	1.00	0.69	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.055	1.114	0.172	0.000	0.000	0.000	0.000	0.000

Problem 147	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F	F(-2)	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	418	418	301	0	0	0	0	0	-1
N.S.	1	1.00	0.72	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.725	1.117	0.184	0.000	0.000	0.000	0.000	0.000

Problem 148	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F	F(-2)	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	312	312	342	0	0	0	0	0	-1
N.S.	1	1.00	1.10	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.527	2.296	0.164	0.000	0.000	0.000	0.000	0.000

Problem 149	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F	F(-2)	F	F(-2)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	423	423	419	0	0	0	0	0	-1
N.S.	1	1.00	0.99	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.797	3.892	0.137	0.000	0.000	0.000	0.000	0.000

Problem 150	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F	F(-2)	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	503	503	413	0	0	0	0	0	-1
N.S.	1	1.00	0.82	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.117	4.337	0.154	0.000	0.000	0.000	0.000	0.000

Problem 151	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F	F(-2)	F	F(-2)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	583	583	444	0	0	0	0	0	-1
N.S.	1	1.00	0.76	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.338	5.671	0.190	0.000	0.000	0.000	0.000	0.000

Problem 152	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	F(-1)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	29	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.027	0.681	0.175	0.000	0.000	0.000	0.000	0.000

Problem 153	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	29	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.024	0.586	0.138	0.000	0.000	0.000	0.000	0.000

Problem 154	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	29	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.025	0.823	0.187	0.000	0.000	0.000	0.000	0.000

Problem 155	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	29	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.027	0.885	0.174	0.000	0.000	0.000	0.000	0.000

Problem 156	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	F(-2)	F(-1)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	83	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.172	0.557	0.129	0.000	0.000	0.000	0.000	0.000

Problem 157	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	F(-2)	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	79	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.163	0.592	0.139	0.000	0.000	0.000	0.000	0.000

Problem 158	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	F(-2)	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	78	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.168	0.659	0.132	0.000	0.000	0.000	0.000	0.000

Problem 159	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	F(-2)	F(-1)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	31	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.035	4.857	0.165	0.000	0.000	0.000	0.000	0.000

Problem 160	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	F(-2)	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	31	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.037	3.010	0.174	0.000	0.000	0.000	0.000	0.000

Problem 161	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	F(-2)	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	31	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.038	0.550	0.174	0.000	0.000	0.000	0.000	0.000

Problem 162	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F(-2)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	94	94	81	0	0	0	0	0	-1
N.S.	1	1.00	0.86	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.039	0.053	0.157	0.000	0.000	0.000	0.000	0.000

Problem 163	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	27	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.04
time (sec)	N/A	0.019	0.206	0.123	0.000	0.000	0.000	0.000	0.000

Problem 164	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	F(-2)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	27	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.04
time (sec)	N/A	0.018	2.983	0.007	0.000	0.000	0.000	0.000	0.000

Problem 165	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	F(-1)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	29	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.034	14.755	0.163	0.000	0.000	0.000	0.000	0.000

Problem 166	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	F(-2)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	29	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.028	0.048	0.202	0.000	0.000	0.000	0.000	0.000

Problem 167	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	29	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.031	10.363	0.169	0.000	0.000	0.000	0.000	0.000

Problem 168	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	F(-2)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	29	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.036	12.769	0.147	0.000	0.000	0.000	0.000	0.000

Problem 169	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	F(-2)	A	F(-2)	F(-2)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	27	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.04
time (sec)	N/A	0.018	0.287	0.161	0.000	0.000	0.000	0.000	0.000

Problem 170	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F(-2)	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	474	474	343	0	0	0	0	0	-1
N.S.	1	1.00	0.72	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.402	1.082	0.148	0.000	0.000	0.000	0.000	0.000

Problem 171	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F(-2)	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	348	348	262	0	0	0	0	0	-1
N.S.	1	1.00	0.75	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.271	0.368	0.132	0.000	0.000	0.000	0.000	0.000

Problem 172	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F(-2)	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	225	225	181	0	0	0	0	0	-1
N.S.	1	1.00	0.80	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.148	0.143	0.042	0.000	0.000	0.000	0.000	0.000

Problem 173	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F(-2)	A	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	103	103	103	0	0	60	0	0	-1
N.S.	1	1.00	1.00	0.00	0.00	0.58	0.00	0.00	-0.01
time (sec)	N/A	0.042	0.051	0.035	0.000	0.085	0.000	0.000	0.000

Problem 174	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	F(-2)	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	27	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.04
time (sec)	N/A	0.020	0.153	0.173	0.000	0.000	0.000	0.000	0.000

Problem 175	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	A	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	315	315	589	988	744	408	682	664	661
N.S.	1	1.00	1.87	3.14	2.36	1.30	2.17	2.11	2.10
time (sec)	N/A	0.364	0.383	0.679	0.316	0.391	1.028	5.866	0.546

Problem 176	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	244	244	375	621	537	269	427	424	393
N.S.	1	1.00	1.54	2.55	2.20	1.10	1.75	1.74	1.61
time (sec)	N/A	0.277	0.214	0.563	0.305	0.399	0.715	5.967	0.408

Problem 177	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	157	157	214	338	360	156	226	235	208
N.S.	1	1.00	1.36	2.15	2.29	0.99	1.44	1.50	1.32
time (sec)	N/A	0.188	0.105	0.476	0.332	0.392	0.436	5.302	0.352

Problem 178	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	79	79	66	142	216	77	85	103	100
N.S.	1	1.00	0.84	1.80	2.73	0.97	1.08	1.30	1.27
time (sec)	N/A	0.092	0.039	0.388	0.325	0.376	0.216	5.473	0.637

Problem 179	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	27	27	27	42	108	36	31	33	31
N.S.	1	1.00	1.00	1.56	4.00	1.33	1.15	1.22	1.15
time (sec)	N/A	0.026	0.004	0.294	0.310	0.371	0.094	3.634	0.353

Problem 180	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	87	87	91	215	0	0	0	0	-1
N.S.	1	1.00	1.05	2.47	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.121	0.049	1.081	0.000	0.000	0.000	0.000	0.000

Problem 181	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	151	151	141	372	0	0	0	0	-1
N.S.	1	1.00	0.93	2.46	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.216	0.111	1.175	0.000	0.000	0.000	0.000	0.000

Problem 182	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	250	250	226	705	522	0	0	0	-1
N.S.	1	1.00	0.90	2.82	2.09	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.371	0.163	1.164	0.621	0.000	0.000	0.000	0.000

Problem 183	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	A	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	579	579	733	1891	1437	833	1479	1588	1346
N.S.	1	1.00	1.27	3.27	2.48	1.44	2.55	2.74	2.32
time (sec)	N/A	1.069	0.636	0.747	0.320	0.380	2.272	4.166	0.962

Problem 184	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	A	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	464	464	460	1178	979	546	918	1005	803
N.S.	1	1.00	0.99	2.54	2.11	1.18	1.98	2.17	1.73
time (sec)	N/A	0.687	0.385	0.541	0.318	0.380	1.348	7.022	0.692

Problem 185	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	A	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	238	238	171	632	606	315	473	548	408
N.S.	1	1.00	0.72	2.66	2.55	1.32	1.99	2.30	1.71
time (sec)	N/A	0.362	0.122	0.522	0.312	0.388	0.683	5.273	0.498

Problem 186	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	113	113	89	257	324	148	175	228	163
N.S.	1	1.00	0.79	2.27	2.87	1.31	1.55	2.02	1.44
time (sec)	N/A	0.139	0.044	0.355	0.303	0.393	0.361	2.878	0.335

Problem 187	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	27	27	27	64	136	56	51	53	50
N.S.	1	1.00	1.00	2.37	5.04	2.07	1.89	1.96	1.85
time (sec)	N/A	0.041	0.005	0.279	0.290	0.366	0.089	4.748	0.481

Problem 188	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	142	142	189	409	324	0	0	0	-1
N.S.	1	1.00	1.33	2.88	2.28	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.208	0.122	1.181	0.352	0.000	0.000	0.000	0.000

Problem 189	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	B	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	273	273	360	0	622	0	0	0	-1
N.S.	1	1.00	1.32	0.00	2.28	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.398	0.366	0.352	0.360	0.000	0.000	0.000	0.000

Problem 190	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	B	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	485	485	680	0	1068	0	0	0	-1
N.S.	1	1.00	1.40	0.00	2.20	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.736	0.614	0.375	2.605	0.000	0.000	0.000	0.000

Problem 191	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	A	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	230	230	397	567	0	364	0	0	-1
N.S.	1	1.00	1.73	2.47	0.00	1.58	0.00	0.00	-0.00
time (sec)	N/A	0.470	0.796	3.635	0.000	0.390	0.000	0.000	0.000

Problem 192	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	A	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	177	177	279	361	0	245	0	0	-1
N.S.	1	1.00	1.58	2.04	0.00	1.38	0.00	0.00	-0.01
time (sec)	N/A	0.359	0.238	3.306	0.000	0.355	0.000	0.000	0.000

Problem 193	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	A	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	124	124	137	200	0	148	0	0	-1
N.S.	1	1.00	1.10	1.61	0.00	1.19	0.00	0.00	-0.01
time (sec)	N/A	0.267	0.151	2.867	0.000	0.397	0.000	0.000	0.000

Problem 194	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	A	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	71	71	76	88	0	76	0	0	-1
N.S.	1	1.00	1.07	1.24	0.00	1.07	0.00	0.00	-0.01
time (sec)	N/A	0.155	0.082	2.038	0.000	0.360	0.000	0.000	0.000

Problem 195	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	23	23	23	25	30	25	17	25	23
N.S.	1	1.00	1.00	1.09	1.30	1.09	0.74	1.09	1.00
time (sec)	N/A	0.045	0.014	0.508	0.273	0.351	0.083	4.643	0.850

Problem 196	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	72	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.166	0.288	1.028	0.000	0.000	0.000	0.000	0.000

Problem 197	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	115	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.204	6.841	0.950	0.000	0.000	0.000	0.000	0.000

Problem 198	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F	F(-2)	F	F(-1)	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	485	485	1400	0	0	0	0	0	-1
N.S.	1	1.00	2.89	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.453	14.539	0.311	0.000	0.000	0.000	0.000	0.000

Problem 199	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F	F(-2)	F	F(-1)	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	417	417	576	0	0	0	0	0	-1
N.S.	1	1.00	1.38	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.980	5.533	0.292	0.000	0.000	0.000	0.000	0.000

Problem 200	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F	F(-2)	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	349	349	268	0	0	0	0	0	-1
N.S.	1	1.00	0.77	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.700	1.365	0.327	0.000	0.000	0.000	0.000	0.000

Problem 201	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F(-2)	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	256	256	314	0	0	0	0	0	-1
N.S.	1	1.00	1.23	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.483	2.989	0.267	0.000	0.000	0.000	0.000	0.000

Problem 202	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F	F(-2)	F	F(-1)	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	340	340	267	0	0	0	0	0	-1
N.S.	1	1.00	0.79	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.735	2.087	0.289	0.000	0.000	0.000	0.000	0.000

Problem 203	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F	F(-2)	F	F(-1)	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	406	406	332	0	0	0	0	0	-1
N.S.	1	1.00	0.82	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.009	4.809	0.280	0.000	0.000	0.000	0.000	0.000

Problem 204	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F	F(-2)	F	F(-1)	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	381	381	407	0	0	0	0	0	-1
N.S.	1	1.00	1.07	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.077	4.118	180.000	0.000	0.000	0.000	0.000	0.000

Problem 205	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F	F(-2)	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	323	323	186	0	0	0	0	0	-1
N.S.	1	1.00	0.58	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.626	0.382	0.372	0.000	0.000	0.000	0.000	0.000

Problem 206	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F(-2)	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	242	242	239	0	0	0	0	0	-1
N.S.	1	1.00	0.99	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.447	1.739	0.280	0.000	0.000	0.000	0.000	0.000

Problem 207	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F	F(-2)	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	316	316	183	0	0	0	0	0	-1
N.S.	1	1.00	0.58	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.661	1.231	0.264	0.000	0.000	0.000	0.000	0.000

Problem 208	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F	F(-2)	F	F(-1)	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	372	372	197	0	0	0	0	0	-1
N.S.	1	1.00	0.53	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.877	2.952	0.367	0.000	0.000	0.000	0.000	0.000

Problem 209	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	F(-1)	F(-2)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	35	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.076	0.506	0.259	0.000	0.000	0.000	0.000	0.000

Problem 210	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	305	305	247	0	0	0	0	0	-1
N.S.	1	1.00	0.81	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.464	0.839	0.264	0.000	0.000	0.000	0.000	0.000

Problem 211	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	210	210	189	0	0	0	0	0	-1
N.S.	1	1.00	0.90	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.336	0.271	0.336	0.000	0.000	0.000	0.000	0.000

Problem 212	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	A	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	115	115	106	0	0	121	0	0	-1
N.S.	1	1.00	0.92	0.00	0.00	1.05	0.00	0.00	-0.01
time (sec)	N/A	0.195	0.164	0.219	0.000	0.096	0.000	0.000	0.000

Problem 213	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	31	31	31	32	33	43	0	33	31
N.S.	1	1.00	1.00	1.03	1.06	1.39	0.00	1.06	1.00
time (sec)	N/A	0.056	0.011	0.206	0.270	0.358	0.000	3.999	0.349

Problem 214	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	35	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.086	0.463	0.352	0.000	0.000	0.000	0.000	0.000

Problem 215	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	F(-1)	F(-2)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	35	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.085	1.045	0.344	0.000	0.000	0.000	0.000	0.000

Problem 216	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	F(-1)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	35	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.084	2.300	0.276	0.000	0.000	0.000	0.000	0.000

Problem 217	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	402	402	379	2801	0	0	0	0	-1
N.S.	1	1.00	0.94	6.97	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.265	0.406	0.510	0.000	0.000	0.000	0.000	0.000

Problem 218	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	241	241	224	1605	0	0	0	0	-1
N.S.	1	1.00	0.93	6.66	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.163	0.185	0.498	0.000	0.000	0.000	0.000	0.000

Problem 219	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	119	119	110	750	0	0	0	0	-1
N.S.	1	1.00	0.92	6.30	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.099	0.078	0.434	0.000	0.000	0.000	0.000	0.000

Problem 220	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	63	63	62	261	0	0	0	0	-1
N.S.	1	1.00	0.98	4.14	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.034	0.006	0.220	0.000	0.000	0.000	0.000	0.000

Problem 221	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	155	155	111	647	0	0	0	0	-1
N.S.	1	1.00	0.72	4.17	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.142	0.048	0.533	0.000	0.000	0.000	0.000	0.000

Problem 222	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F(-2)	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	252	252	196	970	0	0	0	0	-1
N.S.	1	1.00	0.78	3.85	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.185	0.130	0.553	0.000	0.000	0.000	0.000	0.000

Problem 223	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	402	402	311	1468	0	0	0	0	-1
N.S.	1	1.00	0.77	3.65	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.267	0.242	0.503	0.000	0.000	0.000	0.000	0.000

Problem 224	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	469	469	876	0	0	0	0	0	-1
N.S.	1	1.00	1.87	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.385	0.354	0.327	0.000	0.000	0.000	0.000	0.000

Problem 225	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	215	215	460	0	0	0	0	0	-1
N.S.	1	1.00	2.14	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.191	0.194	0.149	0.000	0.000	0.000	0.000	0.000

Problem 226	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	C	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	111	111	226	2018	0	0	0	0	-1
N.S.	1	1.00	2.04	18.18	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.081	0.125	0.276	0.000	0.000	0.000	0.000	0.000

Problem 227	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	264	264	353	4712	0	0	0	0	-1
N.S.	1	1.00	1.34	17.85	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.257	0.161	2.606	0.000	0.000	0.000	0.000	0.000

Problem 228	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F(-2)	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	427	427	630	0	0	0	0	0	-1
N.S.	1	1.00	1.48	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.344	0.414	0.321	0.000	0.000	0.000	0.000	0.000

Problem 229	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	660	660	1521	0	0	0	0	0	-1
N.S.	1	1.00	2.30	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.512	0.548	0.331	0.000	0.000	0.000	0.000	0.000

Problem 230	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	308	308	799	0	0	0	0	0	-1
N.S.	1	1.00	2.59	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.256	0.232	0.171	0.000	0.000	0.000	0.000	0.000

Problem 231	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	C	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	158	158	335	9538	0	0	0	0	-1
N.S.	1	1.00	2.12	60.37	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.124	0.101	0.300	0.000	0.000	0.000	0.000	0.000

Problem 232	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	372	372	599	21696	0	0	0	0	-1
N.S.	1	1.00	1.61	58.32	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.359	0.247	4.770	0.000	0.000	0.000	0.000	0.000

Problem 233	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F(-2)	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	602	602	1025	0	0	0	0	0	-1
N.S.	1	1.00	1.70	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.496	0.774	0.287	0.000	0.000	0.000	0.000	0.000

Problem 234	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	107	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.126	0.142	0.194	0.000	0.000	0.000	0.000	0.000

Problem 235	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	27	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.04
time (sec)	N/A	0.023	0.022	0.030	0.000	0.000	0.000	0.000	0.000

Problem 236	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	80	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.126	0.415	0.291	0.000	0.000	0.000	0.000	0.000

Problem 237	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	123	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.157	1.747	0.341	0.000	0.000	0.000	0.000	0.000

Problem 238	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	143	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.140	0.761	0.036	0.000	0.000	0.000	0.000	0.000

Problem 239	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	27	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.04
time (sec)	N/A	0.022	0.064	0.032	0.000	0.000	0.000	0.000	0.000

Problem 240	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	80	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.123	6.484	88.961	0.000	0.000	0.000	0.000	0.000

Problem 241	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	123	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.153	14.179	180.000	0.000	0.000	0.000	0.000	0.000

Problem 242	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	281	281	241	1000	0	0	0	0	-1
N.S.	1	1.00	0.86	3.56	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.200	0.193	0.387	0.000	0.000	0.000	0.000	0.000

Problem 243	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	181	181	170	724	0	0	0	0	-1
N.S.	1	1.00	0.94	4.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.138	0.099	0.326	0.000	0.000	0.000	0.000	0.000

Problem 244	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	104	104	95	463	0	0	0	0	-1
N.S.	1	1.00	0.91	4.45	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.093	0.053	0.372	0.000	0.000	0.000	0.000	0.000

Problem 245	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	63	63	62	261	0	0	0	0	-1
N.S.	1	1.00	0.98	4.14	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.033	0.006	0.323	0.000	0.000	0.000	0.000	0.000

Problem 246	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	107	107	85	455	0	0	0	0	-1
N.S.	1	1.00	0.79	4.25	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.102	0.030	0.366	0.000	0.000	0.000	0.000	0.000

Problem 247	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	162	162	141	669	0	0	0	0	-1
N.S.	1	1.00	0.87	4.13	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.134	0.061	0.391	0.000	0.000	0.000	0.000	0.000

Problem 248	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	250	250	208	926	0	0	0	0	-1
N.S.	1	1.00	0.83	3.70	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.178	0.153	0.344	0.000	0.000	0.000	0.000	0.000

Problem 249	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	265	265	220	1063	0	0	0	0	-1
N.S.	1	1.00	0.83	4.01	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.189	0.199	0.404	0.000	0.000	0.000	0.000	0.000

Problem 250	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	186	186	153	791	0	0	0	0	-1
N.S.	1	1.00	0.82	4.25	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.149	0.103	0.397	0.000	0.000	0.000	0.000	0.000

Problem 251	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	138	138	114	519	0	0	0	0	-1
N.S.	1	1.00	0.83	3.76	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.112	0.068	0.351	0.000	0.000	0.000	0.000	0.000

Problem 252	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	A	F(-2)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	74	74	57	354	90	99	0	111	84
N.S.	1	1.00	0.77	4.78	1.22	1.34	0.00	1.50	1.14
time (sec)	N/A	0.020	0.045	0.230	0.286	0.353	0.000	4.151	0.503

Problem 253	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	179	179	152	694	0	0	0	0	-1
N.S.	1	1.00	0.85	3.88	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.148	0.081	0.327	0.000	0.000	0.000	0.000	0.000

Problem 254	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	240	240	199	936	0	0	0	0	-1
N.S.	1	1.00	0.83	3.90	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.178	0.129	0.378	0.000	0.000	0.000	0.000	0.000

Problem 255	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	335	335	269	1224	0	0	0	0	-1
N.S.	1	1.00	0.80	3.65	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.228	0.268	0.438	0.000	0.000	0.000	0.000	0.000

Problem 256	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	397	397	331	905	0	0	0	0	-1
N.S.	1	1.00	0.83	2.28	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.361	0.204	0.701	0.000	0.000	0.000	0.000	0.000

Problem 257	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	278	278	243	631	0	0	0	0	-1
N.S.	1	1.00	0.87	2.27	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.242	0.113	0.389	0.000	0.000	0.000	0.000	0.000

Problem 258	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	203	203	172	411	0	0	0	0	-1
N.S.	1	1.00	0.85	2.02	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.137	0.028	0.336	0.000	0.000	0.000	0.000	0.000

Problem 259	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	245	245	224	604	0	0	0	0	-1
N.S.	1	1.00	0.91	2.47	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.231	0.064	0.329	0.000	0.000	0.000	0.000	0.000

Problem 260	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	331	331	279	841	0	0	0	0	-1
N.S.	1	1.00	0.84	2.54	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.276	0.122	0.325	0.000	0.000	0.000	0.000	0.000

Problem 261	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	369	369	339	982	0	0	0	0	-1
N.S.	1	1.00	0.92	2.66	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.302	0.220	0.421	0.000	0.000	0.000	0.000	0.000

Problem 262	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	276	276	263	710	0	0	0	0	-1
N.S.	1	1.00	0.95	2.57	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.249	0.097	0.389	0.000	0.000	0.000	0.000	0.000

Problem 263	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	239	239	184	474	0	0	0	0	-1
N.S.	1	1.00	0.77	1.98	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.136	0.035	0.462	0.000	0.000	0.000	0.000	0.000

Problem 264	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	290	290	280	722	0	0	0	0	-1
N.S.	1	1.00	0.97	2.49	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.241	0.120	0.417	0.000	0.000	0.000	0.000	0.000

Problem 265	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	388	388	350	983	0	0	0	0	-1
N.S.	1	1.00	0.90	2.53	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.301	0.246	0.532	0.000	0.000	0.000	0.000	0.000

Problem 266	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	C	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	417	417	530	1008	0	0	0	0	-1
N.S.	1	1.00	1.27	2.42	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.360	0.933	0.440	0.000	0.000	0.000	0.000	0.000

Problem 267	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	C	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	344	344	455	726	0	0	0	0	-1
N.S.	1	1.00	1.32	2.11	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.307	0.716	0.391	0.000	0.000	0.000	0.000	0.000

Problem 268	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	A	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	139	139	165	765	132	359	0	218	366
N.S.	1	1.00	1.19	5.50	0.95	2.58	0.00	1.57	2.63
time (sec)	N/A	0.056	0.098	0.778	0.502	0.402	0.000	5.797	0.789

Problem 269	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	C	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	383	383	521	910	0	0	0	0	-1
N.S.	1	1.00	1.36	2.38	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.330	0.901	0.387	0.000	0.000	0.000	0.000	0.000

Problem 270	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	C	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	460	460	596	1165	0	0	0	0	-1
N.S.	1	1.00	1.30	2.53	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.380	0.974	0.381	0.000	0.000	0.000	0.000	0.000

Problem 271	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	534	534	434	2021	0	0	0	0	-1
N.S.	1	1.00	0.81	3.78	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.728	0.507	0.521	0.000	0.000	0.000	0.000	0.000

Problem 272	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	491	491	383	1781	0	0	0	0	-1
N.S.	1	1.00	0.78	3.63	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.608	0.446	0.534	0.000	0.000	0.000	0.000	0.000

Problem 273	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	503	503	407	1666	0	0	0	0	-1
N.S.	1	1.00	0.81	3.31	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.319	0.672	0.521	0.000	0.000	0.000	0.000	0.000

Problem 274	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	560	560	476	2032	0	0	0	0	-1
N.S.	1	1.00	0.85	3.63	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.646	0.527	0.631	0.000	0.000	0.000	0.000	0.000

Problem 275	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	326	326	275	0	0	0	0	0	-1
N.S.	1	1.00	0.84	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.294	0.165	0.162	0.000	0.000	0.000	0.000	0.000

Problem 276	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	F	F	F	F	F	F	F
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	506	506	0	0	0	0	0	0	-1
N.S.	1	1.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.390	2.820	0.144	0.000	0.000	0.000	0.000	0.000

Problem 277	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	278	278	307	0	0	0	0	0	-1
N.S.	1	1.00	1.10	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.322	0.024	0.320	0.000	0.000	0.000	0.000	0.000

Problem 278	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	510	510	1077	0	0	0	0	0	-1
N.S.	1	1.00	2.11	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.448	3.135	0.279	0.000	0.000	0.000	0.000	0.000

Problem 279	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	F	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	24	24	27	20	124	22	0	0	19
N.S.	1	1.00	1.12	0.83	5.17	0.92	0.00	0.00	0.79
time (sec)	N/A	0.022	0.006	0.722	0.270	0.353	0.000	0.000	0.286

Problem 280	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	42	42	81	62	123	0	0	0	-1
N.S.	1	1.00	1.93	1.48	2.93	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.038	0.013	0.663	0.280	0.000	0.000	0.000	0.000

Problem 281	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	A	F	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	41	41	82	44	0	46	0	0	43
N.S.	1	1.00	2.00	1.07	0.00	1.12	0.00	0.00	1.05
time (sec)	N/A	0.041	0.025	0.845	0.000	0.365	0.000	0.000	0.343

Problem 282	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	47	47	80	103	0	0	0	0	-1
N.S.	1	1.00	1.70	2.19	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.044	0.019	0.743	0.000	0.000	0.000	0.000	0.000

Problem 283	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	371	371	345	170	0	0	0	0	-1
N.S.	1	1.00	0.93	0.46	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.425	0.237	0.479	0.000	0.000	0.000	0.000	0.000

Problem 284	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	292	292	297	77	0	0	0	0	-1
N.S.	1	1.00	1.02	0.26	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.204	0.039	0.510	0.000	0.000	0.000	0.000	0.000

Problem 285	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	324	324	330	106	0	0	0	0	-1
N.S.	1	1.00	1.02	0.33	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.304	0.065	0.729	0.000	0.000	0.000	0.000	0.000

Problem 286	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	414	414	405	199	0	0	0	0	-1
N.S.	1	1.00	0.98	0.48	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.359	0.108	0.773	0.000	0.000	0.000	0.000	0.000

Problem 287	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	416	416	403	149	0	0	0	0	-1
N.S.	1	1.00	0.97	0.36	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.483	0.231	0.486	0.000	0.000	0.000	0.000	0.000

Problem 288	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	383	383	369	127	0	0	0	0	-1
N.S.	1	1.00	0.96	0.33	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.319	0.099	0.543	0.000	0.000	0.000	0.000	0.000

Problem 289	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	359	359	297	86	0	0	0	0	-1
N.S.	1	1.00	0.83	0.24	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.230	0.063	0.488	0.000	0.000	0.000	0.000	0.000

Problem 290	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	359	359	294	94	0	0	0	0	-1
N.S.	1	1.00	0.82	0.26	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.175	0.053	0.524	0.000	0.000	0.000	0.000	0.000

Problem 291	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	398	398	378	124	0	0	0	0	-1
N.S.	1	1.00	0.95	0.31	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.348	0.107	0.520	0.000	0.000	0.000	0.000	0.000

Problem 292	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	423	423	371	150	0	0	0	0	-1
N.S.	1	1.00	0.88	0.35	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.316	0.161	0.583	0.000	0.000	0.000	0.000	0.000

Problem 293	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	C	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	498	498	446	209	0	0	0	0	-1
N.S.	1	1.00	0.90	0.42	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.606	0.237	0.474	0.000	0.000	0.000	0.000	0.000

Problem 294	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	C	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	401	401	383	85	0	0	0	0	-1
N.S.	1	1.00	0.96	0.21	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.364	0.048	0.446	0.000	0.000	0.000	0.000	0.000

Problem 295	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	C	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	433	433	416	114	0	0	0	0	-1
N.S.	1	1.00	0.96	0.26	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.463	0.080	0.747	0.000	0.000	0.000	0.000	0.000

Problem 296	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	C	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	530	530	484	163	0	0	0	0	-1
N.S.	1	1.00	0.91	0.31	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.547	0.166	0.469	0.000	0.000	0.000	0.000	0.000

Problem 297	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	C	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	473	473	348	102	0	0	0	0	-1
N.S.	1	1.00	0.74	0.22	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.392	0.089	0.473	0.000	0.000	0.000	0.000	0.000

Problem 298	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	C	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	537	537	506	158	0	0	0	0	-1
N.S.	1	1.00	0.94	0.29	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.534	0.160	0.498	0.000	0.000	0.000	0.000	0.000

Problem 299	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	C	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	521	521	458	145	0	0	0	0	-1
N.S.	1	1.00	0.88	0.28	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.672	0.176	0.535	0.000	0.000	0.000	0.000	0.000

Problem 300	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	497	497	464	94	0	0	0	0	-1
N.S.	1	1.00	0.93	0.19	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.488	0.207	0.456	0.000	0.000	0.000	0.000	0.000

Problem 301	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	C	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	497	497	359	112	0	0	0	0	-1
N.S.	1	1.00	0.72	0.23	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.415	0.073	0.470	0.000	0.000	0.000	0.000	0.000

Problem 302	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	536	536	525	132	0	0	0	0	-1
N.S.	1	1.00	0.98	0.25	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.721	0.446	0.535	0.000	0.000	0.000	0.000	0.000

Problem 303	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	91	91	101	101	104	105	134	186	104
N.S.	1	1.00	1.11	1.11	1.14	1.15	1.47	2.04	1.14
time (sec)	N/A	0.047	0.048	0.349	0.263	0.353	0.692	4.356	0.271

Problem 304	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	A	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	120	120	150	585	190	195	252	430	212
N.S.	1	1.00	1.25	4.88	1.58	1.62	2.10	3.58	1.77
time (sec)	N/A	0.081	0.109	0.297	0.271	0.357	5.577	5.218	0.298

Problem 305	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	B	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	149	149	226	836	287	304	410	780	352
N.S.	1	1.00	1.52	5.61	1.93	2.04	2.75	5.23	2.36
time (sec)	N/A	0.086	0.155	0.290	0.278	0.356	26.986	4.800	0.370

Problem 306	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	63	63	62	261	0	0	0	0	-1
N.S.	1	1.00	0.98	4.14	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.068	0.012	0.183	0.000	0.000	0.000	0.000	0.000

Problem 307	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	A	F(-2)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	74	74	57	354	90	99	0	111	84
N.S.	1	1.00	0.77	4.78	1.22	1.34	0.00	1.50	1.14
time (sec)	N/A	0.060	0.047	0.306	0.269	0.386	0.000	6.013	0.897

Problem 308	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	B	F(-2)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	112	112	83	633	174	258	0	302	173
N.S.	1	1.00	0.74	5.65	1.55	2.30	0.00	2.70	1.54
time (sec)	N/A	0.081	0.084	0.308	0.315	0.362	0.000	2.495	0.669

Problem 309	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	C	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	247	247	247	220	298	0	0	0	-1
N.S.	1	1.00	1.00	0.89	1.21	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.250	0.131	0.352	0.557	0.000	0.000	0.000	0.000

Problem 310	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	831	831	862	0	0	0	0	0	-1
N.S.	1	1.00	1.04	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.789	0.599	0.182	0.000	0.000	0.000	0.000	0.000

Problem 311	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	499	499	637	0	0	0	0	0	-1
N.S.	1	1.00	1.28	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.484	0.241	0.166	0.000	0.000	0.000	0.000	0.000

Problem 312	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	317	317	464	0	0	0	0	0	-1
N.S.	1	1.00	1.46	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.262	0.116	0.173	0.000	0.000	0.000	0.000	0.000

Problem 313	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	397	397	576	0	0	0	0	0	-1
N.S.	1	1.00	1.45	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.429	0.200	0.166	0.000	0.000	0.000	0.000	0.000

Problem 314	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	551	551	811	0	0	0	0	0	-1
N.S.	1	1.00	1.47	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.635	0.402	0.153	0.000	0.000	0.000	0.000	0.000

Problem 315	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	701	701	821	0	0	0	0	0	-1
N.S.	1	1.00	1.17	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.666	0.559	0.677	0.000	0.000	0.000	0.000	0.000

Problem 316	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	447	447	623	0	0	0	0	0	-1
N.S.	1	1.00	1.39	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.444	0.335	0.156	0.000	0.000	0.000	0.000	0.000

Problem 317	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	371	371	485	0	0	0	0	0	-1
N.S.	1	1.00	1.31	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.268	0.150	0.217	0.000	0.000	0.000	0.000	0.000

Problem 318	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	461	461	668	0	0	0	0	0	-1
N.S.	1	1.00	1.45	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.437	0.275	0.187	0.000	0.000	0.000	0.000	0.000

Problem 319	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	694	694	930	0	0	0	0	0	-1
N.S.	1	1.00	1.34	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.768	0.497	0.194	0.000	0.000	0.000	0.000	0.000

Problem 320	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	936	936	1254	0	0	0	0	0	-1
N.S.	1	1.00	1.34	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.089	1.989	0.173	0.000	0.000	0.000	0.000	0.000

Problem 321	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	739	739	1103	0	0	0	0	0	-1
N.S.	1	1.00	1.49	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.881	1.703	0.201	0.000	0.000	0.000	0.000	0.000

Problem 322	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	C	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	430	430	590	2134	0	0	0	0	-1
N.S.	1	1.00	1.37	4.96	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.411	0.431	0.679	0.000	0.000	0.000	0.000	0.000

Problem 323	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	814	814	1209	0	0	0	0	0	-1
N.S.	1	1.00	1.49	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.960	1.555	0.187	0.000	0.000	0.000	0.000	0.000

Problem 324	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	970	970	1391	0	0	0	0	0	-1
N.S.	1	1.00	1.43	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.169	1.994	0.183	0.000	0.000	0.000	0.000	0.000

Problem 325	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	897	897	1237	0	0	0	0	0	-1
N.S.	1	1.00	1.38	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.355	2.297	0.710	0.000	0.000	0.000	0.000	0.000

Problem 326	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	815	815	1132	0	0	0	0	0	-1
N.S.	1	1.00	1.39	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.213	1.709	0.230	0.000	0.000	0.000	0.000	0.000

Problem 327	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	821	821	1143	0	0	0	0	0	-1
N.S.	1	1.00	1.39	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.651	1.914	0.216	0.000	0.000	0.000	0.000	0.000

Problem 328	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	919	919	1304	0	0	0	0	0	-1
N.S.	1	1.00	1.42	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.257	2.260	0.630	0.000	0.000	0.000	0.000	0.000

Problem 329	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	477	477	754	0	0	0	0	0	-1
N.S.	1	1.00	1.58	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.368	0.174	0.158	0.000	0.000	0.000	0.000	0.000

Problem 330	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	347	347	488	0	0	0	0	0	-1
N.S.	1	1.00	1.41	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.220	0.082	0.185	0.000	0.000	0.000	0.000	0.000

Problem 331	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	C	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	229	229	178	419	317	0	0	0	-1
N.S.	1	1.00	0.78	1.83	1.38	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.121	0.065	0.416	0.536	0.000	0.000	0.000	0.000

Problem 332	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	90	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.083	0.289	0.185	0.000	0.000	0.000	0.000	0.000

Problem 333	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	A	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	27	27	29	24	0	33	0	0	-1
N.S.	1	1.00	1.07	0.89	0.00	1.22	0.00	0.00	-0.04
time (sec)	N/A	0.087	0.016	1.934	0.000	0.362	0.000	0.000	0.000

Problem 334	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	A	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	27	27	29	24	0	33	0	0	-1
N.S.	1	1.00	1.07	0.89	0.00	1.22	0.00	0.00	-0.04
time (sec)	N/A	0.115	0.007	1.929	0.000	0.362	0.000	0.000	0.000

Problem 335	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	A	F(-2)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	28	28	31	28	0	35	0	0	-1
N.S.	1	1.00	1.11	1.00	0.00	1.25	0.00	0.00	-0.04
time (sec)	N/A	0.089	0.018	1.889	0.000	0.356	0.000	0.000	0.000

Problem 336	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	A	F(-2)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	28	28	31	28	0	35	0	0	-1
N.S.	1	1.00	1.11	1.00	0.00	1.25	0.00	0.00	-0.04
time (sec)	N/A	0.120	0.007	1.847	0.000	0.363	0.000	0.000	0.000

Problem 337	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	F	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	24	24	27	20	120	21	0	0	19
N.S.	1	1.00	1.12	0.83	5.00	0.88	0.00	0.00	0.79
time (sec)	N/A	0.021	0.006	0.725	0.304	0.381	0.000	0.000	0.282

Problem 338	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	F	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	24	24	27	20	120	21	0	0	19
N.S.	1	1.00	1.12	0.83	5.00	0.88	0.00	0.00	0.79
time (sec)	N/A	0.089	0.004	0.831	0.291	0.372	0.000	0.000	0.200

Problem 339	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	A	B	A	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	37	37	252	24	246	34	0	0	-1
N.S.	1	1.00	6.81	0.65	6.65	0.92	0.00	0.00	-0.03
time (sec)	N/A	0.018	0.134	0.779	0.306	0.352	0.000	0.000	0.000

Problem 340	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	A	B	A	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	27	27	259	24	246	34	0	0	-1
N.S.	1	1.00	9.59	0.89	9.11	1.26	0.00	0.00	-0.04
time (sec)	N/A	0.049	0.084	0.949	0.301	0.354	0.000	0.000	0.000

Problem 341	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	A	B	A	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	27	27	252	24	243	34	0	0	-1
N.S.	1	1.00	9.33	0.89	9.00	1.26	0.00	0.00	-0.04
time (sec)	N/A	0.014	0.101	0.763	0.291	0.361	0.000	0.000	0.000

Problem 342	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	A	B	A	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	27	27	259	24	243	34	0	0	-1
N.S.	1	1.00	9.59	0.89	9.00	1.26	0.00	0.00	-0.04
time (sec)	N/A	0.084	0.056	0.803	0.296	0.356	0.000	0.000	0.000

Problem 343	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	C	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	238	238	494	12205	0	0	0	0	-1
N.S.	1	1.00	2.08	51.28	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.245	0.141	1.995	0.000	0.000	0.000	0.000	0.000

Problem 344	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	168	168	292	2679	0	0	0	0	-1
N.S.	1	1.00	1.74	15.95	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.171	0.090	0.426	0.000	0.000	0.000	0.000	0.000

Problem 345	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	97	97	98	420	129	0	0	0	-1
N.S.	1	1.00	1.01	4.33	1.33	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.091	0.018	0.384	0.317	0.000	0.000	0.000	0.000

Problem 346	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	53	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.073	0.334	0.188	0.000	0.000	0.000	0.000	0.000

Problem 347	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F(-2)	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	500	500	993	0	0	0	0	0	-1
N.S.	1	1.00	1.99	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.483	0.334	0.637	0.000	0.000	0.000	0.000	0.000

Problem 348	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F(-2)	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	372	372	655	0	0	0	0	0	-1
N.S.	1	1.00	1.76	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.283	0.176	0.692	0.000	0.000	0.000	0.000	0.000

Problem 349	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F(-2)	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	243	243	324	689	0	0	0	0	-1
N.S.	1	1.00	1.33	2.84	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.161	0.089	0.907	0.000	0.000	0.000	0.000	0.000

Problem 350	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	F(-1)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	105	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.129	0.347	0.699	0.000	0.000	0.000	0.000	0.000

Problem 351	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	286	286	464	766	0	0	0	0	-1
N.S.	1	1.00	1.62	2.68	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.293	0.465	0.853	0.000	0.000	0.000	0.000	0.000

Problem 352	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	234	234	434	543	0	0	0	0	-1
N.S.	1	1.00	1.85	2.32	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.245	0.185	0.824	0.000	0.000	0.000	0.000	0.000

Problem 353	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	193	193	182	362	0	0	0	0	-1
N.S.	1	1.00	0.94	1.88	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.127	0.101	0.810	0.000	0.000	0.000	0.000	0.000

Problem 354	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	153	153	116	168	0	0	0	0	-1
N.S.	1	1.00	0.76	1.10	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.095	0.025	0.749	0.000	0.000	0.000	0.000	0.000

Problem 355	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	204	204	227	370	0	0	0	0	-1
N.S.	1	1.00	1.11	1.81	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.198	0.148	0.832	0.000	0.000	0.000	0.000	0.000

Problem 356	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	251	251	255	552	0	0	0	0	-1
N.S.	1	1.00	1.02	2.20	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.262	0.256	0.777	0.000	0.000	0.000	0.000	0.000

Problem 357	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	308	308	311	782	0	0	0	0	-1
N.S.	1	1.00	1.01	2.54	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.359	0.318	0.961	0.000	0.000	0.000	0.000	0.000

Problem 358	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	232	232	221	2330	223	0	0	0	-1
N.S.	1	1.00	0.95	10.04	0.96	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.154	0.132	1.176	0.328	0.000	0.000	0.000	0.000

Problem 359	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	195	195	197	2162	202	0	0	0	-1
N.S.	1	1.00	1.01	11.09	1.04	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.129	0.127	0.825	0.347	0.000	0.000	0.000	0.000

Problem 360	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	158	158	164	1994	176	0	0	0	-1
N.S.	1	1.00	1.04	12.62	1.11	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.098	0.089	1.043	0.321	0.000	0.000	0.000	0.000

Problem 361	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	99	99	116	1724	140	0	0	0	-1
N.S.	1	1.00	1.17	17.41	1.41	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.066	0.057	0.678	0.334	0.000	0.000	0.000	0.000

Problem 362	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	88	88	128	1749	0	0	0	0	-1
N.S.	1	1.00	1.45	19.88	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.051	0.054	0.467	0.000	0.000	0.000	0.000	0.000

Problem 363	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	102	102	111	1859	175	0	0	0	-1
N.S.	1	1.00	1.09	18.23	1.72	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.053	0.082	0.596	0.330	0.000	0.000	0.000	0.000

Problem 364	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	156	156	204	2051	204	0	0	0	-1
N.S.	1	1.00	1.31	13.15	1.31	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.095	0.089	0.685	0.331	0.000	0.000	0.000	0.000

Problem 365	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	193	193	240	2220	231	0	0	0	-1
N.S.	1	1.00	1.24	11.50	1.20	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.143	0.098	0.771	0.330	0.000	0.000	0.000	0.000

Problem 366	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	230	230	273	2387	253	0	0	0	-1
N.S.	1	1.00	1.19	10.38	1.10	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.179	0.105	0.814	0.329	0.000	0.000	0.000	0.000

Problem 367	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	705	863	735	0	0	0	0	0	-1
N.S.	1	1.22	1.04	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.286	1.103	0.053	0.000	0.000	0.000	0.000	0.000

Problem 368	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	F	F	F	F	F(-1)	F	F
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	602	602	0	0	0	0	0	0	-1
N.S.	1	1.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.877	0.232	0.078	0.000	0.000	0.000	0.000	0.000

Problem 369	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	309	309	549	0	0	0	0	0	-1
N.S.	1	1.00	1.78	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.313	0.275	0.054	0.000	0.000	0.000	0.000	0.000

Problem 370	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	F	A	F	F	F	F(-1)	F	F
verified	N/A	N/A	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	823	0	823	0	0	0	0	0	-1
N.S.	1	0.00	1.00	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.045	0.233	0.053	0.000	0.000	0.000	0.000	0.000

Problem 371	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	F	A	F	F	F	F(-1)	F	F
verified	N/A	N/A	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	607	0	513	0	0	0	0	0	-1
N.S.	1	0.00	0.85	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.020	0.451	0.051	0.000	0.000	0.000	0.000	0.000

Problem 372	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	F	A	F	F	F	F(-1)	F	F
verified	N/A	N/A	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	939	0	781	0	0	0	0	0	-1
N.S.	1	0.00	0.83	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.019	0.637	0.040	0.000	0.000	0.000	0.000	0.000

Problem 373	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	F	F	F	F	F(-1)	F	F
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	522	522	0	0	0	0	0	0	-1
N.S.	1	1.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.584	0.296	0.056	0.000	0.000	0.000	0.000	0.000

Problem 374	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	F	A	F	F	F	F	F	F
verified	N/A	N/A	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	519	0	519	0	0	0	0	0	-1
N.S.	1	0.00	1.00	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.031	0.068	0.306	0.000	0.000	0.000	0.000	0.000

Problem 375	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	26	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.04
time (sec)	N/A	0.008	0.032	0.039	0.000	0.000	0.000	0.000	0.000

Problem 376	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	26	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.04
time (sec)	N/A	0.008	0.317	0.035	0.000	0.000	0.000	0.000	0.000

Problem 377	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	F(-2)	A	F(-1)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	26	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.04
time (sec)	N/A	0.007	0.067	0.052	0.000	0.000	0.000	0.000	0.000

Problem 378	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	364	364	394	0	0	0	0	0	-1
N.S.	1	1.00	1.08	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.036	0.043	0.387	0.000	0.000	0.000	0.000	0.000

Problem 379	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	A	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	258	258	226	1785	278	295	384	756	323
N.S.	1	1.00	0.88	6.92	1.08	1.14	1.49	2.93	1.25
time (sec)	N/A	0.209	0.155	0.489	0.293	0.360	1.203	3.622	0.403

Problem 380	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	A	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	196	196	263	1558	231	231	296	477	203
N.S.	1	1.00	1.34	7.95	1.18	1.18	1.51	2.43	1.04
time (sec)	N/A	0.172	0.040	0.547	0.297	0.360	0.638	4.104	0.346

Problem 381	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	110	110	76	156	169	156	189	214	102
N.S.	1	1.00	0.69	1.42	1.54	1.42	1.72	1.95	0.93
time (sec)	N/A	0.121	0.024	0.408	0.294	0.347	0.312	3.576	0.273

Problem 382	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	158	158	227	1534	0	0	0	0	-1
N.S.	1	1.00	1.44	9.71	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.163	0.049	0.734	0.000	0.000	0.000	0.000	0.000

Problem 383	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	96	96	180	931	0	0	0	0	-1
N.S.	1	1.00	1.88	9.70	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.132	0.026	0.335	0.000	0.000	0.000	0.000	0.000

Problem 384	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	156	156	254	1201	0	0	0	0	-1
N.S.	1	1.00	1.63	7.70	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.230	0.091	0.256	0.000	0.000	0.000	0.000	0.000

Problem 385	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	234	234	351	1437	0	0	0	0	-1
N.S.	1	1.00	1.50	6.14	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.341	0.125	0.324	0.000	0.000	0.000	0.000	0.000

Problem 386	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	742	742	605	4217	0	0	0	0	-1
N.S.	1	1.00	0.82	5.68	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.611	0.712	2.699	0.000	0.000	0.000	0.000	0.000

Problem 387	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	558	558	492	3680	0	0	0	0	-1
N.S.	1	1.00	0.88	6.59	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.431	0.517	1.592	0.000	0.000	0.000	0.000	0.000

Problem 388	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	397	397	341	3163	0	0	0	0	-1
N.S.	1	1.00	0.86	7.97	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.307	0.340	1.944	0.000	0.000	0.000	0.000	0.000

Problem 389	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	232	232	329	2544	0	0	0	0	-1
N.S.	1	1.00	1.42	10.97	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.200	0.132	1.072	0.000	0.000	0.000	0.000	0.000

Problem 390	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	637	637	605	0	0	0	0	0	-1
N.S.	1	1.00	0.95	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.307	0.165	0.074	0.000	0.000	0.000	0.000	0.000

Problem 391	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	270	270	476	0	0	0	0	0	-1
N.S.	1	1.00	1.76	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.236	0.117	0.064	0.000	0.000	0.000	0.000	0.000

Problem 392	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	421	421	765	0	0	0	0	0	-1
N.S.	1	1.00	1.82	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.319	0.181	0.056	0.000	0.000	0.000	0.000	0.000

Problem 393	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	1210	1210	2067	0	0	0	0	0	-1
N.S.	1	1.00	1.71	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.953	0.773	0.097	0.000	0.000	0.000	0.000	0.000

Problem 394	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	649	649	1355	0	0	0	0	0	-1
N.S.	1	1.00	2.09	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.045	0.311	0.056	0.000	0.000	0.000	0.000	0.000

Problem 395	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	F(-1)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	37	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.026	0.457	0.084	0.000	0.000	0.000	0.000	0.000

Problem 396	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	F(-1)	F(-1)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	37	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.027	0.540	0.069	0.000	0.000	0.000	0.000	0.000

Problem 397	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	2050	2050	4971	0	0	0	0	0	-1
N.S.	1	1.00	2.42	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	4.810	2.074	0.148	0.000	0.000	0.000	0.000	0.000

Problem 398	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	1147	1147	3163	0	0	0	0	0	-1
N.S.	1	1.00	2.76	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	2.175	0.633	0.054	0.000	0.000	0.000	0.000	0.000

Problem 399	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	F(-1)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	37	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.025	0.650	0.127	0.000	0.000	0.000	0.000	0.000

Problem 400	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	F(-1)	F(-1)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	37	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.026	0.989	0.111	0.000	0.000	0.000	0.000	0.000

Problem 401	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F(-2)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	66	66	62	0	0	0	0	0	-1
N.S.	1	1.00	0.94	0.00	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.060	0.048	0.216	0.000	0.000	0.000	0.000	0.000

Problem 402	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	92	92	43	110	100	48	56	72	63
N.S.	1	1.00	0.47	1.20	1.09	0.52	0.61	0.78	0.68
time (sec)	N/A	0.065	0.033	0.344	0.295	0.346	0.137	4.447	0.473

Problem 403	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	102	102	58	169	161	63	75	104	92
N.S.	1	1.00	0.57	1.66	1.58	0.62	0.74	1.02	0.90
time (sec)	N/A	0.075	0.049	0.372	0.281	0.353	0.162	4.991	0.496

Problem 404	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	B	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	160	160	132	0	609	1438	609	1802	380
N.S.	1	1.00	0.82	0.00	3.81	8.99	3.81	11.26	2.38
time (sec)	N/A	0.141	0.048	0.042	0.324	0.379	3.129	6.317	0.576

Problem 405	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	B	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	121	121	100	0	343	655	360	822	242
N.S.	1	1.00	0.83	0.00	2.83	5.41	2.98	6.79	2.00
time (sec)	N/A	0.106	0.011	0.046	0.298	0.387	1.352	4.125	0.409

Problem 406	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	A	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	78	78	69	0	159	238	178	303	111
N.S.	1	1.00	0.88	0.00	2.04	3.05	2.28	3.88	1.42
time (sec)	N/A	0.069	0.008	0.034	0.301	0.360	0.636	6.757	0.280

Problem 407	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	34	34	34	42	48	52	53	64	41
N.S.	1	1.00	1.00	1.24	1.41	1.53	1.56	1.88	1.21
time (sec)	N/A	0.022	0.007	0.071	0.279	0.337	0.222	1.800	0.213

Problem 408	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	83	83	83	0	0	66	0	79	-1
N.S.	1	1.00	1.00	0.00	0.00	0.80	0.00	0.95	-0.01
time (sec)	N/A	0.095	0.074	0.047	0.000	0.369	0.000	6.396	0.000

Problem 409	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	123	123	163	0	0	175	0	593	-1
N.S.	1	1.00	1.33	0.00	0.00	1.42	0.00	4.82	-0.01
time (sec)	N/A	0.119	0.080	0.032	0.000	0.356	0.000	4.747	0.000

Problem 410	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	B	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	169	169	189	0	0	455	0	3481	-1
N.S.	1	1.00	1.12	0.00	0.00	2.69	0.00	20.60	-0.01
time (sec)	N/A	0.159	0.127	0.047	0.000	0.369	0.000	6.207	0.000

Problem 411	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F(-2)	F(-2)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	219	219	190	0	0	0	0	0	-1
N.S.	1	1.00	0.87	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.265	0.223	0.057	0.000	0.000	0.000	0.000	0.000

Problem 412	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	176	176	160	0	0	0	0	0	-1
N.S.	1	1.00	0.91	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.198	0.045	0.035	0.000	0.000	0.000	0.000	0.000

Problem 413	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	139	139	134	0	0	0	0	0	-1
N.S.	1	1.00	0.96	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.159	0.044	0.035	0.000	0.000	0.000	0.000	0.000

Problem 414	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	104	104	104	0	0	0	0	0	-1
N.S.	1	1.00	1.00	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.139	0.017	0.030	0.000	0.000	0.000	0.000	0.000

Problem 415	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	147	147	181	0	0	0	0	0	-1
N.S.	1	1.00	1.23	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.178	0.155	0.033	0.000	0.000	0.000	0.000	0.000

Problem 416	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	194	194	211	0	0	0	0	0	-1
N.S.	1	1.00	1.09	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.230	0.208	0.035	0.000	0.000	0.000	0.000	0.000

Problem 417	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F(-2)	F(-2)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	237	237	272	0	0	0	0	0	-1
N.S.	1	1.00	1.15	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.282	0.292	0.030	0.000	0.000	0.000	0.000	0.000

Problem 418	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F(-2)	A	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	131	131	131	0	0	81	0	0	-1
N.S.	1	1.00	1.00	0.00	0.00	0.62	0.00	0.00	-0.01
time (sec)	N/A	0.110	0.140	0.057	0.000	0.090	0.000	0.000	0.000

Problem 419	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	A	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	109	109	109	0	72	0	0	0	-1
N.S.	1	1.00	1.00	0.00	0.66	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.107	0.102	0.088	0.051	0.000	0.000	0.000	0.000

Problem 420	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	B	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	158	158	233	0	309	419	457	1047	370
N.S.	1	1.00	1.47	0.00	1.96	2.65	2.89	6.63	2.34
time (sec)	N/A	0.122	0.181	0.173	0.321	0.354	2.956	6.281	0.421

Problem 421	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	A	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	128	128	157	0	207	275	286	585	225
N.S.	1	1.00	1.23	0.00	1.62	2.15	2.23	4.57	1.76
time (sec)	N/A	0.095	0.114	0.185	0.289	0.361	1.356	3.483	0.347

Problem 422	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	A	A	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	98	98	113	0	117	150	156	259	113
N.S.	1	1.00	1.15	0.00	1.19	1.53	1.59	2.64	1.15
time (sec)	N/A	0.061	0.046	0.050	0.287	0.350	0.614	4.942	0.294

Problem 423	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	34	34	34	42	48	52	53	64	41
N.S.	1	1.00	1.00	1.24	1.41	1.53	1.56	1.88	1.21
time (sec)	N/A	0.022	0.008	0.079	0.282	0.355	0.215	4.994	0.218

Problem 424	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	68	68	67	0	0	0	0	0	-1
N.S.	1	1.00	0.99	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.083	0.011	0.211	0.000	0.000	0.000	0.000	0.000

Problem 425	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	A	A	F(-2)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	80	80	97	0	94	119	0	129	89
N.S.	1	1.00	1.21	0.00	1.18	1.49	0.00	1.61	1.11
time (sec)	N/A	0.056	0.058	0.224	0.290	0.401	0.000	6.058	2.044

Problem 426	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	A	B	F(-2)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	119	119	187	0	176	315	0	359	180
N.S.	1	1.00	1.57	0.00	1.48	2.65	0.00	3.02	1.51
time (sec)	N/A	0.098	0.092	0.213	0.299	0.389	0.000	3.184	2.259

Problem 427	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	B	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	149	149	297	0	307	563	5673	643	293
N.S.	1	1.00	1.99	0.00	2.06	3.78	38.07	4.32	1.97
time (sec)	N/A	0.124	0.098	0.201	0.301	0.400	72.229	6.189	2.477

Problem 428	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	B	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	409	409	634	0	914	1892	1421	3938	1154
N.S.	1	1.00	1.55	0.00	2.23	4.63	3.47	9.63	2.82
time (sec)	N/A	0.707	0.472	0.216	0.313	0.390	6.698	2.685	0.915

Problem 429	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	A	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	323	323	422	0	624	1215	894	2241	652
N.S.	1	1.00	1.31	0.00	1.93	3.76	2.77	6.94	2.02
time (sec)	N/A	0.571	0.334	0.208	0.297	0.389	3.097	3.877	0.692

Problem 430	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	A	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	211	211	164	0	365	646	466	1014	302
N.S.	1	1.00	0.78	0.00	1.73	3.06	2.21	4.81	1.43
time (sec)	N/A	0.280	0.069	0.048	0.289	0.375	1.411	4.942	0.464

Problem 431	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	A	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	78	78	69	0	159	238	178	303	111
N.S.	1	1.00	0.88	0.00	2.04	3.05	2.28	3.88	1.42
time (sec)	N/A	0.065	0.014	0.034	0.280	0.345	0.556	5.898	0.301

Problem 432	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	123	123	324	0	0	0	0	0	-1
N.S.	1	1.00	2.63	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.186	0.079	0.177	0.000	0.000	0.000	0.000	0.000

Problem 433	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	144	144	200	0	0	0	0	0	-1
N.S.	1	1.00	1.39	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.144	0.127	0.209	0.000	0.000	0.000	0.000	0.000

Problem 434	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	222	222	316	0	0	0	0	0	-1
N.S.	1	1.00	1.42	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.486	0.262	0.183	0.000	0.000	0.000	0.000	0.000

Problem 435	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	B	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	492	492	858	0	1286	3392	1846	5481	1400
N.S.	1	1.00	1.74	0.00	2.61	6.89	3.75	11.14	2.85
time (sec)	N/A	0.647	0.722	0.227	0.338	0.476	6.666	4.649	1.264

Problem 436	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	B	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	306	306	231	0	770	1776	991	2717	651
N.S.	1	1.00	0.75	0.00	2.52	5.80	3.24	8.88	2.13
time (sec)	N/A	0.378	0.111	0.079	0.315	0.427	3.171	5.696	0.831

Problem 437	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	B	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	121	121	100	0	343	655	360	822	242
N.S.	1	1.00	0.83	0.00	2.83	5.41	2.98	6.79	2.00
time (sec)	N/A	0.106	0.019	0.053	0.280	0.369	1.192	3.579	0.426

Problem 438	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	177	177	646	0	0	0	0	0	-1
N.S.	1	1.00	3.65	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.295	0.140	0.183	0.000	0.000	0.000	0.000	0.000

Problem 439	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	209	209	444	0	0	0	0	0	-1
N.S.	1	1.00	2.12	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.258	0.316	0.192	0.000	0.000	0.000	0.000	0.000

Problem 440	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	376	376	660	0	0	0	0	0	-1
N.S.	1	1.00	1.76	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.856	0.519	0.199	0.000	0.000	0.000	0.000	0.000

Problem 441	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	B	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	160	160	132	0	609	1438	609	1802	380
N.S.	1	1.00	0.82	0.00	3.81	8.99	3.81	11.26	2.38
time (sec)	N/A	0.143	0.040	0.039	0.306	0.372	2.668	5.021	0.561

Problem 442	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	231	231	1095	0	0	0	0	0	-1
N.S.	1	1.00	4.74	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.365	0.228	0.208	0.000	0.000	0.000	0.000	0.000

Problem 443	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	274	274	1301	0	0	0	0	0	-1
N.S.	1	1.00	4.75	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.352	0.324	0.241	0.000	0.000	0.000	0.000	0.000

Problem 444	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	29	29	29	41	43	44	48	58	36
N.S.	1	1.00	1.00	1.41	1.48	1.52	1.66	2.00	1.24
time (sec)	N/A	0.019	0.008	0.071	0.274	0.348	0.215	4.055	0.073

Problem 445	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	279	279	252	0	0	244	0	524	-1
N.S.	1	1.00	0.90	0.00	0.00	0.87	0.00	1.88	-0.00
time (sec)	N/A	0.531	0.478	0.187	0.000	0.390	0.000	5.187	0.000

Problem 446	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	179	179	164	0	0	142	0	252	-1
N.S.	1	1.00	0.92	0.00	0.00	0.79	0.00	1.41	-0.01
time (sec)	N/A	0.297	0.164	0.042	0.000	0.419	0.000	3.302	0.000

Problem 447	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	83	83	83	0	0	66	0	79	-1
N.S.	1	1.00	1.00	0.00	0.00	0.80	0.00	0.95	-0.01
time (sec)	N/A	0.088	0.043	0.042	0.000	0.342	0.000	5.169	0.000

Problem 448	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	31	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.048	0.155	0.164	0.000	0.000	0.000	0.000	0.000

Problem 449	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	31	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.042	0.445	0.168	0.000	0.000	0.000	0.000	0.000

Problem 450	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	326	326	1310	0	0	595	0	4046	-1
N.S.	1	1.00	4.02	0.00	0.00	1.83	0.00	12.41	-0.00
time (sec)	N/A	0.921	0.548	0.173	0.000	0.359	0.000	4.918	0.000

Problem 451	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	224	224	269	0	0	342	0	1968	-1
N.S.	1	1.00	1.20	0.00	0.00	1.53	0.00	8.79	-0.00
time (sec)	N/A	0.449	0.280	0.044	0.000	0.349	0.000	4.990	0.000

Problem 452	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	123	123	163	0	0	175	0	593	-1
N.S.	1	1.00	1.33	0.00	0.00	1.42	0.00	4.82	-0.01
time (sec)	N/A	0.115	0.082	0.035	0.000	0.375	0.000	4.281	0.000

Problem 453	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	31	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.043	0.738	0.216	0.000	0.000	0.000	0.000	0.000

Problem 454	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	31	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.042	9.225	0.170	0.000	0.000	0.000	0.000	0.000

Problem 455	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	B	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	432	432	438	0	0	1803	0	6028	-1
N.S.	1	1.00	1.01	0.00	0.00	4.17	0.00	13.95	-0.00
time (sec)	N/A	1.488	1.453	0.163	0.000	0.395	0.000	3.747	0.000

Problem 456	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	B	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	322	322	322	0	0	988	0	11533	-1
N.S.	1	1.00	1.00	0.00	0.00	3.07	0.00	35.82	-0.00
time (sec)	N/A	0.651	0.458	0.036	0.000	0.374	0.000	5.021	0.000

Problem 457	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	B	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	169	169	189	0	0	455	0	3481	-1
N.S.	1	1.00	1.12	0.00	0.00	2.69	0.00	20.60	-0.01
time (sec)	N/A	0.152	0.139	0.041	0.000	0.353	0.000	5.909	0.000

Problem 458	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	31	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.044	0.764	0.202	0.000	0.000	0.000	0.000	0.000

Problem 459	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	31	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.041	24.834	0.201	0.000	0.000	0.000	0.000	0.000

Problem 460	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	488	488	458	0	0	0	0	0	-1
N.S.	1	1.00	0.94	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.150	0.453	0.177	0.000	0.000	0.000	0.000	0.000

Problem 461	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	311	311	298	0	0	0	0	0	-1
N.S.	1	1.00	0.96	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.612	0.263	0.032	0.000	0.000	0.000	0.000	0.000

Problem 462	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	139	139	134	0	0	0	0	0	-1
N.S.	1	1.00	0.96	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.164	0.046	0.036	0.000	0.000	0.000	0.000	0.000

Problem 463	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	F(-2)	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	33	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.066	2.770	0.175	0.000	0.000	0.000	0.000	0.000

Problem 464	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	F(-2)	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	33	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.099	0.255	0.209	0.000	0.000	0.000	0.000	0.000

Problem 465	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	625	625	545	0	0	0	0	0	-1
N.S.	1	1.00	0.87	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.363	0.898	0.136	0.000	0.000	0.000	0.000	0.000

Problem 466	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	396	396	348	0	0	0	0	0	-1
N.S.	1	1.00	0.88	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.761	0.374	0.044	0.000	0.000	0.000	0.000	0.000

Problem 467	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	176	176	160	0	0	0	0	0	-1
N.S.	1	1.00	0.91	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.193	0.142	0.042	0.000	0.000	0.000	0.000	0.000

Problem 468	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	F(-2)	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	33	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.081	1.123	0.214	0.000	0.000	0.000	0.000	0.000

Problem 469	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	F(-2)	F(-1)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	33	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.108	1.418	0.209	0.000	0.000	0.000	0.000	0.000

Problem 470	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	355	355	315	0	0	0	0	0	-1
N.S.	1	1.00	0.89	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.927	0.239	0.193	0.000	0.000	0.000	0.000	0.000

Problem 471	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	229	229	208	0	0	0	0	0	-1
N.S.	1	1.00	0.91	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.492	0.129	0.048	0.000	0.000	0.000	0.000	0.000

Problem 472	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	104	104	104	0	0	0	0	0	-1
N.S.	1	1.00	1.00	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.130	0.017	0.044	0.000	0.000	0.000	0.000	0.000

Problem 473	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	F(-2)	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	33	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.072	0.080	0.205	0.000	0.000	0.000	0.000	0.000

Problem 474	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	404	404	1821	0	0	0	0	0	-1
N.S.	1	1.00	4.51	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.635	2.761	0.175	0.000	0.000	0.000	0.000	0.000

Problem 475	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	275	275	435	0	0	0	0	0	-1
N.S.	1	1.00	1.58	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.727	0.876	0.031	0.000	0.000	0.000	0.000	0.000

Problem 476	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	147	147	181	0	0	0	0	0	-1
N.S.	1	1.00	1.23	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.174	0.121	0.042	0.000	0.000	0.000	0.000	0.000

Problem 477	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	F(-2)	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	33	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.080	0.319	0.174	0.000	0.000	0.000	0.000	0.000

Problem 478	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	514	514	1471	0	0	0	0	0	-1
N.S.	1	1.00	2.86	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	2.588	3.105	0.186	0.000	0.000	0.000	0.000	0.000

Problem 479	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	380	380	491	0	0	0	0	0	-1
N.S.	1	1.00	1.29	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.052	1.517	0.033	0.000	0.000	0.000	0.000	0.000

Problem 480	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	194	194	211	0	0	0	0	0	-1
N.S.	1	1.00	1.09	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.221	0.235	0.038	0.000	0.000	0.000	0.000	0.000

Problem 481	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	F(-2)	F(-1)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	33	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.077	0.565	0.184	0.000	0.000	0.000	0.000	0.000

Problem 482	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F(-2)	B	A	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	171	171	163	0	0	647	484	0	-1
N.S.	1	1.00	0.95	0.00	0.00	3.78	2.83	0.00	-0.01
time (sec)	N/A	0.196	0.393	0.186	0.000	0.419	58.762	0.000	0.000

Problem 483	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F(-2)	A	A	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	139	139	124	0	0	366	144	0	-1
N.S.	1	1.00	0.89	0.00	0.00	2.63	1.04	0.00	-0.01
time (sec)	N/A	0.132	0.233	0.215	0.000	0.419	3.047	0.000	0.000

Problem 484	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	A	B	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	103	103	89	147	0	210	347	128	-1
N.S.	1	1.00	0.86	1.43	0.00	2.04	3.37	1.24	-0.01
time (sec)	N/A	0.100	0.200	0.774	0.000	0.384	17.095	3.036	0.000

Problem 485	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F(-2)	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	86	86	84	0	0	250	90	99	-1
N.S.	1	1.00	0.98	0.00	0.00	2.91	1.05	1.15	-0.01
time (sec)	N/A	0.090	0.183	0.192	0.000	0.415	10.767	6.277	0.000

Problem 486	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F(-2)	B	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	120	120	124	0	0	491	122	209	-1
N.S.	1	1.00	1.03	0.00	0.00	4.09	1.02	1.74	-0.01
time (sec)	N/A	0.116	0.322	0.198	0.000	0.434	95.070	2.732	0.000

Problem 487	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F(-2)	B	F(-2)	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	152	152	135	0	0	883	0	378	-1
N.S.	1	1.00	0.89	0.00	0.00	5.81	0.00	2.49	-0.01
time (sec)	N/A	0.148	0.532	0.215	0.000	0.426	0.000	5.711	0.000

Problem 488	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F(-2)	B	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	184	184	160	0	0	1380	0	0	-1
N.S.	1	1.00	0.87	0.00	0.00	7.50	0.00	0.00	-0.01
time (sec)	N/A	0.195	0.565	0.211	0.000	0.447	0.000	0.000	0.000

Problem 489	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F	F(-2)	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	635	635	1168	0	0	0	0	0	-1
N.S.	1	1.00	1.84	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	2.916	6.625	0.162	0.000	0.000	0.000	0.000	0.000

Problem 490	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F	F(-2)	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	547	547	365	0	0	0	0	0	-1
N.S.	1	1.00	0.67	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	2.080	1.213	0.219	0.000	0.000	0.000	0.000	0.000

Problem 491	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F	F(-2)	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	447	447	646	0	0	0	0	0	-1
N.S.	1	1.00	1.45	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.524	1.253	0.186	0.000	0.000	0.000	0.000	0.000

Problem 492	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F	F(-2)	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	330	330	356	0	0	0	0	0	-1
N.S.	1	1.00	1.08	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.134	2.613	0.225	0.000	0.000	0.000	0.000	0.000

Problem 493	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F	F(-2)	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	449	449	657	0	0	0	0	0	-1
N.S.	1	1.00	1.46	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.600	4.850	0.208	0.000	0.000	0.000	0.000	0.000

Problem 494	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F	F(-2)	F	F(-2)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	537	537	726	0	0	0	0	0	-1
N.S.	1	1.00	1.35	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	2.105	6.816	0.185	0.000	0.000	0.000	0.000	0.000

Problem 495	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F	F(-2)	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	625	625	1249	0	0	0	0	0	-1
N.S.	1	1.00	2.00	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	2.684	8.704	0.156	0.000	0.000	0.000	0.000	0.000

Problem 496	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	F(-1)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	33	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.053	0.764	0.216	0.000	0.000	0.000	0.000	0.000

Problem 497	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	F(-1)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	33	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.049	0.689	0.202	0.000	0.000	0.000	0.000	0.000

Problem 498	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	33	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.050	0.928	0.187	0.000	0.000	0.000	0.000	0.000

Problem 499	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	33	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.056	1.002	0.234	0.000	0.000	0.000	0.000	0.000

Problem 500	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	F(-2)	F(-2)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	35	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.202	0.750	0.189	0.000	0.000	0.000	0.000	0.000

Problem 501	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	F(-2)	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	35	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.190	0.825	0.197	0.000	0.000	0.000	0.000	0.000

Problem 502	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	F(-2)	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	35	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.201	0.839	0.202	0.000	0.000	0.000	0.000	0.000

Problem 503	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	F(-2)	F(-1)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	35	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.071	6.602	0.187	0.000	0.000	0.000	0.000	0.000

Problem 504	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	F(-2)	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	35	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.074	3.847	0.205	0.000	0.000	0.000	0.000	0.000

Problem 505	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	F(-2)	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	35	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.075	0.683	0.226	0.000	0.000	0.000	0.000	0.000

Problem 506	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F(-2)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	99	99	76	0	0	0	0	0	-1
N.S.	1	1.00	0.77	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.071	0.162	0.228	0.000	0.000	0.000	0.000	0.000

Problem 507	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	31	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.038	0.241	0.199	0.000	0.000	0.000	0.000	0.000

Problem 508	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	F(-2)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	31	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.037	1.487	0.195	0.000	0.000	0.000	0.000	0.000

Problem 509	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	F(-2)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	33	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.071	26.649	0.176	0.000	0.000	0.000	0.000	0.000

Problem 510	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	F(-2)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	33	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.058	0.062	0.214	0.000	0.000	0.000	0.000	0.000

Problem 511	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	33	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.062	16.911	0.206	0.000	0.000	0.000	0.000	0.000

Problem 512	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	F(-2)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	33	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.074	22.860	0.231	0.000	0.000	0.000	0.000	0.000

Problem 513	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	F(-2)	A	F(-2)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	31	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.036	0.384	0.351	0.000	0.000	0.000	0.000	0.000

Problem 514	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F(-2)	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	432	432	326	0	0	0	0	0	-1
N.S.	1	1.00	0.75	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.658	0.665	0.202	0.000	0.000	0.000	0.000	0.000

Problem 515	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F(-2)	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	281	281	227	0	0	0	0	0	-1
N.S.	1	1.00	0.81	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.360	0.253	0.047	0.000	0.000	0.000	0.000	0.000

Problem 516	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F(-2)	A	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	131	131	131	0	0	81	0	0	-1
N.S.	1	1.00	1.00	0.00	0.00	0.62	0.00	0.00	-0.01
time (sec)	N/A	0.105	0.104	0.054	0.000	0.104	0.000	0.000	0.000

Problem 517	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	F(-2)	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	31	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.043	0.217	0.218	0.000	0.000	0.000	0.000	0.000

Problem 518	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	249	249	190	0	0	0	0	0	-1
N.S.	1	1.00	0.76	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.342	0.109	0.230	0.000	0.000	0.000	0.000	0.000

Problem 519	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	335	335	284	0	0	0	0	0	-1
N.S.	1	1.00	0.85	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.563	0.159	0.215	0.000	0.000	0.000	0.000	0.000

Problem 520	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	F	F	F	F	F	F	F
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	515	515	0	0	0	0	0	0	-1
N.S.	1	1.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.893	2.660	0.208	0.000	0.000	0.000	0.000	0.000

Problem 521	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	287	287	316	0	0	0	0	0	-1
N.S.	1	1.00	1.10	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.683	0.024	0.341	0.000	0.000	0.000	0.000	0.000

Problem 522	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	519	519	1083	0	0	0	0	0	-1
N.S.	1	1.00	2.09	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.928	3.125	0.315	0.000	0.000	0.000	0.000	0.000

Problem 523	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	427	427	451	0	0	0	0	0	-1
N.S.	1	1.00	1.06	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.550	0.548	0.339	0.000	0.000	0.000	0.000	0.000

Problem 524	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	258	258	270	0	0	0	0	0	-1
N.S.	1	1.00	1.05	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.369	0.272	0.367	0.000	0.000	0.000	0.000	0.000

Problem 525	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	129	129	120	0	0	0	0	0	-1
N.S.	1	1.00	0.93	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.221	0.085	0.187	0.000	0.000	0.000	0.000	0.000

Problem 526	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	68	68	67	0	0	0	0	0	-1
N.S.	1	1.00	0.99	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.080	0.007	0.031	0.000	0.000	0.000	0.000	0.000

Problem 527	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	165	165	117	0	0	0	0	0	-1
N.S.	1	1.00	0.71	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.313	0.051	0.398	0.000	0.000	0.000	0.000	0.000

Problem 528	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F(-2)	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	268	268	527	0	0	0	0	0	-1
N.S.	1	1.00	1.97	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.403	0.211	0.328	0.000	0.000	0.000	0.000	0.000

Problem 529	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	425	425	434	0	0	0	0	0	-1
N.S.	1	1.00	1.02	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.561	0.534	0.353	0.000	0.000	0.000	0.000	0.000

Problem 530	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	519	519	927	0	0	0	0	0	-1
N.S.	1	1.00	1.79	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.895	0.436	0.346	0.000	0.000	0.000	0.000	0.000

Problem 531	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	240	240	852	0	0	0	0	0	-1
N.S.	1	1.00	3.55	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.430	0.211	0.214	0.000	0.000	0.000	0.000	0.000

Problem 532	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	123	123	313	0	0	0	0	0	-1
N.S.	1	1.00	2.54	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.181	0.157	0.035	0.000	0.000	0.000	0.000	0.000

Problem 533	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	288	288	652	0	0	0	0	0	-1
N.S.	1	1.00	2.26	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.599	0.189	0.366	0.000	0.000	0.000	0.000	0.000

Problem 534	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F(-2)	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	463	463	654	0	0	0	0	0	-1
N.S.	1	1.00	1.41	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.805	0.462	0.415	0.000	0.000	0.000	0.000	0.000

Problem 535	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	742	742	4056	0	0	0	0	0	-1
N.S.	1	1.00	5.47	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.199	0.931	0.321	0.000	0.000	0.000	0.000	0.000

Problem 536	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	349	349	1769	0	0	0	0	0	-1
N.S.	1	1.00	5.07	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.592	0.421	0.210	0.000	0.000	0.000	0.000	0.000

Problem 537	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	177	177	646	0	0	0	0	0	-1
N.S.	1	1.00	3.65	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.271	0.124	0.030	0.000	0.000	0.000	0.000	0.000

Problem 538	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	410	410	1350	0	0	0	0	0	-1
N.S.	1	1.00	3.29	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.798	0.286	0.372	0.000	0.000	0.000	0.000	0.000

Problem 539	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F(-2)	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	659	659	1057	0	0	0	0	0	-1
N.S.	1	1.00	1.60	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.130	0.886	0.365	0.000	0.000	0.000	0.000	0.000

Problem 540	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	36	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.169	0.193	0.193	0.000	0.000	0.000	0.000	0.000

Problem 541	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	31	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.045	0.027	0.031	0.000	0.000	0.000	0.000	0.000

Problem 542	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	38	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.196	0.461	0.364	0.000	0.000	0.000	0.000	0.000

Problem 543	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	38	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.230	2.268	0.386	0.000	0.000	0.000	0.000	0.000

Problem 544	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	36	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.201	1.672	0.206	0.000	0.000	0.000	0.000	0.000

Problem 545	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	31	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.044	0.132	0.031	0.000	0.000	0.000	0.000	0.000

Problem 546	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	38	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.194	16.549	0.426	0.000	0.000	0.000	0.000	0.000

Problem 547	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	38	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.217	23.593	0.354	0.000	0.000	0.000	0.000	0.000

2.3 Detailed conclusion table specific for Rubi results

The following table is specific to Rubi. It gives additional statistics for each integral. the column **steps** is the number of steps used by Rubi to obtain the antiderivative. The **rules** column is the number of unique rules used. The **integrand size** column is the leaf size of the integrand. Finally the ratio $\frac{\text{number of rules}}{\text{integrand size}}$ is given. The larger this ratio is, the harder the integral was to solve. In this test, problem number [401] had the largest ratio of [40]

Table 2.1: Rubi specific breakdown of results for each integral

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
1	A	5	3	1.00	10	0.300
2	A	4	3	1.00	10	0.300
3	A	3	3	1.00	10	0.300
4	A	2	2	1.00	8	0.250
5	A	2	2	1.00	10	0.200
6	A	3	3	1.00	10	0.300
7	A	4	3	1.00	10	0.300
8	A	5	3	1.00	10	0.300
9	A	7	5	1.00	12	0.417
10	A	6	5	1.00	12	0.417
11	A	5	5	1.00	12	0.417
12	A	4	4	1.00	12	0.333
13	A	5	5	1.00	12	0.417
14	A	6	5	1.00	12	0.417
15	A	7	5	1.00	12	0.417
16	A	3	3	1.00	10	0.300
17	A	6	3	1.00	16	0.188
18	A	5	3	1.00	16	0.188
19	A	4	3	1.00	16	0.188
20	A	3	2	1.00	14	0.143
21	A	3	3	1.00	16	0.188
22	A	4	4	1.00	16	0.250
23	A	5	4	1.00	16	0.250
24	A	7	5	1.00	18	0.278
25	A	6	5	1.00	18	0.278

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
26	A	5	5	1.00	18	0.278
27	A	4	4	1.00	18	0.222
28	A	5	5	1.00	18	0.278
29	A	6	5	1.00	18	0.278
30	A	7	5	1.00	18	0.278
31	A	3	3	1.00	16	0.188
32	A	3	3	1.00	18	0.167
33	A	3	3	1.00	22	0.136
34	A	4	4	1.00	25	0.160
35	A	3	2	1.00	22	0.091
36	A	3	2	1.00	22	0.091
37	A	3	2	1.00	22	0.091
38	A	3	2	1.00	20	0.100
39	A	3	2	1.00	14	0.143
40	A	3	3	1.00	22	0.136
41	A	4	3	1.00	22	0.136
42	A	3	2	1.00	22	0.091
43	A	3	2	1.00	22	0.091
44	A	6	6	1.00	24	0.250
45	A	8	7	1.00	24	0.292
46	A	9	7	1.00	22	0.318
47	A	4	3	1.00	16	0.188
48	A	4	4	1.00	24	0.167
49	A	4	4	1.00	24	0.167
50	A	7	7	1.00	24	0.292
51	A	11	9	1.00	24	0.375
52	A	19	7	1.00	24	0.292
53	A	15	7	1.00	24	0.292
54	A	11	7	1.00	22	0.318
55	A	5	3	1.00	16	0.188
56	A	5	5	1.00	24	0.208
57	A	5	5	1.00	24	0.208
58	A	9	9	1.00	24	0.375
59	A	16	12	1.00	24	0.500
60	A	13	7	1.00	22	0.318

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
61	A	6	3	1.00	16	0.188
62	A	6	5	1.00	24	0.208
63	A	6	6	1.00	24	0.250
64	A	2	2	1.00	6	0.333
65	A	3	3	1.00	8	0.375
66	A	4	3	1.00	8	0.375
67	A	3	3	1.00	9	0.333
68	A	4	4	1.00	11	0.364
69	A	5	4	1.00	11	0.364
70	A	2	2	1.00	10	0.200
71	A	2	2	1.00	27	0.074
72	A	2	2	1.00	18	0.111
73	A	2	2	1.00	10	0.200
74	A	2	2	1.00	10	0.200
75	A	1	1	1.00	10	0.100
76	A	1	1	1.00	8	0.125
77	A	2	2	1.00	10	0.200
78	A	2	2	1.00	10	0.200
79	A	2	2	1.00	14	0.143
80	A	2	2	1.00	14	0.143
81	A	2	2	1.00	14	0.143
82	A	1	1	1.00	12	0.083
83	A	2	2	1.00	14	0.143
84	A	2	2	1.00	14	0.143
85	A	7	7	1.00	16	0.438
86	A	11	9	1.00	16	0.562
87	A	14	7	1.00	16	0.438
88	A	14	6	1.00	24	0.250
89	A	11	6	1.00	24	0.250
90	A	8	6	1.00	22	0.273
91	A	3	3	1.00	16	0.188
92	A	0	0	0.00	0	0.000
93	A	0	0	0.00	0	0.000
94	A	26	7	1.00	24	0.292
95	A	20	7	1.00	24	0.292

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
96	A	12	7	1.00	22	0.318
97	A	4	4	1.00	16	0.250
98	A	0	0	0.00	0	0.000
99	A	0	0	0.00	0	0.000
100	A	33	7	1.00	24	0.292
101	A	17	8	1.00	22	0.364
102	A	5	4	1.00	16	0.250
103	A	0	0	0.00	0	0.000
104	A	0	0	0.00	0	0.000
105	A	17	9	1.00	26	0.346
106	A	12	9	1.00	24	0.375
107	A	5	5	1.00	18	0.278
108	A	0	0	0.00	0	0.000
109	A	0	0	0.00	0	0.000
110	A	0	0	0.00	0	0.000
111	A	20	9	1.00	26	0.346
112	A	14	9	1.00	24	0.375
113	A	6	5	1.00	18	0.278
114	A	0	0	0.00	0	0.000
115	A	0	0	0.00	0	0.000
116	A	0	0	0.00	0	0.000
117	A	23	9	1.00	26	0.346
118	A	16	9	1.00	24	0.375
119	A	7	5	1.00	18	0.278
120	A	0	0	0.00	0	0.000
121	A	0	0	0.00	0	0.000
122	A	0	0	0.00	0	0.000
123	A	18	7	1.00	26	0.269
124	A	14	7	1.00	26	0.269
125	A	10	7	1.00	24	0.292
126	A	4	4	1.00	18	0.222
127	A	0	0	0.00	0	0.000
128	A	33	8	1.00	26	0.308
129	A	25	8	1.00	26	0.308
130	A	15	8	1.00	24	0.333

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
131	A	5	5	1.00	18	0.278
132	A	0	0	0.00	0	0.000
133	A	59	8	1.00	26	0.308
134	A	41	8	1.00	26	0.308
135	A	21	9	1.00	24	0.375
136	A	6	5	1.00	18	0.278
137	A	0	0	0.00	0	0.000
138	A	6	4	1.00	24	0.167
139	A	5	4	1.00	24	0.167
140	A	4	4	1.00	24	0.167
141	A	3	3	1.00	24	0.125
142	A	4	4	1.00	24	0.167
143	A	5	4	1.00	24	0.167
144	A	6	4	1.00	24	0.167
145	A	28	15	1.00	26	0.577
146	A	21	15	1.00	26	0.577
147	A	15	15	1.00	26	0.577
148	A	10	12	1.00	26	0.462
149	A	14	14	1.00	26	0.538
150	A	19	15	1.00	26	0.577
151	A	25	15	1.00	26	0.577
152	A	0	0	0.00	0	0.000
153	A	0	0	0.00	0	0.000
154	A	0	0	0.00	0	0.000
155	A	0	0	0.00	0	0.000
156	A	0	0	0.00	0	0.000
157	A	0	0	0.00	0	0.000
158	A	0	0	0.00	0	0.000
159	A	0	0	0.00	0	0.000
160	A	0	0	0.00	0	0.000
161	A	0	0	0.00	0	0.000
162	A	2	2	1.00	22	0.091
163	A	0	0	0.00	0	0.000
164	A	0	0	0.00	0	0.000
165	A	0	0	0.00	0	0.000

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
166	A	0	0	0.00	0	0.000
167	A	0	0	0.00	0	0.000
168	A	0	0	0.00	0	0.000
169	A	0	0	0.00	0	0.000
170	A	14	6	1.00	24	0.250
171	A	11	6	1.00	24	0.250
172	A	8	6	1.00	22	0.273
173	A	3	3	1.00	16	0.188
174	A	0	0	0.00	0	0.000
175	A	6	5	1.00	30	0.167
176	A	8	6	1.00	30	0.200
177	A	7	6	1.00	30	0.200
178	A	6	5	1.00	28	0.179
179	A	3	3	1.00	23	0.130
180	A	4	4	1.00	30	0.133
181	A	7	7	1.00	30	0.233
182	A	11	9	1.00	30	0.300
183	A	30	15	1.00	32	0.469
184	A	24	15	1.00	32	0.469
185	A	16	10	1.00	32	0.312
186	A	8	7	1.00	30	0.233
187	A	4	4	1.00	25	0.160
188	A	5	5	1.00	32	0.156
189	A	9	9	1.00	32	0.281
190	A	16	12	1.00	32	0.375
191	A	14	8	1.00	32	0.250
192	A	12	8	1.00	32	0.250
193	A	10	8	1.00	32	0.250
194	A	8	7	1.00	30	0.233
195	A	4	4	1.00	25	0.160
196	A	0	0	0.00	0	0.000
197	A	0	0	0.00	0	0.000
198	A	27	14	1.00	31	0.452
199	A	20	14	1.00	31	0.452
200	A	14	14	1.00	31	0.452

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
201	A	9	11	1.00	31	0.355
202	A	13	13	1.00	31	0.419
203	A	18	14	1.00	31	0.452
204	A	20	14	1.00	23	0.609
205	A	14	14	1.00	23	0.609
206	A	9	11	1.00	23	0.478
207	A	13	13	1.00	23	0.565
208	A	18	14	1.00	23	0.609
209	A	0	0	0.00	0	0.000
210	A	12	8	1.00	32	0.250
211	A	10	8	1.00	32	0.250
212	A	8	7	1.00	30	0.233
213	A	4	4	1.00	25	0.160
214	A	0	0	0.00	0	0.000
215	A	0	0	0.00	0	0.000
216	A	0	0	0.00	0	0.000
217	A	14	8	1.00	29	0.276
218	A	11	8	1.00	29	0.276
219	A	8	6	1.00	27	0.222
220	A	3	3	1.00	22	0.136
221	A	8	4	1.00	29	0.138
222	A	12	7	1.00	29	0.241
223	A	15	8	1.00	29	0.276
224	A	19	12	1.00	31	0.387
225	A	10	8	1.00	29	0.276
226	A	4	4	1.00	24	0.167
227	A	10	5	1.00	31	0.161
228	A	14	9	1.00	31	0.290
229	A	23	13	1.00	31	0.419
230	A	12	9	1.00	29	0.310
231	A	5	5	1.00	24	0.208
232	A	12	6	1.00	31	0.194
233	A	17	7	1.00	31	0.226
234	A	0	0	0.00	0	0.000
235	A	0	0	0.00	0	0.000

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
236	A	0	0	0.00	0	0.000
237	A	0	0	0.00	0	0.000
238	A	0	0	0.00	0	0.000
239	A	0	0	0.00	0	0.000
240	A	0	0	0.00	0	0.000
241	A	0	0	0.00	0	0.000
242	A	14	8	1.00	25	0.320
243	A	11	8	1.00	25	0.320
244	A	8	7	1.00	23	0.304
245	A	3	3	1.00	22	0.136
246	A	7	8	1.00	25	0.320
247	A	11	10	1.00	25	0.400
248	A	14	10	1.00	25	0.400
249	A	15	10	1.00	25	0.400
250	A	12	10	1.00	25	0.400
251	A	9	8	1.00	23	0.348
252	A	4	3	1.00	22	0.136
253	A	11	9	1.00	25	0.360
254	A	15	10	1.00	25	0.400
255	A	18	10	1.00	25	0.400
256	A	16	8	1.00	27	0.296
257	A	13	8	1.00	27	0.296
258	A	8	5	1.00	25	0.200
259	A	12	10	1.00	27	0.370
260	A	15	9	1.00	27	0.333
261	A	16	11	1.00	27	0.407
262	A	13	9	1.00	27	0.333
263	A	8	4	1.00	24	0.167
264	A	14	11	1.00	27	0.407
265	A	17	12	1.00	27	0.444
266	A	19	13	1.00	27	0.482
267	A	16	12	1.00	27	0.444
268	A	6	6	1.00	25	0.240
269	A	18	13	1.00	27	0.482
270	A	21	14	1.00	27	0.518

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
271	A	31	13	1.00	27	0.482
272	A	28	10	1.00	27	0.370
273	A	18	7	1.00	24	0.292
274	A	32	12	1.00	27	0.444
275	A	10	8	1.00	26	0.308
276	A	11	9	1.00	26	0.346
277	A	9	7	1.00	34	0.206
278	A	11	9	1.00	34	0.265
279	A	2	2	1.00	26	0.077
280	A	4	4	1.00	25	0.160
281	A	4	4	1.00	30	0.133
282	A	4	4	1.00	29	0.138
283	A	16	8	1.00	19	0.421
284	A	11	5	1.00	19	0.263
285	A	15	10	1.00	19	0.526
286	A	18	9	1.00	19	0.474
287	A	16	13	1.00	19	0.684
288	A	15	14	1.00	19	0.737
289	A	11	10	1.00	17	0.588
290	A	11	4	1.00	16	0.250
291	A	17	14	1.00	19	0.737
292	A	16	14	1.00	19	0.737
293	A	23	8	1.00	19	0.421
294	A	18	5	1.00	19	0.263
295	A	22	10	1.00	19	0.526
296	A	23	10	1.00	19	0.526
297	A	18	7	1.00	17	0.412
298	A	23	10	1.00	19	0.526
299	A	22	14	1.00	19	0.737
300	A	18	11	1.00	19	0.579
301	A	18	4	1.00	16	0.250
302	A	24	16	1.00	19	0.842
303	A	4	3	1.00	23	0.130
304	A	4	3	1.00	27	0.111
305	A	4	3	1.00	27	0.111

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
306	A	4	4	1.00	27	0.148
307	A	5	4	1.00	27	0.148
308	A	4	3	1.00	27	0.111
309	A	12	6	1.00	16	0.375
310	A	28	19	1.00	29	0.655
311	A	21	12	1.00	29	0.414
312	A	10	5	1.00	27	0.185
313	A	16	5	1.00	29	0.172
314	A	23	12	1.00	29	0.414
315	A	23	16	1.00	29	0.552
316	A	16	9	1.00	29	0.310
317	A	10	5	1.00	26	0.192
318	A	15	9	1.00	29	0.310
319	A	26	18	1.00	29	0.621
320	A	34	18	1.00	29	0.621
321	A	25	12	1.00	29	0.414
322	A	13	7	1.00	27	0.259
323	A	29	12	1.00	29	0.414
324	A	36	18	1.00	29	0.621
325	A	36	13	1.00	29	0.448
326	A	32	10	1.00	29	0.345
327	A	20	9	1.00	26	0.346
328	A	35	11	1.00	29	0.379
329	A	12	6	1.00	22	0.273
330	A	10	5	1.00	22	0.227
331	A	8	4	1.00	20	0.200
332	A	0	0	0.00	0	0.000
333	A	4	4	1.00	32	0.125
334	A	5	5	1.00	36	0.139
335	A	4	4	1.00	38	0.105
336	A	5	5	1.00	38	0.132
337	A	2	2	1.00	26	0.077
338	A	4	4	1.00	27	0.148
339	A	1	1	1.00	38	0.026
340	A	2	2	1.00	39	0.051

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
341	A	1	1	1.00	34	0.029
342	A	3	3	1.00	35	0.086
343	A	13	7	1.00	24	0.292
344	A	11	6	1.00	24	0.250
345	A	8	9	1.00	22	0.409
346	A	0	0	0.00	0	0.000
347	A	12	6	1.00	25	0.240
348	A	10	5	1.00	25	0.200
349	A	8	4	1.00	23	0.174
350	A	0	0	0.00	0	0.000
351	A	10	5	1.00	18	0.278
352	A	9	4	1.00	18	0.222
353	A	6	3	1.00	16	0.188
354	A	6	3	1.00	15	0.200
355	A	9	4	1.00	18	0.222
356	A	10	5	1.00	18	0.278
357	A	11	5	1.00	18	0.278
358	A	11	7	1.00	24	0.292
359	A	10	7	1.00	24	0.292
360	A	9	7	1.00	22	0.318
361	A	8	6	1.00	21	0.286
362	A	4	4	1.00	24	0.167
363	A	6	6	1.00	24	0.250
364	A	7	6	1.00	24	0.250
365	A	9	6	1.00	24	0.250
366	A	11	6	1.00	24	0.250
367	A	52	19	1.22	26	0.731
368	A	38	16	1.00	24	0.667
369	A	17	12	1.00	23	0.522
370	F	0	0	N/A	0.	N/A
371	F	0	0	N/A	0.	N/A
372	F	0	0	N/A	0.	N/A
373	A	28	13	1.00	23	0.565
374	F	0	0	N/A	0.	N/A

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Table 2.1 – continued from previous page

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

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Table 2.1 – continued from previous page

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

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
445	A	12	7	1.00	28	0.250
446	A	9	7	1.00	26	0.269
447	A	4	4	1.00	20	0.200
448	A	0	0	0.00	0	0.000
449	A	0	0	0.00	0	0.000
450	A	21	8	1.00	28	0.286
451	A	13	8	1.00	26	0.308
452	A	5	5	1.00	20	0.250
453	A	0	0	0.00	0	0.000
454	A	0	0	0.00	0	0.000
455	A	34	8	1.00	28	0.286
456	A	18	9	1.00	26	0.346
457	A	6	5	1.00	20	0.250
458	A	0	0	0.00	0	0.000
459	A	0	0	0.00	0	0.000
460	A	18	10	1.00	30	0.333
461	A	13	10	1.00	28	0.357
462	A	6	6	1.00	22	0.273
463	A	0	0	0.00	0	0.000
464	A	0	0	0.00	0	0.000
465	A	21	10	1.00	30	0.333
466	A	15	10	1.00	28	0.357
467	A	7	6	1.00	22	0.273
468	A	0	0	0.00	0	0.000
469	A	0	0	0.00	0	0.000
470	A	15	8	1.00	30	0.267
471	A	11	8	1.00	28	0.286
472	A	5	5	1.00	22	0.227
473	A	0	0	0.00	0	0.000
474	A	26	9	1.00	30	0.300
475	A	16	9	1.00	28	0.321
476	A	6	6	1.00	22	0.273
477	A	0	0	0.00	0	0.000
478	A	42	9	1.00	30	0.300
479	A	22	10	1.00	28	0.357

Continued on next page

Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
480	A	7	6	1.00	22	0.273
481	A	0	0	0.00	0	0.000
482	A	7	5	1.00	28	0.179
483	A	6	5	1.00	28	0.179
484	A	5	5	1.00	28	0.179
485	A	4	4	1.00	28	0.143
486	A	5	5	1.00	28	0.179
487	A	6	5	1.00	28	0.179
488	A	7	5	1.00	28	0.179
489	A	29	16	1.00	30	0.533
490	A	22	16	1.00	30	0.533
491	A	16	16	1.00	30	0.533
492	A	11	13	1.00	30	0.433
493	A	15	15	1.00	30	0.500
494	A	20	16	1.00	30	0.533
495	A	26	16	1.00	30	0.533
496	A	0	0	0.00	0	0.000
497	A	0	0	0.00	0	0.000
498	A	0	0	0.00	0	0.000
499	A	0	0	0.00	0	0.000
500	A	0	0	0.00	0	0.000
501	A	0	0	0.00	0	0.000
502	A	0	0	0.00	0	0.000
503	A	0	0	0.00	0	0.000
504	A	0	0	0.00	0	0.000
505	A	0	0	0.00	0	0.000
506	A	3	3	1.00	26	0.115
507	A	0	0	0.00	0	0.000
508	A	0	0	0.00	0	0.000
509	A	0	0	0.00	0	0.000
510	A	0	0	0.00	0	0.000
511	A	0	0	0.00	0	0.000
512	A	0	0	0.00	0	0.000
513	A	0	0	0.00	0	0.000
514	A	12	7	1.00	28	0.250

Continued on next page

Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
515	A	9	7	1.00	26	0.269
516	A	4	4	1.00	20	0.200
517	A	0	0	0.00	0	0.000
518	A	9	5	1.00	28	0.179
519	A	11	9	1.00	30	0.300
520	A	12	10	1.00	30	0.333
521	A	10	8	1.00	38	0.210
522	A	12	10	1.00	38	0.263
523	A	15	9	1.00	33	0.273
524	A	12	9	1.00	33	0.273
525	A	9	7	1.00	31	0.226
526	A	4	4	1.00	26	0.154
527	A	9	5	1.00	33	0.152
528	A	13	8	1.00	33	0.242
529	A	16	9	1.00	33	0.273
530	A	20	13	1.00	35	0.371
531	A	11	9	1.00	33	0.273
532	A	5	5	1.00	28	0.179
533	A	11	6	1.00	35	0.171
534	A	15	10	1.00	35	0.286
535	A	24	14	1.00	35	0.400
536	A	13	10	1.00	33	0.303
537	A	6	6	1.00	28	0.214
538	A	13	7	1.00	35	0.200
539	A	18	8	1.00	35	0.229
540	A	0	0	0.00	0	0.000
541	A	0	0	0.00	0	0.000
542	A	0	0	0.00	0	0.000
543	A	0	0	0.00	0	0.000
544	A	0	0	0.00	0	0.000
545	A	0	0	0.00	0	0.000
546	A	0	0	0.00	0	0.000
547	A	0	0	0.00	0	0.000

Chapter 3

Listing of integrals

Local contents

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

Optimal. Leaf size=81

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

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

Rubi [A]
time = 0.02, antiderivative size = 81, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 3, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}} = 0.300$, Rules used = {2436, 2333, 2332}

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

Antiderivative was successfully verified.

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

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

Rule 2332

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

Rule 2333

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

Rule 2436

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

Rubi steps

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

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

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

Antiderivative was successfully verified.

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

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

Maple [A]
time = 0.15, size = 99, normalized size = 1.22

method	result
risch	$\frac{(ex+d)\ln(c(ex+d))^4}{e} - \frac{4(ex+d)\ln(c(ex+d))^3}{e} + \frac{12(ex+d)\ln(c(ex+d))^2}{e} - 24x\ln(c(ex+d)) + 24x - 2$
derivativedivides	$\frac{\ln(cex+cd)^4(cex+cd)-4(cex+cd)\ln(cex+cd)^3+12(cex+cd)\ln(cex+cd)^2-24(cex+cd)\ln(cex+cd)+24cex+24cd}{ce}$
default	$\frac{\ln(cex+cd)^4(cex+cd)-4(cex+cd)\ln(cex+cd)^3+12(cex+cd)\ln(cex+cd)^2-24(cex+cd)\ln(cex+cd)+24cex+24cd}{ce}$
norman	$x\ln(c(ex+d))^4 + \frac{d\ln(c(ex+d))^4}{e} + 24x - 24x\ln(c(ex+d)) + 12x\ln(c(ex+d))^2 - 4x\ln$

Verification of antiderivative is not currently implemented for this CAS.

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

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

Maxima [B] Leaf count of result is larger than twice the leaf count of optimal. 205 vs. 2(85) = 170.
time = 0.28, size = 205, normalized size = 2.53

$$4\left(de^{(-2)}\log(xe+d) - xe^{(-1)}\right)e\log((xe+d)c)^3 + x\log((xe+d)c)^4 - \left(6\left(d\log(xe+d)^2 - 2xe + 2d\log(xe+d)\right)e^{(-2)}\log((xe+d)c)^2 - \left(4\left(d\log(xe+d)^3 + 3d\log(xe+d)^2 - 6xe + 6d\log(xe+d)\right)e^{(-3)}\log((xe+d)c) - \left(d\log(xe+d)^4 + 4d\log(xe+d)^3 + 12d\log(xe+d)^2 - 24xe + 24d\log(xe+d)\right)e^{(-3)}\right)e\right)e$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 4*(d*e^(-2)*log(x*e + d) - x*e^(-1))*e*log((x*e + d)*c)^3 + x*log((x*e + d)
*c)^4 - (6*(d*log(x*e + d)^2 - 2*x*e + 2*d*log(x*e + d))*e^(-2)*log((x*e +
d)*c)^2 - (4*(d*log(x*e + d)^3 + 3*d*log(x*e + d)^2 - 6*x*e + 6*d*log(x*e +
 d))*e^(-3)*log((x*e + d)*c) - (d*log(x*e + d)^4 + 4*d*log(x*e + d)^3 + 12*
d*log(x*e + d)^2 - 24*x*e + 24*d*log(x*e + d))*e^(-3))*e)*e
```

Fricas [A]
time = 0.34, size = 86, normalized size = 1.06

$$\left((xe+d)\log\left(cxe+cd\right)^{4}-4\,(xe+d)\log\left(cxe+cd\right)^{3}+12\,(xe+d)\log\left(cxe+cd\right)^{2}+24\,xe-24\,(xe+d)\log\left(cxe+cd\right)\right)e^{(-1)}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

Sympy [A]
time = 0.12, size = 88, normalized size = 1.09

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

Verification of antiderivative is not currently implemented for this CAS.

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

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

Giac [A]
time = 4.45, size = 92, normalized size = 1.14

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

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

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

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

Optimal. Leaf size=61

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

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

Rubi [A]
time = 0.02, antiderivative size = 61, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}} = 0.300$, Rules used = {2436, 2333, 2332}

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

Antiderivative was successfully verified.

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

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

Rule 2332

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

Rule 2333

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

Rule 2436

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

Rubi steps

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

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

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

Antiderivative was successfully verified.

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

Maple [A]
time = 0.16, size = 78, normalized size = 1.28

method	result
risch	$\frac{(ex+d)\ln(c(ex+d))^3}{e} - \frac{3(ex+d)\ln(c(ex+d))^2}{e} + 6x\ln(c(ex+d)) - 6x + \frac{6d\ln(ex+d)}{e}$
derivativedivides	$\frac{(cex+cd)\ln(cex+cd)^3 - 3(cex+cd)\ln(cex+cd)^2 + 6(cex+cd)\ln(cex+cd) - 6cex - 6cd}{ce}$
default	$\frac{(cex+cd)\ln(cex+cd)^3 - 3(cex+cd)\ln(cex+cd)^2 + 6(cex+cd)\ln(cex+cd) - 6cex - 6cd}{ce}$
norman	$x\ln(c(ex+d))^3 + \frac{d\ln(c(ex+d))^3}{e} - 6x + 6x\ln(c(ex+d)) - 3x\ln(c(ex+d))^2 + \frac{6d\ln(c(ex}{e}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(c*(e*x+d))^3,x,method=_RETURNVERBOSE)
[Out] 1/c/e*((c*e*x+c*d)*ln(c*e*x+c*d)^3-3*(c*e*x+c*d)*ln(c*e*x+c*d)^2+6*(c*e*x+c
*d)*ln(c*e*x+c*d)-6*c*e*x-6*c*d)
```

Maxima [B] Leaf count of result is larger than twice the leaf count of optimal. 134 vs. 2(64) = 128.
time = 0.28, size = 134, normalized size = 2.20

$$3\left(de^{(-2)}\log(xe+d) - xe^{(-1)}\right)e\log((xe+d)c)^2 + x\log((xe+d)c)^3 - \left(3\left(d\log(xe+d)^2 - 2\,xe + 2\,d\log(xe+d)\right)e^{(-2)}\log((xe+d)c) - \left(d\log(xe+d)^3 + 3\,d\log(xe+d)^2 - 6\,xe + 6\,d\log(xe+d)\right)e^{(-2)}\right)e$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

Fricas [A]
time = 0.34, size = 66, normalized size = 1.08

$$\left((xe+d)\log\left(cxe+cd\right)^3-3\left(xe+d\right)\log\left(cxe+cd\right)^2-6\,xe+6\left(xe+d\right)\log\left(cxe+cd\right)\right)e^{(-1)}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

Sympy [A]
time = 0.10, size = 68, normalized size = 1.11

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

Verification of antiderivative is not currently implemented for this CAS.

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

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

Giac [A]
time = 3.68, size = 71, normalized size = 1.16

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

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

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

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

Optimal. Leaf size=41

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

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

Rubi [A]
time = 0.01, antiderivative size = 41, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.300, Rules used = {2436, 2333, 2332}

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

Antiderivative was successfully verified.

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

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

Rule 2332

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

Rule 2333

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

Rule 2436

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

Rubi steps

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

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

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

Antiderivative was successfully verified.

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

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

Maple [A]
time = 0.13, size = 57, normalized size = 1.39

method	result	size
risch	$\frac{(ex+d)\ln(c(ex+d))^2}{e} - 2x\ln(c(ex+d)) + 2x - \frac{2d\ln(ex+d)}{e}$	47
derivativedivides	$\frac{(cex+cd)\ln(cex+cd)^2 - 2(cex+cd)\ln(cex+cd) + 2cex + 2cd}{ce}$	57
default	$\frac{(cex+cd)\ln(cex+cd)^2 - 2(cex+cd)\ln(cex+cd) + 2cex + 2cd}{ce}$	57
norman	$x\ln(c(ex+d))^2 + \frac{d\ln(c(ex+d))^2}{e} + 2x - 2x\ln(c(ex+d)) - \frac{2d\ln(c(ex+d))}{e}$	57

Verification of antiderivative is not currently implemented for this CAS.

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

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

Maxima [A]
time = 0.27, size = 75, normalized size = 1.83

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

Verification of antiderivative is not currently implemented for this CAS.

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

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

Fricas [A]
time = 0.33, size = 46, normalized size = 1.12

$$\left((xe+d)\log(cxe+cd)^2 + 2\,xe - 2\,(xe+d)\log(cxe+cd)\right)e^{(-1)}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

Sympy [A]
time = 0.08, size = 46, normalized size = 1.12

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

Verification of antiderivative is not currently implemented for this CAS.

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

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

Giac [A]
time = 4.19, size = 50, normalized size = 1.22

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

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

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

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

Optimal. Leaf size=21

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

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

Rubi [A]
time = 0.01, antiderivative size = 21, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 8, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {2436, 2332}

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

Antiderivative was successfully verified.

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

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

Rule 2332

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

Rule 2436

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

Rubi steps

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

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

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

Antiderivative was successfully verified.

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

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

Maple [A]
time = 0.09, size = 36, normalized size = 1.71

method	result	size
risch	$x \ln \left(c(ex+d)\right)-x+\frac{d \ln (ex+d)}{e}$	26
norman	$x \ln \left(c(ex+d)\right)+\frac{d \ln (c(ex+d))}{e}-x$	28
derivativedivides	$\frac{(cex+cd) \ln (cex+cd)-cex-cd}{ce}$	36
default	$\frac{(cex+cd) \ln (cex+cd)-cex-cd}{ce}$	36

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(c*(e*x+d)),x,method=_RETURNVERBOSE)
```

```
[Out] 1/c/e*((c*e*x+c*d)*ln(c*e*x+c*d)-c*e*x-c*d)
```

Maxima [A]
time = 0.27, size = 33, normalized size = 1.57

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

Verification of antiderivative is not currently implemented for this CAS.

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

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

Fricas [A]
time = 0.34, size = 27, normalized size = 1.29

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

Verification of antiderivative is not currently implemented for this CAS.

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

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

Sympy [A]
time = 0.06, size = 26, normalized size = 1.24

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

Verification of antiderivative is not currently implemented for this CAS.

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

Giac [A]
time = 3.36, size = 33, normalized size = 1.57

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

Verification of antiderivative is not currently implemented for this CAS.

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

Mupad [B]
time = 0.06, size = 25, normalized size = 1.19

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

Verification of antiderivative is not currently implemented for this CAS.

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

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

Optimal. Leaf size=15

$$\frac{\text{li}(c(d+ex))}{ce}$$

```
[Out] Li(c*(e*x+d))/c/e
```

Rubi [A]
time = 0.01, antiderivative size = 15, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}} = 0.200$, Rules used = {2436, 2335}

$$\frac{\text{li}(c(d+ex))}{ce}$$

Antiderivative was successfully verified.

```
[In] Int[Log[c*(d + e*x)]^(-1),x]
```

```
[Out] LogIntegral[c*(d + e*x)]/(c*e)
```

Rule 2335

```
Int[Log[(c_.)*(x_)]^(-1), x_Symbol] :> Simp[LogIntegral[c*x]/c, x] /; FreeQ
[c, x]
```

Rule 2436

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

Rubi steps

$$\begin{aligned}\int \frac{1}{\log(c(d+ex))} dx &= \frac{\text{Subst}\left(\int \frac{1}{\log(cx)} dx, x, d+ex\right)}{e}\\ &= \frac{\text{li}(c(d+ex))}{ce}\end{aligned}$$

Mathematica [A]
time = 0.02, size = 17, normalized size = 1.13

$$\frac{\text{Ei}(\log(cd+cex))}{ce}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[c*(d + e*x)]^(-1),x]
```

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

Maple [A]
time = 0.21, size = 22, normalized size = 1.47

method	result	size
derivativedivides	$-\frac{\mathrm{expIntegral}(1,-\ln(cex+cd))}{ce}$	22
default	$-\frac{\mathrm{expIntegral}(1,-\ln(cex+cd))}{ce}$	22
risch	$-\frac{\mathrm{expIntegral}(1,-\ln(cex+cd))}{ce}$	22

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/ln(c*(e*x+d)),x,method=_RETURNVERBOSE)
```

```
[Out] -1/c/e*Ei(1,-ln(c*e*x+c*d))
```

Maxima [A]
time = 0.33, size = 17, normalized size = 1.13

$$\frac{\mathrm{Ei}(\log(cxe+cd))\,e^{(-1)}}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

Fricas [A]
time = 0.34, size = 16, normalized size = 1.07

$$\frac{e^{(-1)}\,\mathrm{log\_integral}\,(cxe+cd)}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] e^(-1)*log_integral(c*x*e + c*d)/c
```

Sympy [A]
time = 0.34, size = 12, normalized size = 0.80

$$\frac{\mathrm{li}\,(cd+cex)}{ce}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] li(c*d + c*e*x)/(c*e)
```

Giac [A]
time = 4.10, size = 16, normalized size = 1.07

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

Verification of antiderivative is not currently implemented for this CAS.

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

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

Mupad [B]
time = 0.21, size = 15, normalized size = 1.00

$$\frac{\text{logint}(c\,(d+e\,x))}{c\,e}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] logint(c*(d + e*x))/(c*e)
```

3.6 $\int \frac{1}{\log^2(c(d+ex))} \, dx$

Optimal. Leaf size=36

$$-\frac{d+ex}{e\log(c(d+ex))}+\frac{\text{li}(c(d+ex))}{ce}$$

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

Rubi [A]
time = 0.01, antiderivative size = 36, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}} = 0.300$, Rules used = {2436, 2334, 2335}

$$\frac{\text{li}(c(d+ex))}{ce}-\frac{d+ex}{e\log(c(d+ex))}$$

Antiderivative was successfully verified.

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

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

Rule 2334

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

Rule 2335

```
Int[Log[(c_.)*(x_)]^(-1), x_Symbol] :> Simp[LogIntegral[c*x]/c, x] /; FreeQ
[c, x]
```

Rule 2436

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

Rubi steps

$$\int \frac{1}{\log^2(c(d+ex))}\,dx = \frac{\text{Subst}\left(\int \frac{1}{\log^2(cx)}\,dx, x, d+ex\right)}{e}$$
$$= -\frac{d+ex}{e\log(c(d+ex))} + \frac{\text{Subst}\left(\int \frac{1}{\log(cx)}\,dx, x, d+ex\right)}{e}$$
$$= -\frac{d+ex}{e\log(c(d+ex))} + \frac{\text{li}(c(d+ex))}{ce}$$

Mathematica [A]
time = 0.03, size = 37, normalized size = 1.03

$$\frac{\text{Ei}(\log(c(d+ex)))}{ce} - \frac{d+ex}{e\log(c(d+ex))}$$

Antiderivative was successfully verified.

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

Maple [A]
time = 0.24, size = 45, normalized size = 1.25

method	result	size
risch	$-\frac{ex+d}{\ln(c(ex+d))e} - \frac{\text{expIntegral}(1,-\ln(cex+cd))}{ce}$	43
derivativedivides	$\frac{-\frac{cex+cd}{\ln(cex+cd)} - \text{expIntegral}(1,-\ln(cex+cd))}{ce}$	45
default	$\frac{-\frac{cex+cd}{\ln(cex+cd)} - \text{expIntegral}(1,-\ln(cex+cd))}{ce}$	45

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/ln(c*(e*x+d))^2,x,method=_RETURNVERBOSE)
[Out] 1/c/e*(-(c*e*x+c*d)/ln(c*e*x+c*d)-Ei(1,-ln(c*e*x+c*d)))
```

Maxima [A]
time = 0.33, size = 20, normalized size = 0.56

$$\frac{e^{(-1)}\Gamma(-1, -\log(cxe+cd))}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/log(c*(e*x+d))^2,x, algorithm="maxima")
```

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

Fricas [A]
time = 0.34, size = 50, normalized size = 1.39

$$-\frac{(cxe + cd - \log{(cxe + cd)} \log\_integral{(cxe + cd)})e^{(-1)}}{c\log{(cxe + cd)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/log(c*(e*x+d))^2,x, algorithm="fricas")
```

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

Sympy [A]
time = 0.36, size = 29, normalized size = 0.81

$$\frac{-d - ex}{e\log{(c(d + ex))}} + \frac{\operatorname{li}{(cd + cex)}}{ce}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

Giac [A]
time = 3.92, size = 38, normalized size = 1.06

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

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/log(c*(e*x+d))^2,x, algorithm="giac")
```

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

Mupad [B]
time = 0.23, size = 36, normalized size = 1.00

$$\frac{\mathrm{logint}(c\,(d + e\,x))}{c\,e} - \frac{d + e\,x}{e\,\ln{(c\,(d + e\,x))}}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

3.7 $\int \frac{1}{\log^3(c(d+ex))} \, dx$

Optimal. Leaf size=63

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

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

Rubi [A]
time = 0.02, antiderivative size = 63, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}} = 0.300$, Rules used = {2436, 2334, 2335}

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

Antiderivative was successfully verified.

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

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

Rule 2334

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

Rule 2335

```
Int[Log[(c_.)*(x_)]^(-1), x_Symbol] :> Simp[LogIntegral[c*x]/c, x] /; FreeQ
[c, x]
```

Rule 2436

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

Rubi steps

$$\int \frac{1}{\log^3(c(d+ex))}\,dx = \frac{\text{Subst}\left(\int \frac{1}{\log^3(cx)}\,dx, x, d+ex\right)}{e}$$
$$= -\frac{d+ex}{2e\log^2(c(d+ex))} + \frac{\text{Subst}\left(\int \frac{1}{\log^2(cx)}\,dx, x, d+ex\right)}{2e}$$
$$= -\frac{d+ex}{2e\log^2(c(d+ex))} - \frac{d+ex}{2e\log(c(d+ex))} + \frac{\text{Subst}\left(\int \frac{1}{\log(cx)}\,dx, x, d+ex\right)}{2e}$$
$$= -\frac{d+ex}{2e\log^2(c(d+ex))} - \frac{d+ex}{2e\log(c(d+ex))} + \frac{\text{li}(c(d+ex))}{2ce}$$

Mathematica [A]
time = 0.04, size = 48, normalized size = 0.76

$$\frac{\text{Ei}(\log(c(d+ex))) - \frac{c(d+ex)(1+\log(c(d+ex)))}{\log^2(c(d+ex))}}{2ce}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[c*(d + e*x)]^(-3),x]
[Out] (ExpIntegralEi[Log[c*(d + e*x)]] - (c*(d + e*x)*(1 + Log[c*(d + e*x)]))/Log
[c*(d + e*x)]^2)/(2*c*e)
```

Maple [A]
time = 0.31, size = 66, normalized size = 1.05

method	result	size
risch	$-\frac{ex\ln(c(ex+d))+d\ln(c(ex+d))+ex+d}{2e\ln(c(ex+d))^2} - \frac{\text{expIntegral}(1,-\ln(cex+cd))}{2ce}$	64
derivativedivides	$\frac{-\frac{cex+cd}{2\ln(cex+cd)^2} - \frac{cex+cd}{2\ln(cex+cd)} - \frac{\text{expIntegral}(1,-\ln(cex+cd))}{2}}{ce}$	66
default	$\frac{-\frac{cex+cd}{2\ln(cex+cd)^2} - \frac{cex+cd}{2\ln(cex+cd)} - \frac{\text{expIntegral}(1,-\ln(cex+cd))}{2}}{ce}$	66

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/ln(c*(e*x+d))^3,x,method=_RETURNVERBOSE)
[Out] 1/c/e*(-1/2*(c*e*x+c*d)/ln(c*e*x+c*d)^2-1/2*(c*e*x+c*d)/ln(c*e*x+c*d)-1/2*E
i(1,-ln(c*e*x+c*d)))
```

Maxima [A]
time = 0.32, size = 21, normalized size = 0.33

$$-\frac{e^{(-1)}\Gamma(-2, -\log(cxe + cd))}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/log(c*(e*x+d))^3,x, algorithm="maxima")
```

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

Fricas [A]
time = 0.33, size = 72, normalized size = 1.14

$$-\frac{\left(cxe - \log\left(cxe + cd\right)^{2} \operatorname{log\_integral}\left(cxe + cd\right) + cd + \left(cxe + cd\right)\log\left(cxe + cd\right)\right)e^{(-1)}}{2\,c\log\left(cxe + cd\right)^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/log(c*(e*x+d))^3,x, algorithm="fricas")
```

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

Sympy [A]
time = 0.37, size = 48, normalized size = 0.76

$$\frac{-d - ex + (-d - ex)\log\left(c(d + ex)\right)}{2e\log\left(c\left(d + ex\right)\right)^{2}} + \frac{\operatorname{li}\left(cd + cex\right)}{2ce}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/ln(c*(e*x+d))**3,x)
```

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

Giac [A]
time = 4.65, size = 60, normalized size = 0.95

$$\frac{\operatorname{Ei}(\log\left((xe + d)c\right))\,e^{(-1)}}{2\,c} - \frac{(xe + d)e^{(-1)}}{2\,\log\left((xe + d)c\right)} - \frac{(xe + d)e^{(-1)}}{2\,\log\left((xe + d)c\right)^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/log(c*(e*x+d))^3,x, algorithm="giac")
```

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

Mupad [B]
time = 0.28, size = 64, normalized size = 1.02

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

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/log(c*(d + e*x))^3,x)
```

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

3.8 $\int \frac{1}{\log^4(c(d+ex))}\,dx$

Optimal. Leaf size=85

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

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

Rubi [A]
time = 0.02, antiderivative size = 85, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 3, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}} = 0.300$, Rules used = {2436, 2334, 2335}

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

Antiderivative was successfully verified.

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

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

Rule 2334

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

Rule 2335

```
Int[Log[(c_.)*(x_)]^(-1), x_Symbol] :> Simp[LogIntegral[c*x]/c, x] /; FreeQ
[c, x]
```

Rule 2436

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

Rubi steps

$$\int \frac{1}{\log^4(c(d+ex))}\,dx = \frac{\text{Subst}\left(\int \frac{1}{\log^4(cx)}\,dx, x, d+ex\right)}{e}$$
$$= -\frac{d+ex}{3e\log^3(c(d+ex))} + \frac{\text{Subst}\left(\int \frac{1}{\log^3(cx)}\,dx, x, d+ex\right)}{3e}$$
$$= -\frac{d+ex}{3e\log^3(c(d+ex))} - \frac{d+ex}{6e\log^2(c(d+ex))} + \frac{\text{Subst}\left(\int \frac{1}{\log^2(cx)}\,dx, x, d+ex\right)}{6e}$$
$$= -\frac{d+ex}{3e\log^3(c(d+ex))} - \frac{d+ex}{6e\log^2(c(d+ex))} - \frac{d+ex}{6e\log(c(d+ex))} + \frac{\text{Subst}\left(\int \frac{1}{\log(cx)}\,dx\right.}{6e}$$
$$= -\frac{d+ex}{3e\log^3(c(d+ex))} - \frac{d+ex}{6e\log^2(c(d+ex))} - \frac{d+ex}{6e\log(c(d+ex))} + \frac{\text{li}(c(d+ex))}{6ce}$$

Mathematica [A]
time = 0.01, size = 57, normalized size = 0.67

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

Antiderivative was successfully verified.

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

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

Maple [A]
time = 0.24, size = 87, normalized size = 1.02

method	result	size
derivativedivides	$\frac{-\frac{cex+cd}{3\ln(cex+cd)^3}-\frac{cex+cd}{6\ln(cex+cd)^2}-\frac{cex+cd}{6\ln(cex+cd)}-\frac{\text{expIntegral}(1,-\ln(cex+cd))}{6}}{ce}$	87
default	$\frac{-\frac{cex+cd}{3\ln(cex+cd)^3}-\frac{cex+cd}{6\ln(cex+cd)^2}-\frac{cex+cd}{6\ln(cex+cd)}-\frac{\text{expIntegral}(1,-\ln(cex+cd))}{6}}{ce}$	87
risch	$-\frac{ex\ln(c(ex+d))^2+d\ln(c(ex+d))^2+ex\ln(c(ex+d))+d\ln(c(ex+d))+2ex+2d}{6e\ln(c(ex+d))^3}-\frac{\text{expIntegral}(1,-\ln(cex+cd))}{6ce}$	92

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/ln(c*(e*x+d))^4,x,method=_RETURNVERBOSE)
```

```
[Out] 1/c/e*(-1/3*(c*e*x+c*d)/ln(c*e*x+c*d)^3-1/6*(c*e*x+c*d)/ln(c*e*x+c*d)^2-1/6
*(c*e*x+c*d)/ln(c*e*x+c*d)-1/6*Ei(1,-ln(c*e*x+c*d)))
```

Maxima [A]
time = 0.33, size = 20, normalized size = 0.24

$$\frac{e^{(-1)}\Gamma(-3, -\log(cxe + cd))}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/log(c*(e*x+d))^4,x, algorithm="maxima")
```

```
[Out] e^(-1)*gamma(-3, -log(c*x*e + c*d))/c
```

Fricas [A]
time = 0.34, size = 97, normalized size = 1.14

$$\frac{\left(\log(cxe+cd)^3 \operatorname{log\_integral}(cxe+cd) - 2\,cxe - (cxe+cd)\log(cxe+cd)^2 - 2\,cd - (cxe+cd)\log(cxe+cd)\right)e^{(-1)}}{6\,c\log(cxe+cd)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/log(c*(e*x+d))^4,x, algorithm="fricas")
```

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

Sympy [A]
time = 0.44, size = 71, normalized size = 0.84

$$\frac{-d - ex + \left(-\frac{d}{2} - \frac{ex}{2}\right)\log(c(d+ex))^2 + \left(-\frac{d}{2} - \frac{ex}{2}\right)\log(c(d+ex))}{3e\log(c(d+ex))^3} + \frac{\operatorname{li}(cd+cex)}{6ce}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/ln(c*(e*x+d))**4,x)
```

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

Giac [A]
time = 6.28, size = 81, normalized size = 0.95

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

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/log(c*(e*x+d))^4,x, algorithm="giac")
```

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

Mupad [B]
time = 0.19, size = 67, normalized size = 0.79

$$-\frac{(d+e\,x)\,\left(\frac{1}{6\,\ln(c\,(d+e\,x))}+\frac{1}{6\ln(c\,(d+e\,x))^2}+\frac{1}{3\ln(c\,(d+e\,x))^3}\right)}{e}-\frac{\mathrm{expint}(-\ln\left(c\,(d+e\,x)\right))}{6\,c\,e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/log(c*(d + e*x))^4,x)
```

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

3.9 $\int \log^{\frac{5}{2}}(c(d+ex))\,dx$

Optimal. Leaf size=98

$$-\frac{15\sqrt{\pi}\,\text{erfi}\left(\sqrt{\log(c(d+ex))}\right)}{8ce}+\frac{15(d+ex)\sqrt{\log(c(d+ex))}}{4e}-\frac{5(d+ex)\log^{\frac{3}{2}}(c(d+ex))}{2e}+\frac{(d+ex)\log^{\frac{5}{2}}(c(d+ex))}{e}$$

```
[Out] -5/2*(e*x+d)*ln(c*(e*x+d))^(3/2)/e+(e*x+d)*ln(c*(e*x+d))^(5/2)/e-15/8*erfi(
ln(c*(e*x+d))^(1/2))*Pi^(1/2)/c/e+15/4*(e*x+d)*ln(c*(e*x+d))^(1/2)/e
```

Rubi [A]
time = 0.04, antiderivative size = 98, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}} = 0.417$, Rules used = {2436, 2333, 2336, 2211, 2235}

$$-\frac{15\sqrt{\pi}\,\text{Erfi}\left(\sqrt{\log(c(d+ex))}\right)}{8ce}+\frac{(d+ex)\log^{\frac{5}{2}}(c(d+ex))}{e}-\frac{5(d+ex)\log^{\frac{3}{2}}(c(d+ex))}{2e}+\frac{15(d+ex)\sqrt{\log(c(d+ex))}}{4e}$$

Antiderivative was successfully verified.

```
[In] Int[Log[c*(d + e*x)]^(5/2),x]
```

```
[Out] (-15*Sqrt[Pi]*Erfi[Sqrt[Log[c*(d + e*x)]]])/(8*c*e) + (15*(d + e*x)*Sqrt[Lo
g[c*(d + e*x)]])/(4*e) - (5*(d + e*x)*Log[c*(d + e*x)]^(3/2))/(2*e) + ((d +
 e*x)*Log[c*(d + e*x)]^(5/2))/e
```

Rule 2211

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - c*(f/d)) + f*g*(x^2/d)), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !TrueQ[$UseGamma]
```

Rule 2235

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[F^a*Sqrt
[Pi]*(Erfi[(c + d*x)*Rt[b*Log[F], 2]]/(2*d*Rt[b*Log[F], 2])), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2333

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

Rule 2336

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

```
c, p}, x] && IntegerQ[1/n]
```

Rule 2436

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

Rubi steps

$$\int \log^{\frac{5}{2}}(c(d+ex))\,dx = \frac{\text{Subst}\left(\int \log^{\frac{5}{2}}(cx)\,dx, x, d+ex\right)}{e}$$
$$= \frac{(d+ex)\log^{\frac{5}{2}}(c(d+ex))}{e} - \frac{5\text{Subst}\left(\int \log^{\frac{3}{2}}(cx)\,dx, x, d+ex\right)}{2e}$$
$$= -\frac{5(d+ex)\log^{\frac{3}{2}}(c(d+ex))}{2e} + \frac{(d+ex)\log^{\frac{5}{2}}(c(d+ex))}{e} + \frac{15\text{Subst}\left(\int \sqrt{\log(cx)}\ d\right.}{4e}$$
$$= \frac{15(d+ex)\sqrt{\log(c(d+ex))}}{4e} - \frac{5(d+ex)\log^{\frac{3}{2}}(c(d+ex))}{2e} + \frac{(d+ex)\log^{\frac{5}{2}}(c(d+e}{e}$$
$$= \frac{15(d+ex)\sqrt{\log(c(d+ex))}}{4e} - \frac{5(d+ex)\log^{\frac{3}{2}}(c(d+ex))}{2e} + \frac{(d+ex)\log^{\frac{5}{2}}(c(d+e}{e}$$
$$= \frac{15(d+ex)\sqrt{\log(c(d+ex))}}{4e} - \frac{5(d+ex)\log^{\frac{3}{2}}(c(d+ex))}{2e} + \frac{(d+ex)\log^{\frac{5}{2}}(c(d+e}{e}$$
$$= -\frac{15\sqrt{\pi}\,\text{erfi}\left(\sqrt{\log(c(d+ex))}\right)}{8ce} + \frac{15(d+ex)\sqrt{\log(c(d+ex))}}{4e} - \frac{5(d+ex)\log^{\frac{3}{2}}(}{2e}$$

Mathematica [A]
time = 0.01, size = 75, normalized size = 0.77

$$\frac{-15\sqrt{\pi}\,\text{erfi}\left(\sqrt{\log(c(d+ex))}\right) + 2c(d+ex)\sqrt{\log(c(d+ex))}\left(15 - 10\log(c(d+ex)) + 4\log^2(c(d+ex))\right)}{8ce}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[c*(d + e*x)]^(5/2),x]
```

```
[Out] (-15*Sqrt[Pi]*Erfi[Sqrt[Log[c*(d + e*x)]]] + 2*c*(d + e*x)*Sqrt[Log[c*(d +
e*x)]]*(15 - 10*Log[c*(d + e*x)] + 4*Log[c*(d + e*x)]^2))/(8*c*e)
```

Maple [F]
time = 0.05, size = 0, normalized size = 0.00

$$\int \ln (c(ex+d))^{\frac{5}{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(c*(e*x+d))^(5/2),x)
```

```
[Out] int(ln(c*(e*x+d))^(5/2),x)
```

Maxima [C] Result contains complex when optimal does not.
time = 0.29, size = 84, normalized size = 0.86

$$\frac{2\,(cxe+cd)\left(4\,\log\left(cxe+cd\right)^{\frac{5}{2}}-10\,\log\left(cxe+cd\right)^{\frac{3}{2}}+15\,\sqrt{\log\left(cxe+cd\right)}\right)e^{(-1)}+15i\,\sqrt{\pi}\,\mathrm{erf}\left(i\,\sqrt{\log\left(cxe+cd\right)}\right)e^{(-1)}}{8\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(e*x+d))^(5/2),x, algorithm="maxima")
```

```
[Out] 1/8*(2*(c*x*e + c*d)*(4*log(c*x*e + c*d)^(5/2) - 10*log(c*x*e + c*d)^(3/2)
+ 15*sqrt(log(c*x*e + c*d)))*e^(-1) + 15*I*sqrt(pi)*erf(I*sqrt(log(c*x*e +
c*d)))*e^(-1))/c
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(e*x+d))^(5/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: SystemError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(c*(e*x+d))**(5/2),x)
```

```
[Out] Exception raised: SystemError >> excessive stack use: stack is 4369 deep
```

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

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(e*x+d))^(5/2),x, algorithm="giac")
```

```
[Out] integrate(log((x*e + d)*c)^(5/2), x)
```

Mupad [B]
time = 0.21, size = 96, normalized size = 0.98

$$\frac{\ln\left(c\left(d+e\,x\right)\right)^{5/2}\left(\frac{15\,\sqrt{\pi}\,\mathrm{erfc}\left(\sqrt{-\ln\left(c\,\left(d+e\,x\right)\right)}\right)}{8}+c\left(d+e\,x\right)\,\left(\frac{15\,\sqrt{-\ln\left(c\,\left(d+e\,x\right)\right)}}{4}+\frac{5\left(-\ln\left(c\left(d+e\,x\right)\right)\right)^{3/2}}{2}+\left(-\ln\left(c\left(d+e\,x\right)\right)\right)^{5/2}\right)\right)}{c\,e\left(-\ln\left(c\,\left(d+e\,x\right)\right)\right)^{5/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(log(c*(d + e*x))^(5/2),x)
```

```
[Out] (log(c*(d + e*x))^(5/2)*((15*pi^(1/2)*erfc((-log(c*(d + e*x)))^(1/2)))/8 +
c*(d + e*x)*((15*(-log(c*(d + e*x)))^(1/2))/4 + (5*(-log(c*(d + e*x)))^(3/2
))/2 + (-log(c*(d + e*x)))^(5/2))))/(c*e*(-log(c*(d + e*x)))^(5/2))
```

3.10 $\int \log^{\frac{3}{2}}(c(d+ex))\,dx$

Optimal. Leaf size=74

$$\frac{3\sqrt{\pi}\,\mathrm{erfi}\left(\sqrt{\log(c(d+ex))}\right)}{4ce}-\frac{3(d+ex)\sqrt{\log(c(d+ex))}}{2e}+\frac{(d+ex)\log^{\frac{3}{2}}(c(d+ex))}{e}$$

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

Rubi [A]
time = 0.03, antiderivative size = 74, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}} = 0.417$, Rules used = {2436, 2333, 2336, 2211, 2235}

$$\frac{3\sqrt{\pi}\,\mathrm{Erfi}\left(\sqrt{\log(c(d+ex))}\right)}{4ce}+\frac{(d+ex)\log^{\frac{3}{2}}(c(d+ex))}{e}-\frac{3(d+ex)\sqrt{\log(c(d+ex))}}{2e}$$

Antiderivative was successfully verified.

```
[In] Int[Log[c*(d + e*x)]^(3/2),x]
```

```
[Out] (3*Sqrt[Pi]*Erfi[Sqrt[Log[c*(d + e*x)]]])/(4*c*e) - (3*(d + e*x)*Sqrt[Log[c
*(d + e*x)]])/(2*e) + ((d + e*x)*Log[c*(d + e*x)]^(3/2))/e
```

Rule 2211

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - c*(f/d)) + f*g*(x^2/d)), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !TrueQ[$UseGamma]
```

Rule 2235

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[F^a*Sqrt
[Pi]*(Erfi[(c + d*x)*Rt[b*Log[F], 2]]/(2*d*Rt[b*Log[F], 2])), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2333

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

Rule 2336

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

```
c, p}, x] && IntegerQ[1/n]
```

Rule 2436

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

Rubi steps

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

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

$$= -\frac{3(d+ex)\sqrt{\log(c(d+ex))}}{2e} + \frac{(d+ex)\log^{\frac{3}{2}}(c(d+ex))}{e} + \frac{3\text{Subst}\left(\int \frac{1}{\sqrt{\log(cx)}}\right.}{4e}$$

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

$$= -\frac{3(d+ex)\sqrt{\log(c(d+ex))}}{2e} + \frac{(d+ex)\log^{\frac{3}{2}}(c(d+ex))}{e} + \frac{3\text{Subst}\left(\int e^{x^2}\,dx, x, \sqrt{}\right.}{2ce}$$

$$= \frac{3\sqrt{\pi}\,\text{erfi}\left(\sqrt{\log(c(d+ex))}\right)}{4ce} - \frac{3(d+ex)\sqrt{\log(c(d+ex))}}{2e} + \frac{(d+ex)\log^{\frac{3}{2}}(c(d+}{e}$$

Mathematica [A]
time = 0.01, size = 63, normalized size = 0.85

$$\frac{3\sqrt{\pi}\,\text{erfi}\left(\sqrt{\log(c(d+ex))}\right) + 2c(d+ex)\sqrt{\log(c(d+ex))}\,(-3+2\log(c(d+ex)))}{4ce}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[c*(d + e*x)]^(3/2),x]
[Out] (3*Sqrt[Pi]*Erfi[Sqrt[Log[c*(d + e*x)]]] + 2*c*(d + e*x)*Sqrt[Log[c*(d + e*
x)]]*(-3 + 2*Log[c*(d + e*x)]))/(4*c*e)
```

Maple [F]
time = 0.03, size = 0, normalized size = 0.00

$$\int \ln\left(c(ex+d)\right)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(c*(e*x+d))^(3/2),x)
```

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

Maxima [C] Result contains complex when optimal does not.
time = 0.27, size = 70, normalized size = 0.95

$$\frac{2\,(cxe+cd)\Big(2\,\log\left(cxe+cd\right)^{\frac{3}{2}}-3\,\sqrt{\log\left(cxe+cd\right)}\Big)e^{(-1)}-3i\,\sqrt{\pi}\,\operatorname{erf}\left(i\,\sqrt{\log\left(cxe+cd\right)}\right)e^{(-1)}}{4\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(e*x+d))^(3/2),x, algorithm="maxima")
```

```
[Out] 1/4*(2*(c*x*e + c*d)*(2*log(c*x*e + c*d)^(3/2) - 3*sqrt(log(c*x*e + c*d)))*
e^(-1) - 3*I*sqrt(pi)*erf(I*sqrt(log(c*x*e + c*d)))*e^(-1))/c
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(e*x+d))^(3/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [A]
time = 74.03, size = 105, normalized size = 1.42

$$\begin{cases} \tilde{\infty}x & \text{for}\: c=0 \\ x\log\left(cd\right)^{\frac{3}{2}} & \text{for}\: e=0 \\ \frac{\left(-\sqrt{-\log\left(cd+cex\right)}\,(cd+cex)\left(\log\left(cd+cex\right)-\frac{3}{2}\right)+\frac{3\sqrt{\pi}\,\operatorname{erfc}\left(\sqrt{-\log\left(cd+cex\right)}\right)}{4}\right)\log\left(cd+cex\right)^{\frac{3}{2}}}{ce\left(-\log\left(cd+cex\right)\right)^{\frac{3}{2}}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(c*(e*x+d))**(3/2),x)
```

```
[Out] Piecewise((zoo*x, Eq(c, 0)), (x*log(c*d)**(3/2), Eq(e, 0)), ((-sqrt(-log(c*
d + c*e*x))*(c*d + c*e*x)*(log(c*d + c*e*x) - 3/2) + 3*sqrt(pi)*erfc(sqrt(-
log(c*d + c*e*x)))/4)*log(c*d + c*e*x)**(3/2)/(c*e*(-log(c*d + c*e*x))**(3/
2)), True))
```

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

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(e*x+d))^(3/2),x, algorithm="giac")
[Out] integrate(log((x*e + d)*c)^(3/2), x)
```

Mupad [B]
time = 0.17, size = 82, normalized size = 1.11

$$\frac{\ln\left(c\left(d+e\,x\right)\right)^{3/2}\left(\frac{3\,\sqrt{\pi}\,\mathrm{erfc}\left(\sqrt{-\ln\left(c\,\left(d+e\,x\right)\right)}\right)}{4}+c\left(\frac{3\,\sqrt{-\ln\left(c\,\left(d+e\,x\right)\right)}}{2}+\left(-\ln\left(c\left(d+e\,x\right)\right)\right)^{3/2}\right)\,\left(d+e\,x\right)\right)}{c\,e\left(-\ln\left(c\,\left(d+e\,x\right)\right)\right)^{3/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(log(c*(d + e*x))^(3/2),x)
[Out] (log(c*(d + e*x))^(3/2)*((3*pi^(1/2)*erfc((-log(c*(d + e*x)))^(1/2)))/4 + c
*((3*(-log(c*(d + e*x)))^(1/2))/2 + (-log(c*(d + e*x)))^(3/2))*(d + e*x)))/
(c*e*(-log(c*(d + e*x)))^(3/2))
```

3.11 $\int \sqrt{\log(c(d+ex))}\, dx$

Optimal. Leaf size=50

$$-\frac{\sqrt{\pi}\,\text{erfi}\left(\sqrt{\log(c(d+ex))}\right)}{2ce}+\frac{(d+ex)\sqrt{\log(c(d+ex))}}{e}$$

```
[Out] -1/2*erfi(ln(c*(e*x+d))^(1/2))*Pi^(1/2)/c/e+(e*x+d)*ln(c*(e*x+d))^(1/2)/e
```

Rubi [A]
time = 0.02, antiderivative size = 50, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}} = 0.417$, Rules used = {2436, 2333, 2336, 2211, 2235}

$$\frac{(d+ex)\sqrt{\log(c(d+ex))}}{e}-\frac{\sqrt{\pi}\,\text{Erfi}\left(\sqrt{\log(c(d+ex))}\right)}{2ce}$$

Antiderivative was successfully verified.

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

```
[Out] -1/2*(Sqrt[Pi]*Erfi[Sqrt[Log[c*(d + e*x)]]])/(c*e) + ((d + e*x)*Sqrt[Log[c*
(d + e*x)]])/e
```

Rule 2211

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - c*(f/d)) + f*g*(x^2/d)), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !TrueQ[$UseGamma]
```

Rule 2235

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[F^a*Sqrt
[Pi]*(Erfi[(c + d*x)*Rt[b*Log[F], 2]]/(2*d*Rt[b*Log[F], 2])), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2333

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

Rule 2336

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

```
c, p}, x] && IntegerQ[1/n]
```

Rule 2436

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

Rubi steps

$$
\begin{aligned}
\int \sqrt{\log(c(d+ex))}\,dx &= \frac{\text{Subst}\left(\int \sqrt{\log(cx)}\,dx, x, d+ex\right)}{e}\\
&= \frac{(d+ex)\sqrt{\log(c(d+ex))}}{e} - \frac{\text{Subst}\left(\int \frac{1}{\sqrt{\log(cx)}}\,dx, x, d+ex\right)}{2e}\\
&= \frac{(d+ex)\sqrt{\log(c(d+ex))}}{e} - \frac{\text{Subst}\left(\int \frac{e^x}{\sqrt{x}}\,dx, x, \log(c(d+ex))\right)}{2ce}\\
&= \frac{(d+ex)\sqrt{\log(c(d+ex))}}{e} - \frac{\text{Subst}\left(\int e^{x^2}\,dx, x, \sqrt{\log(c(d+ex))}\right)}{ce}\\
&= -\frac{\sqrt{\pi}\,\text{erfi}\left(\sqrt{\log(c(d+ex))}\right)}{2ce} + \frac{(d+ex)\sqrt{\log(c(d+ex))}}{e}
\end{aligned}
$$

Mathematica [A]
time = 0.01, size = 50, normalized size = 1.00

$$
-\frac{\sqrt{\pi}\,\text{erfi}\left(\sqrt{\log(c(d+ex))}\right)}{2ce} + \frac{(d+ex)\sqrt{\log(c(d+ex))}}{e}
$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[Log[c*(d + e*x)]],x]
[Out] -1/2*(Sqrt[Pi]*Erfi[Sqrt[Log[c*(d + e*x)]]])/(c*e) + ((d + e*x)*Sqrt[Log[c*
(d + e*x)]])/e
```

Maple [F]
time = 0.02, size = 0, normalized size = 0.00

$$
\int \sqrt{\ln\left(c\left(ex+d\right)\right)}\,dx
$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

Maxima [C] Result contains complex when optimal does not.
time = 0.28, size = 53, normalized size = 1.06

$$-\frac{-i\sqrt{\pi}\,\operatorname{erf}\left(i\sqrt{\log\left(cxe+cd\right)}\right)e^{(-1)}-2\left(cxe+cd\right)e^{(-1)}\sqrt{\log\left(cxe+cd\right)}}{2\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(e*x+d))^(1/2),x, algorithm="maxima")
```

```
[Out] -1/2*(-I*sqrt(pi)*erf(I*sqrt(log(c*x*e + c*d)))*e^(-1) - 2*(c*x*e + c*d)*e^
(-1)*sqrt(log(c*x*e + c*d)))/c
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(e*x+d))^(1/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [B] Leaf count of result is larger than twice the leaf count of optimal. 90 vs. $2(41) = 82$.
time = 1.14, size = 90, normalized size = 1.80

$$\begin{cases} \tilde{\infty}x & \text{for } c=0 \\ x\sqrt{\log\left(cd\right)} & \text{for } e=0 \\ \frac{\left(\sqrt{-\log\left(cd+cex\right)}\left(cd+cex\right)+\frac{\sqrt{\pi}\operatorname{erfc}\left(\sqrt{-\log\left(cd+cex\right)}\right)}{2}\right)\sqrt{\log\left(cd+cex\right)}}{ce\sqrt{-\log\left(cd+cex\right)}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Piecewise((zoo*x, Eq(c, 0)), (x*sqrt(log(c*d)), Eq(e, 0)), ((sqrt(-log(c*d
+ c*e*x))*(c*d + c*e*x) + sqrt(pi)*erfc(sqrt(-log(c*d + c*e*x)))/2)*sqrt(lo
g(c*d + c*e*x))/(c*e*sqrt(-log(c*d + c*e*x))), True))
```

Giac [C] Result contains complex when optimal does not.
time = 3.34, size = 53, normalized size = 1.06

$$-\frac{i\sqrt{\pi}\,\operatorname{erf}\left(-i\sqrt{\log\left(cxe+cd\right)}\right)e^{(-1)}}{2\,c}+\frac{(cxe+cd)e^{(-1)}\sqrt{\log\left(cxe+cd\right)}}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(e*x+d))^(1/2),x, algorithm="giac")
```

```
[Out] -1/2*I*sqrt(pi)*erf(-I*sqrt(log(c*x*e + c*d)))*e^(-1)/c + (c*x*e + c*d)*e^(
-1)*sqrt(log(c*x*e + c*d))/c
```

Mupad [B]
time = 0.18, size = 46, normalized size = 0.92

$$\frac{\sqrt{\ln\left(c\,\left(d+e\,x\right)\right)}\,\left(d+e\,x\right)}{e}+\frac{\sqrt{\pi}\,\operatorname{erf}\left(\sqrt{\ln\left(c\,\left(d+e\,x\right)\right)}\,1\mathrm{i}\right)\,1\mathrm{i}}{2\,c\,e}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] (log(c*(d + e*x))^(1/2)*(d + e*x))/e + (pi^(1/2)*erf(log(c*(d + e*x))^(1/2)
*1i)*1i)/(2*c*e)
```

3.12 $\int \frac{1}{\sqrt{\log(c(d+ex))}}\,dx$

Optimal. Leaf size=25

$$\frac{\sqrt{\pi}\,\mathrm{erfi}\left(\sqrt{\log(c(d+ex))}\right)}{ce}$$

```
[Out] erfi(ln(c*(e*x+d))^(1/2))*Pi^(1/2)/c/e
```

Rubi [A]
time = 0.02, antiderivative size = 25, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}} = 0.333$, Rules used = {2436, 2336, 2211, 2235}

$$\frac{\sqrt{\pi}\,\mathrm{Erfi}\left(\sqrt{\log(c(d+ex))}\right)}{ce}$$

Antiderivative was successfully verified.

```
[In] Int[1/Sqrt[Log[c*(d + e*x)]],x]
```

```
[Out] (Sqrt[Pi]*Erfi[Sqrt[Log[c*(d + e*x)]]])/(c*e)
```

Rule 2211

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - c*(f/d)) + f*g*(x^2/d)), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !TrueQ[$UseGamma]
```

Rule 2235

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[F^a*Sqrt
[Pi]*(Erfi[(c + d*x)*Rt[b*Log[F], 2]]/(2*d*Rt[b*Log[F], 2])), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2336

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

Rule 2436

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

Rubi steps

$$\int \frac{1}{\sqrt{\log(c(d+ex))}}\,dx = \frac{\text{Subst}\left(\int \frac{1}{\sqrt{\log(cx)}}\,dx, x, d+ex\right)}{e}$$
$$= \frac{\text{Subst}\left(\int \frac{e^x}{\sqrt{x}}\,dx, x, \log(c(d+ex))\right)}{ce}$$
$$= \frac{2\text{Subst}\left(\int e^{x^2}\,dx, x, \sqrt{\log(c(d+ex))}\right)}{ce}$$
$$= \frac{\sqrt{\pi}\,\text{erfi}\left(\sqrt{\log(c(d+ex))}\right)}{ce}$$

Mathematica [A]
time = 0.00, size = 25, normalized size = 1.00

$$\frac{\sqrt{\pi}\,\text{erfi}\left(\sqrt{\log(c(d+ex))}\right)}{ce}$$

Antiderivative was successfully verified.

```
[In] Integrate[1/Sqrt[Log[c*(d + e*x)]],x]
[Out] (Sqrt[Pi]*Erfi[Sqrt[Log[c*(d + e*x)]]])/(c*e)
```

Maple [F]
time = 0.03, size = 0, normalized size = 0.00

$$\int \frac{1}{\sqrt{\ln\left(c\left(ex+d\right)\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

Maxima [C] Result contains complex when optimal does not.
time = 0.26, size = 25, normalized size = 1.00

$$-\frac{i\sqrt{\pi}\,\text{erf}\left(i\sqrt{\log\left(cxe+cd\right)}\right)e^{(-1)}}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/log(c*(e*x+d))^(1/2),x, algorithm="maxima")
```

```
[Out] -I*sqrt(pi)*erf(I*sqrt(log(c*x*e + c*d)))*e^(-1)/c
```

Fricas [**F(-2)**]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/log(c*(e*x+d))^(1/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [**B**] Leaf count of result is larger than twice the leaf count of optimal. 63 vs. $2(20) = 40$.
time = 1.12, size = 63, normalized size = 2.52

$$\begin{cases} 0 & \text{for}\ c = 0 \\ \frac{x}{\sqrt{\log{(cd)}}} & \text{for}\ e = 0 \\ \frac{\sqrt{\pi}\sqrt{-\log{(cd + cex)}}\ \text{erfc}\left(\sqrt{-\log{(cd + cex)}}\right)}{ce\sqrt{\log{(cd + cex)}}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Piecewise((0, Eq(c, 0)), (x/sqrt(log(c*d)), Eq(e, 0)), (sqrt(pi)*sqrt(-log(
c*d + c*e*x))*erfc(sqrt(-log(c*d + c*e*x)))/(c*e*sqrt(log(c*d + c*e*x))), T
rue))
```

Giac [**C**] Result contains complex when optimal does not.
time = 2.89, size = 25, normalized size = 1.00

$$\frac{i\sqrt{\pi}\ \text{erf}\left(-i\sqrt{\log{(cxe + cd)}}\right)e^{(-1)}}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/log(c*(e*x+d))^(1/2),x, algorithm="giac")
```

```
[Out] I*sqrt(pi)*erf(-I*sqrt(log(c*x*e + c*d)))*e^(-1)/c
```

Mupad [B]
time = 0.15, size = 45, normalized size = 1.80

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

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/log(c*(d + e*x))^(1/2),x)
[Out] (pi^(1/2)*(-log(c*(d + e*x)))^(1/2)*erfc((-log(c*(d + e*x)))^(1/2)))/(c*e*l
og(c*(d + e*x))^(1/2))
```

3.13 $\int \frac{1}{\log^{\frac{3}{2}}(c(d+ex))}\,dx$

Optimal. Leaf size=49

$$\frac{2\sqrt{\pi}\,\mathrm{erfi}\left(\sqrt{\log(c(d+ex))}\right)}{ce}-\frac{2(d+ex)}{e\sqrt{\log(c(d+ex))}}$$

```
[Out] 2*erfi(ln(c*(e*x+d))^(1/2))*Pi^(1/2)/c/e-2*(e*x+d)/e/ln(c*(e*x+d))^(1/2)
```

Rubi [A]
time = 0.02, antiderivative size = 49, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}} = 0.417$, Rules used = {2436, 2334, 2336, 2211, 2235}

$$\frac{2\sqrt{\pi}\,\mathrm{Erfi}\left(\sqrt{\log(c(d+ex))}\right)}{ce}-\frac{2(d+ex)}{e\sqrt{\log(c(d+ex))}}$$

Antiderivative was successfully verified.

```
[In] Int[Log[c*(d + e*x)]^(-3/2),x]
```

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

Rule 2211

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - c*(f/d)) + f*g*(x^2/d)), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !TrueQ[$UseGamma]
```

Rule 2235

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[F^a*Sqrt
[Pi]*(Erfi[(c + d*x)*Rt[b*Log[F], 2]]/(2*d*Rt[b*Log[F], 2])), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2334

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

Rule 2336

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

Rule 2436

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

Rubi steps

$$\begin{aligned}
\int \frac{1}{\log^{\frac{3}{2}}(c(d+ex))}\,dx &= \frac{\text{Subst}\left(\int \frac{1}{\log^{\frac{3}{2}}(cx)}\,dx, x, d+ex\right)}{e}\\
&= -\frac{2(d+ex)}{e\sqrt{\log(c(d+ex))}} + \frac{2\text{Subst}\left(\int \frac{1}{\sqrt{\log(cx)}}\,dx, x, d+ex\right)}{e}\\
&= -\frac{2(d+ex)}{e\sqrt{\log(c(d+ex))}} + \frac{2\text{Subst}\left(\int \frac{e^x}{\sqrt{x}}\,dx, x, \log(c(d+ex))\right)}{ce}\\
&= -\frac{2(d+ex)}{e\sqrt{\log(c(d+ex))}} + \frac{4\text{Subst}\left(\int e^{x^2}\,dx, x, \sqrt{\log(c(d+ex))}\right)}{ce}\\
&= \frac{2\sqrt{\pi}\,\text{erfi}\left(\sqrt{\log(c(d+ex))}\right)}{ce} - \frac{2(d+ex)}{e\sqrt{\log(c(d+ex))}}
\end{aligned}$$

Mathematica [A]
time = 0.06, size = 58, normalized size = 1.18

$$\frac{-2c(d+ex) + 2\Gamma\left(\frac{1}{2}, -\log(c(d+ex))\right)\sqrt{-\log(c(d+ex))}}{ce\sqrt{\log(c(d+ex))}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[c*(d + e*x)]^(-3/2),x]
```

```
[Out] (-2*c*(d + e*x) + 2*Gamma[1/2, -Log[c*(d + e*x)]]*Sqrt[-Log[c*(d + e*x)]])/
(c*e*Sqrt[Log[c*(d + e*x)]])
```

Maple [F]
time = 0.03, size = 0, normalized size = 0.00

$$\int \frac{1}{\ln\left(c\left(ex+d\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/ln(c*(e*x+d))^(3/2),x)
[Out] int(1/ln(c*(e*x+d))^(3/2),x)
```

Maxima [A]
time = 0.33, size = 47, normalized size = 0.96

$$-\frac{\sqrt{-\log\left(cxe+cd\right)}\,e^{(-1)}\Gamma\left(-\frac{1}{2},-\log\left(cxe+cd\right)\right)}{c\sqrt{\log\left(cxe+cd\right)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/log(c*(e*x+d))^(3/2),x, algorithm="maxima")
[Out] -sqrt(-log(c*x*e + c*d))*e^(-1)*gamma(-1/2, -log(c*x*e + c*d))/(c*sqrt(log(
c*x*e + c*d)))
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/log(c*(e*x+d))^(3/2),x, algorithm="fricas")
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [B] Leaf count of result is larger than twice the leaf count of optimal. 92 vs. 2(44) = 88.
time = 16.97, size = 92, normalized size = 1.88

$$\begin{cases} 0 & \text{for}\ c=0 \\ \frac{x}{\log\left(cd\right)^{\frac{3}{2}}} & \text{for}\ e=0 \\ \frac{\left(-\log\left(cd+cex\right)\right)^{\frac{3}{2}}\left(-2\sqrt{\pi}\,\operatorname{erfc}\left(\sqrt{-\log\left(cd+cex\right)}\right)+\frac{2(cd+cex)}{\sqrt{-\log\left(cd+cex\right)}}\right)}{ce\log\left(cd+cex\right)^{\frac{3}{2}}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Piecewise((0, Eq(c, 0)), (x/log(c*d)**(3/2), Eq(e, 0)), ((-log(c*d + c*e*x)
)**(3/2)*(-2*sqrt(pi)*erfc(sqrt(-log(c*d + c*e*x))) + 2*(c*d + c*e*x)/sqrt(
-log(c*d + c*e*x)))/(c*e*log(c*d + c*e*x)**(3/2)), True))
```

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

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/log(c*(e*x+d))^(3/2),x, algorithm="giac")
```

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

Mupad [B]
time = 0.16, size = 67, normalized size = 1.37

$$-\frac{2\,\left(d+e\,x\right)}{e\,\sqrt{\ln\left(c\,\left(d+e\,x\right)\right)}}-\frac{2\,\sqrt{\pi }\,{\left(-\ln\left(c\,\left(d+e\,x\right)\right)\right)}^{3/2}\,\mathrm{erfc}\left(\sqrt{-\ln\left(c\,\left(d+e\,x\right)\right)}\right)}{c\,e\,{\ln\left(c\,\left(d+e\,x\right)\right)}^{3/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

3.14 $\int \frac{1}{\log^{\frac{5}{2}}(c(d+ex))}\,dx$

Optimal. Leaf size=77

$$\frac{4\sqrt{\pi}\,\mathrm{erfi}\left(\sqrt{\log(c(d+ex))}\right)}{3ce}-\frac{2(d+ex)}{3e\log^{\frac{3}{2}}(c(d+ex))}-\frac{4(d+ex)}{3e\sqrt{\log(c(d+ex))}}$$

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

Rubi [A]
time = 0.03, antiderivative size = 77, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}} = 0.417$, Rules used = {2436, 2334, 2336, 2211, 2235}

$$\frac{4\sqrt{\pi}\,\mathrm{Erfi}\left(\sqrt{\log(c(d+ex))}\right)}{3ce}-\frac{2(d+ex)}{3e\log^{\frac{3}{2}}(c(d+ex))}-\frac{4(d+ex)}{3e\sqrt{\log(c(d+ex))}}$$

Antiderivative was successfully verified.

```
[In] Int[Log[c*(d + e*x)]^(-5/2),x]
```

```
[Out] (4*Sqrt[Pi]*Erfi[Sqrt[Log[c*(d + e*x)]]])/(3*c*e) - (2*(d + e*x))/(3*e*Log[
c*(d + e*x)]^(3/2)) - (4*(d + e*x))/(3*e*Sqrt[Log[c*(d + e*x)]])
```

Rule 2211

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - c*(f/d)) + f*g*(x^2/d)), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !TrueQ[$UseGamma]
```

Rule 2235

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[F^a*Sqrt
[Pi]*(Erfi[(c + d*x)*Rt[b*Log[F], 2]]/(2*d*Rt[b*Log[F], 2])), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2334

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

Rule 2336

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

Rule 2436

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

Rubi steps

$$\begin{aligned}
\int \frac{1}{\log^{\frac{5}{2}}(c(d+ex))}\,dx &= \frac{\text{Subst}\left(\int \frac{1}{\log^{\frac{5}{2}}(cx)}\,dx, x, d+ex\right)}{e} \\
&= -\frac{2(d+ex)}{3e\log^{\frac{3}{2}}(c(d+ex))} + \frac{2\text{Subst}\left(\int \frac{1}{\log^{\frac{3}{2}}(cx)}\,dx, x, d+ex\right)}{3e} \\
&= -\frac{2(d+ex)}{3e\log^{\frac{3}{2}}(c(d+ex))} - \frac{4(d+ex)}{3e\sqrt{\log(c(d+ex))}} + \frac{4\text{Subst}\left(\int \frac{1}{\sqrt{\log(cx)}}\,dx, x, d+ex\right)}{3e} \\
&= -\frac{2(d+ex)}{3e\log^{\frac{3}{2}}(c(d+ex))} - \frac{4(d+ex)}{3e\sqrt{\log(c(d+ex))}} + \frac{4\text{Subst}\left(\int \frac{e^x}{\sqrt{x}}\,dx, x, \log(c(d+ex))\right)}{3ce} \\
&= -\frac{2(d+ex)}{3e\log^{\frac{3}{2}}(c(d+ex))} - \frac{4(d+ex)}{3e\sqrt{\log(c(d+ex))}} + \frac{8\text{Subst}\left(\int e^{x^2}\,dx, x, \sqrt{\log(c(d+ex))}\right)}{3ce} \\
&= \frac{4\sqrt{\pi}\,\text{erfi}\left(\sqrt{\log(c(d+ex))}\right)}{3ce} - \frac{2(d+ex)}{3e\log^{\frac{3}{2}}(c(d+ex))} - \frac{4(d+ex)}{3e\sqrt{\log(c(d+ex))}}
\end{aligned}$$

Mathematica [A]
time = 0.06, size = 72, normalized size = 0.94

$$-\frac{2\left(2\Gamma\left(\frac{1}{2},-\log(c(d+ex))\right)\left(-\log(c(d+ex))\right)^{3/2}+c(d+ex)(1+2\log(c(d+ex)))\right)}{3ce\log^{\frac{3}{2}}(c(d+ex))}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[c*(d + e*x)]^(-5/2),x]
```

```
[Out] (-2*(2*Gamma[1/2, -Log[c*(d + e*x)]]*(-Log[c*(d + e*x)])^(3/2) + c*(d + e*x
)*(1 + 2*Log[c*(d + e*x)])))/(3*c*e*Log[c*(d + e*x)]^(3/2))
```

Maple [F]
time = 0.03, size = 0, normalized size = 0.00

$$\int \frac{1}{\ln \left(c \left(ex+d\right)\right)^{\frac{5}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/ln(c*(e*x+d))^(5/2),x)
```

```
[Out] int(1/ln(c*(e*x+d))^(5/2),x)
```

Maxima [A]
time = 0.32, size = 47, normalized size = 0.61

$$-\frac{\left(-\log \left(cxe+cd\right)\right)^{\frac{3}{2}} e^{(-1)}\Gamma\left(-\frac{3}{2}, -\log \left(cxe+cd\right)\right)}{c \log \left(cxe+cd\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/log(c*(e*x+d))^(5/2),x, algorithm="maxima")
```

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

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/log(c*(e*x+d))^(5/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [F(-1)] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/ln(c*(e*x+d))**(5/2),x)
```

```
[Out] Timed out
```

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

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/log(c*(e*x+d))^(5/2),x, algorithm="giac")
```

```
[Out] integrate(log((x*e + d)*c)^(-5/2), x)
```

Mupad [B]
time = 0.18, size = 113, normalized size = 1.47

$$\frac{4\sqrt{\pi}\,\left(-\ln\left(c\,(d+e\,x)\right)\right)^{5/2}\,\mathrm{erfc}\left(\sqrt{-\ln\left(c\,(d+e\,x)\right)}\right)}{3\,c\,e\ln\left(c\,(d+e\,x)\right)^{5/2}}-\frac{4\,d\ln\left(c\,(d+e\,x)\right)^2+2\,d\,\ln\left(c\,(d+e\,x)\right)+2\,e\,x\,\ln\left(c\,(d+e\,x)\right)+4\,e\,x\ln\left(c\,(d+e\,x)\right)^2}{3\,e\ln\left(c\,(d+e\,x)\right)^{5/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/log(c*(d + e*x))^(5/2),x)
```

```
[Out] (4*pi^(1/2)*(-log(c*(d + e*x)))^(5/2)*erfc((-log(c*(d + e*x)))^(1/2)))/(3*c
*e*log(c*(d + e*x))^(5/2)) - (4*d*log(c*(d + e*x))^2 + 2*d*log(c*(d + e*x))
 + 2*e*x*log(c*(d + e*x)) + 4*e*x*log(c*(d + e*x))^2)/(3*e*log(c*(d + e*x))
^(5/2))
```

3.15 $\int \frac{1}{\log^{\frac{7}{2}}(c(d+ex))} dx$

Optimal. Leaf size=101

$$\frac{8\sqrt{\pi}\,\mathrm{erfi}\left(\sqrt{\log(c(d+ex))}\right)}{15ce}-\frac{2(d+ex)}{5e\log^{\frac{5}{2}}(c(d+ex))}-\frac{4(d+ex)}{15e\log^{\frac{3}{2}}(c(d+ex))}-\frac{8(d+ex)}{15e\sqrt{\log(c(d+ex))}}$$

```
[Out] -2/5*(e*x+d)/e/ln(c*(e*x+d))^(5/2)-4/15*(e*x+d)/e/ln(c*(e*x+d))^(3/2)+8/15*
erfi(ln(c*(e*x+d))^(1/2))*Pi^(1/2)/c/e-8/15*(e*x+d)/e/ln(c*(e*x+d))^(1/2)
```

Rubi [A]
time = 0.04, antiderivative size = 101, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}} = 0.417$, Rules used = {2436, 2334, 2336, 2211, 2235}

$$\frac{8\sqrt{\pi}\,\mathrm{Erfi}\left(\sqrt{\log(c(d+ex))}\right)}{15ce}-\frac{4(d+ex)}{15e\log^{\frac{3}{2}}(c(d+ex))}-\frac{2(d+ex)}{5e\log^{\frac{5}{2}}(c(d+ex))}-\frac{8(d+ex)}{15e\sqrt{\log(c(d+ex))}}$$

Antiderivative was successfully verified.

```
[In] Int[Log[c*(d + e*x)]^(-7/2),x]
```

```
[Out] (8*Sqrt[Pi]*Erfi[Sqrt[Log[c*(d + e*x)]]])/(15*c*e) - (2*(d + e*x))/(5*e*Log
[c*(d + e*x)]^(5/2)) - (4*(d + e*x))/(15*e*Log[c*(d + e*x)]^(3/2)) - (8*(d
+ e*x))/(15*e*Sqrt[Log[c*(d + e*x)]])
```

Rule 2211

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - c*(f/d)) + f*g*(x^2/d)), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !TrueQ[$UseGamma]
```

Rule 2235

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[F^a*Sqrt
[Pi]*(Erfi[(c + d*x)*Rt[b*Log[F], 2]]/(2*d*Rt[b*Log[F], 2])), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2334

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

Rule 2336

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

Rule 2436

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

Rubi steps

$$\int \frac{1}{\log^{\frac{7}{2}}(c(d+ex))}\,dx = \frac{\text{Subst}\left(\int \frac{1}{\log^{\frac{7}{2}}(cx)}\,dx, x, d+ex\right)}{e}$$

$$= -\frac{2(d+ex)}{5e\log^{\frac{5}{2}}(c(d+ex))} + \frac{2\text{Subst}\left(\int \frac{1}{\log^{\frac{5}{2}}(cx)}\,dx, x, d+ex\right)}{5e}$$

$$= -\frac{2(d+ex)}{5e\log^{\frac{5}{2}}(c(d+ex))} - \frac{4(d+ex)}{15e\log^{\frac{3}{2}}(c(d+ex))} + \frac{4\text{Subst}\left(\int \frac{1}{\log^{\frac{3}{2}}(cx)}\,dx, x, d+ex\right)}{15e}$$

$$= -\frac{2(d+ex)}{5e\log^{\frac{5}{2}}(c(d+ex))} - \frac{4(d+ex)}{15e\log^{\frac{3}{2}}(c(d+ex))} - \frac{8(d+ex)}{15e\sqrt{\log(c(d+ex))}} + \frac{8\text{Subst}\left(\int \right.}{}$$

$$= -\frac{2(d+ex)}{5e\log^{\frac{5}{2}}(c(d+ex))} - \frac{4(d+ex)}{15e\log^{\frac{3}{2}}(c(d+ex))} - \frac{8(d+ex)}{15e\sqrt{\log(c(d+ex))}} + \frac{8\text{Subst}\left(\int \right.}{}$$

$$= -\frac{2(d+ex)}{5e\log^{\frac{5}{2}}(c(d+ex))} - \frac{4(d+ex)}{15e\log^{\frac{3}{2}}(c(d+ex))} - \frac{8(d+ex)}{15e\sqrt{\log(c(d+ex))}} + \frac{16\text{Subst}\left(\int \right.}{}$$

$$= \frac{8\sqrt{\pi}\,\text{erfi}\left(\sqrt{\log(c(d+ex))}\right)}{15ce} - \frac{2(d+ex)}{5e\log^{\frac{5}{2}}(c(d+ex))} - \frac{4(d+ex)}{15e\log^{\frac{3}{2}}(c(d+ex))} - \frac{}{15e\sqrt{}}$$

Mathematica [A]
time = 0.06, size = 85, normalized size = 0.84

$$\frac{8\Gamma\left(\frac{1}{2}, -\log(c(d+ex))\right)(-\log(c(d+ex)))^{5/2} - 2c(d+ex)\left(3+2\log(c(d+ex))+4\log^2(c(d+ex))\right)}{15ce\log^{\frac{5}{2}}(c(d+ex))}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[c*(d + e*x)]^(-7/2),x]
```

```
[Out] (8*Gamma[1/2, -Log[c*(d + e*x)]]*(-Log[c*(d + e*x)])^(5/2) - 2*c*(d + e*x)*
(3 + 2*Log[c*(d + e*x)] + 4*Log[c*(d + e*x)]^2))/(15*c*e*Log[c*(d + e*x)]^(
5/2))
```

Maple [F]
time = 0.03, size = 0, normalized size = 0.00

$$\int \frac{1}{\ln\left(c\left(ex+d\right)\right)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/ln(c*(e*x+d))^(7/2),x)
```

```
[Out] int(1/ln(c*(e*x+d))^(7/2),x)
```

Maxima [A]
time = 0.33, size = 47, normalized size = 0.47

$$-\frac{\left(-\log\left(cxe+cd\right)\right)^{\frac{5}{2}}e^{(-1)}\Gamma\left(-\frac{5}{2},-\log\left(cxe+cd\right)\right)}{c\log\left(cxe+cd\right)^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/log(c*(e*x+d))^(7/2),x, algorithm="maxima")
```

```
[Out] -(-log(c*x*e + c*d))^(5/2)*e^(-1)*gamma(-5/2, -log(c*x*e + c*d))/(c*log(c*x
*e + c*d)^(5/2))
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/log(c*(e*x+d))^(7/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: SystemError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/ln(c*(e*x+d))**(7/2),x)
```

```
[Out] Exception raised: SystemError >> excessive stack use: stack is 6190 deep
```

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

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/log(c*(e*x+d))^(7/2),x, algorithm="giac")
```

```
[Out] integrate(log((x*e + d)*c)^(-7/2), x)
```

Mupad [B]
time = 0.19, size = 140, normalized size = 1.39

$$-\frac{4\,d\ln\left(c\,(d+e\,x)\right)^2+8\,d\ln\left(c\,(d+e\,x)\right)^3+6\,d\,\ln\left(c\,(d+e\,x)\right)+6\,e\,x\,\ln\left(c\,(d+e\,x)\right)+4\,e\,x\ln\left(c\,(d+e\,x)\right)^2+8\,e\,x\ln\left(c\,(d+e\,x)\right)^3}{15\,e\ln\left(c\,\left(d+e\,x\right)\right)^{7/2}}-\frac{8\,\sqrt{\pi}\,\left(-\ln\left(c\,(d+e\,x)\right)\right)^{7/2}\mathrm{erfc}\left(\sqrt{-\ln\left(c\,\left(d+e\,x\right)\right)}\right)}{15\,c\,e\ln\left(c\,\left(d+e\,x\right)\right)^{7/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/log(c*(d + e*x))^(7/2),x)
```

```
[Out] - (4*d*log(c*(d + e*x))^2 + 8*d*log(c*(d + e*x))^3 + 6*d*log(c*(d + e*x)) +
 6*e*x*log(c*(d + e*x)) + 4*e*x*log(c*(d + e*x))^2 + 8*e*x*log(c*(d + e*x))
^3)/(15*e*log(c*(d + e*x))^(7/2)) - (8*pi^(1/2)*(-log(c*(d + e*x)))^(7/2)*e
rfc((-log(c*(d + e*x)))^(1/2)))/(15*c*e*log(c*(d + e*x))^(7/2))
```

3.16 $\int \log^p(c(d+ex))\,dx$

Optimal. Leaf size=45

$$\frac{\Gamma(1+p,-\log(c(d+ex)))(-\log(c(d+ex)))^{-p}\log^p(c(d+ex))}{ce}$$

```
[Out] GAMMA(1+p,-ln(c*(e*x+d)))*ln(c*(e*x+d))^p/c/e/((-ln(c*(e*x+d)))^p)
```

Rubi [A]
time = 0.02, antiderivative size = 45, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}} = 0.300$, Rules used = {2436, 2336, 2212}

$$\frac{(-\log(c(d+ex)))^{-p}\log^p(c(d+ex))\text{Gamma}(p+1,-\log(c(d+ex)))}{ce}$$

Antiderivative was successfully verified.

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

```
[Out] (Gamma[1 + p, -Log[c*(d + e*x)]]*Log[c*(d + e*x)]^p)/(c*e*(-Log[c*(d + e*x)
])^p)
```

Rule 2212

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))*((c_.) + (d_.)*(x_))^(m_), x_Symbol]
:> Simp[(-F^(g*(e - c*(f/d))))*((c + d*x)^FracPart[m]/(d*((-f)*g*(Log[F]/d)
)^(IntPart[m] + 1)*((-f)*g*Log[F]*((c + d*x)/d))^FracPart[m]))*Gamma[m + 1,
 ((-f)*g*(Log[F]/d))*(c + d*x)], x] /; FreeQ[{F, c, d, e, f, g, m}, x] &&
!IntegerQ[m]
```

Rule 2336

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

Rule 2436

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

Rubi steps

$$\int \log^p(c(d+ex))\,dx = \frac{\text{Subst}\left(\int \log^p(cx)\,dx, x, d+ex\right)}{e}$$
$$= \frac{\text{Subst}\left(\int e^x x^p\,dx, x, \log(c(d+ex))\right)}{ce}$$
$$= \frac{\Gamma(1+p, -\log(c(d+ex)))(-\log(c(d+ex)))^{-p}\log^p(c(d+ex))}{ce}$$

Mathematica [A]
time = 0.02, size = 45, normalized size = 1.00

$$\frac{\Gamma(1+p, -\log(c(d+ex)))(-\log(c(d+ex)))^{-p}\log^p(c(d+ex))}{ce}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[c*(d + e*x)]^p,x]
[Out] (Gamma[1 + p, -Log[c*(d + e*x)]]*Log[c*(d + e*x)]^p)/(c*e*(-Log[c*(d + e*x)
])^p)
```

Maple [F]
time = 0.02, size = 0, normalized size = 0.00

$$\int \ln\left(c(ex+d)\right)^p\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

Maxima [A]
time = 0.08, size = 55, normalized size = 1.22

$$-\frac{(-\log(cxe+cd))^{-p-1}\log(cxe+cd)^{p+1}e^{(-1)}\Gamma(p+1, -\log(cxe+cd))}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

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

Fricas [A]
time = 0.11, size = 26, normalized size = 0.58

$$\frac{\cos\left(\pi p\right)e^{(-1)}\Gamma(p+1,-\log\left(cxe+cd\right))}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] cos(pi*p)*e^(-1)*gamma(p + 1, -log(c*x*e + c*d))/c
```

Sympy [A]
time = 3.95, size = 54, normalized size = 1.20

$$\begin{cases} \tilde{\infty}^{p}x & \text{for}\ c=0 \\ x\log\left(cd\right)^{p} & \text{for}\ e=0 \\ \frac{(-\log\left(cd+cex\right))^{-p}\log\left(cd+cex\right)^{p}\Gamma(p+1,-\log\left(cd+cex\right))}{ce} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Piecewise((zoo**p*x, Eq(c, 0)), (x*log(c*d)**p, Eq(e, 0)), (log(c*d + c*e*x
)**p*uppergamma(p + 1, -log(c*d + c*e*x))/(c*e*(-log(c*d + c*e*x))**p), Tru
e))
```

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

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate(log((x*e + d)*c)^p, x)
```

Mupad [B]
time = 0.18, size = 45, normalized size = 1.00

$$\frac{\ln\left(c\left(d+e\,x\right)\right)^{p}\,\Gamma(p+1,-\ln\left(c\left(d+e\,x\right)\right))}{c\,e\left(-\ln\left(c\,\left(d+e\,x\right)\right)\right)^{p}}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] (log(c*(d + e*x))^p*igamma(p + 1, -log(c*(d + e*x))))/(c*e*(-log(c*(d + e*x
)))^p)
```

3.17 $\int (a+b\log(c(d+ex)^n))^4 \, dx$

Optimal. Leaf size=131

$$-24ab^3n^3x+24b^4n^4x-\frac{24b^4n^3(d+ex)\log(c(d+ex)^n)}{e}+\frac{12b^2n^2(d+ex)(a+b\log(c(d+ex)^n))^2}{e}-\frac{4bn(d+$$

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

Rubi [A]
time = 0.05, antiderivative size = 131, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 3, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}} = 0.188$, Rules used = {2436, 2333, 2332}

$$-24ab^3n^3x+\frac{12b^2n^2(d+ex)(a+b\log(c(d+ex)^n))^2}{e}-\frac{4bn(d+ex)(a+b\log(c(d+ex)^n))^3}{e}+\frac{(d+ex)(a+b\log(c(d+ex)^n))^4}{e}-\frac{24b^4n^3(d+ex)\log(c(d+ex)^n)}{e}+24b^4n^4x$$

Antiderivative was successfully verified.

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

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

Rule 2332

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

Rule 2333

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

Rule 2436

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

Rubi steps

$$
\begin{aligned}
\int (a+b\log(c(d+ex)^n))^4\,dx &= \frac{\text{Subst}\left(\int (a+b\log(cx^n))^4\,dx,x,d+ex\right)}{e} \\
&= \frac{(d+ex)\,(a+b\log(c(d+ex)^n))^4}{e} - \frac{(4bn)\text{Subst}\left(\int (a+b\log(cx^n))^3\,dx,x,\right.}{e} \\
&= -\frac{4bn(d+ex)\,(a+b\log(c(d+ex)^n))^3}{e} + \frac{(d+ex)\,(a+b\log(c(d+ex)^n))^4}{e} \\
&= \frac{12b^2n^2(d+ex)\,(a+b\log(c(d+ex)^n))^2}{e} - \frac{4bn(d+ex)\,(a+b\log(c(d+ex}{e} \\
&= -24ab^3n^3x + \frac{12b^2n^2(d+ex)\,(a+b\log(c(d+ex)^n))^2}{e} - \frac{4bn(d+ex)\,(a+b}{e} \\
&= -24ab^3n^3x + 24b^4n^4x - \frac{24b^4n^3(d+ex)\log(c(d+ex)^n)}{e} + \frac{12b^2n^2(d+ex)}{}
\end{aligned}
$$

Mathematica [A]
time = 0.04, size = 112, normalized size = 0.85

$$\frac{(d+ex)\,(a+b\log(c(d+ex)^n))^4 - 4bn\left((d+ex)\,(a+b\log(c(d+ex)^n))^3 - 3bn\left((d+ex)\,(a+b\log(c(d+ex)^n))^2 - 2bn(e(a-bn)x+b(d+ex)\log(c(d+ex)^n))\right)\right)}{e}$$

Antiderivative was successfully verified.

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

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

Maple [C] Result contains higher order function than in optimal. Order 9 vs. order 3.
time = 1.45, size = 15871, normalized size = 121.15

method	result	size
risch	Expression too large to display	15871

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))^4,x,method=_RETURNVERBOSE)
```

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

Maxima [B] Leaf count of result is larger than twice the leaf count of optimal. 528 vs. 2(135) = 270.
time = 0.31, size = 528, normalized size = 4.03

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] b^4*x*log((x*e + d)^n*c)^4 + 4*a*b^3*x*log((x*e + d)^n*c)^3 + 4*(d*e^(-2)*l
og(x*e + d) - x*e^(-1))*a^3*b*n*e + 6*a^2*b^2*x*log((x*e + d)^n*c)^2 + 4*a^
3*b*x*log((x*e + d)^n*c) - 6*((d*log(x*e + d)^2 - 2*x*e + 2*d*log(x*e + d))
*n^2*e^(-1) - 2*(d*e^(-2)*log(x*e + d) - x*e^(-1))*n*e*log((x*e + d)^n*c))*
a^2*b^2 + 4*(3*(d*e^(-2)*log(x*e + d) - x*e^(-1))*n*e*log((x*e + d)^n*c)^2
+ ((d*log(x*e + d)^3 + 3*d*log(x*e + d)^2 - 6*x*e + 6*d*log(x*e + d))*n^2*e
^(-2) - 3*(d*log(x*e + d)^2 - 2*x*e + 2*d*log(x*e + d))*n*e^(-2)*log((x*e +
 d)^n*c))*n*e)*a*b^3 + (4*(d*e^(-2)*log(x*e + d) - x*e^(-1))*n*e*log((x*e +
 d)^n*c)^3 - (6*(d*log(x*e + d)^2 - 2*x*e + 2*d*log(x*e + d))*n*e^(-2)*log(
(x*e + d)^n*c)^2 + ((d*log(x*e + d)^4 + 4*d*log(x*e + d)^3 + 12*d*log(x*e +
 d)^2 - 24*x*e + 24*d*log(x*e + d))*n^2*e^(-3) - 4*(d*log(x*e + d)^3 + 3*d*
log(x*e + d)^2 - 6*x*e + 6*d*log(x*e + d))*n*e^(-3)*log((x*e + d)^n*c))*n*e
)*n*e)*b^4 + a^4*x
```

Fricas [B] Leaf count of result is larger than twice the leaf count of optimal. 611 vs. $2(135) = 270$.
time = 0.39, size = 611, normalized size = 4.66

$$\left(b^{4} x e \log\left(c\right)^{4} - 4 \left(b^{4} n - a b^{3}\right) x e \log\left(c\right)^{3} + \left(b^{4} n^{4} x e + b^{4} d n^{4}\right) \log\left(x e + d\right)^{4} + 6 \left(2 b^{4} n^{2} - 2 a b^{3} n + a^{2} b^{2}\right) x e \log\left(c\right)^{2} - 4 \left(b^{4} d n^{4} - a b^{3} d n^{3} + \left(b^{4} n^{4} - a b^{3} n^{3}\right) x e - \left(b^{4} n^{3} x e + b^{4} d n^{3}\right) \log\left(c\right)\right) \log\left(x e + d\right)^{3} - 4 \left(6 b^{4} n^{3} - 6 a b^{3} n^{2} + 3 a^{2} b^{2} n - a^{3} b\right) x e \log\left(c\right) + \left(24 b^{4} n^{4} - 24 a b^{3} n^{3} + 12 a^{2} b^{2} n^{2} - 4 a^{3} b n + a^{4}\right) x e + 6 \left(2 b^{4} d n^{4} - 2 a b^{3} d n^{3} + a^{2} b^{2} d n^{2} + \left(2 b^{4} n^{4} - 2 a b^{3} n^{3} + a^{2} b^{2} n^{2}\right) x e + \left(b^{4} n^{2} x e + b^{4} d n^{2}\right) \log\left(c\right)^{2} - 2 \left(b^{4} d n^{3} - a b^{3} d n^{2} + \left(b^{4} n^{3} - a b^{3} n^{2}\right) x e\right) \log\left(c\right)\right) \log\left(x e + d\right)^{2} - 4 \left(6 b^{4} d n^{4} - 6 a b^{3} d n^{3} + 3 a^{2} b^{2} d n^{2} - a^{3} b d n - \left(b^{4} n x e + b^{4} d n\right) \log\left(c\right)^{3} + \left(6 b^{4} n^{4} - 6 a b^{3} n^{3} + 3 a^{2} b^{2} n^{2} - a^{3} b n\right) x e + 3 \left(b^{4} d n^{2} - a b^{3} d n + \left(b^{4} n^{2} - a b^{3} n\right) x e\right) \log\left(c\right)^{2} - 3 \left(2 b^{4} d n^{3} - 2 a b^{3} d n^{2} + a^{2} b^{2} d n + \left(2 b^{4} n^{3} - 2 a b^{3} n^{2} + a^{2} b^{2} n\right) x e\right) \log\left(c\right)\right) \log\left(x e + d\right)\right) e^{\left(-1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] (b^4*x*e*log(c)^4 - 4*(b^4*n - a*b^3)*x*e*log(c)^3 + (b^4*n^4*x*e + b^4*d*n
^4)*log(x*e + d)^4 + 6*(2*b^4*n^2 - 2*a*b^3*n + a^2*b^2)*x*e*log(c)^2 - 4*(
b^4*d*n^4 - a*b^3*d*n^3 + (b^4*n^4 - a*b^3*n^3)*x*e - (b^4*n^3*x*e + b^4*d*
n^3)*log(c))*log(x*e + d)^3 - 4*(6*b^4*n^3 - 6*a*b^3*n^2 + 3*a^2*b^2*n - a^
3*b)*x*e*log(c) + (24*b^4*n^4 - 24*a*b^3*n^3 + 12*a^2*b^2*n^2 - 4*a^3*b*n +
 a^4)*x*e + 6*(2*b^4*d*n^4 - 2*a*b^3*d*n^3 + a^2*b^2*d*n^2 + (2*b^4*n^4 - 2
*a*b^3*n^3 + a^2*b^2*n^2)*x*e + (b^4*n^2*x*e + b^4*d*n^2)*log(c)^2 - 2*(b^4
*d*n^3 - a*b^3*d*n^2 + (b^4*n^3 - a*b^3*n^2)*x*e)*log(c))*log(x*e + d)^2 -
4*(6*b^4*d*n^4 - 6*a*b^3*d*n^3 + 3*a^2*b^2*d*n^2 - a^3*b*d*n - (b^4*n*x*e +
 b^4*d*n)*log(c)^3 + (6*b^4*n^4 - 6*a*b^3*n^3 + 3*a^2*b^2*n^2 - a^3*b*n)*x*
e + 3*(b^4*d*n^2 - a*b^3*d*n + (b^4*n^2 - a*b^3*n)*x*e)*log(c)^2 - 3*(2*b^4
*d*n^3 - 2*a*b^3*d*n^2 + a^2*b^2*d*n + (2*b^4*n^3 - 2*a*b^3*n^2 + a^2*b^2*n
)*x*e)*log(c))*log(x*e + d))*e^(-1)
```

Sympy [B] Leaf count of result is larger than twice the leaf count of optimal. 495 vs. $2(126) = 252$.
time = 1.01, size = 495, normalized size = 3.78

$$\begin{cases} a^{4} x + \frac{4 a^{3} b d \log{\left(c \left(d + e x\right)^{n} \right)}}{e} - 4 a^{3} b n x + 4 a^{3} b x \log{\left(c \left(d + e x\right)^{n} \right)} - \frac{12 a^{2} b^{2} d n \log{\left(c \left(d + e x\right)^{n} \right)}}{e} + \frac{6 a^{2} b^{2} d \log{\left(c \left(d + e x\right)^{n} \right)}^{2}}{e} + 12 a^{2} b^{2} n^{2} x - 12 a^{2} b^{2} n x \log{\left(c \left(d + e x\right)^{n} \right)} + 6 a^{2} b^{2} x \log{\left(c \left(d + e x\right)^{n} \right)}^{2} + \frac{24 a b^{3} d n^{2} \log{\left(c \left(d + e x\right)^{n} \right)}}{e} - \frac{12 a b^{3} d n \log{\left(c \left(d + e x\right)^{n} \right)}^{2}}{e} + \frac{4 a b^{3} d \log{\left(c \left(d + e x\right)^{n} \right)}^{3}}{e} - 24 a b^{3} n^{3} x + 24 a b^{3} n^{2} x \log{\left(c \left(d + e x\right)^{n} \right)} - 12 a b^{3} n x \log{\left(c \left(d + e x\right)^{n} \right)}^{2} + 4 a b^{3} x \log{\left(c \left(d + e x\right)^{n} \right)}^{3} - \frac{24 b^{4} d n^{3} \log{\left(c \left(d + e x\right)^{n} \right)}}{e} + \frac{12 b^{4} d n^{2} \log{\left(c \left(d + e x\right)^{n} \right)}^{2}}{e} - \frac{4 b^{4} d n \log{\left(c \left(d + e x\right)^{n} \right)}^{3}}{e} + \frac{b^{4} d \log{\left(c \left(d + e x\right)^{n} \right)}^{4}}{e} + 24 b^{4} n^{4} x - 24 b^{4} n^{3} x \log{\left(c \left(d + e x\right)^{n} \right)} + 12 b^{4} n^{2} x \log{\left(c \left(d + e x\right)^{n} \right)}^{2} - 4 b^{4} n x \log{\left(c \left(d + e x\right)^{n} \right)}^{3} + b^{4} x \log{\left(c \left(d + e x\right)^{n} \right)}^{4} & \text{for}\: e \neq 0 \\ x \left(a + b \log{\left(c d^{n} \right)}\right)^{4} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Piecewise((a**4*x + 4*a**3*b*d*log(c*(d + e*x)**n)/e - 4*a**3*b*n*x + 4*a**
3*b*x*log(c*(d + e*x)**n) - 12*a**2*b**2*d*n*log(c*(d + e*x)**n)/e + 6*a**2
*b**2*d*log(c*(d + e*x)**n)**2/e + 12*a**2*b**2*n**2*x - 12*a**2*b**2*n*x*l
og(c*(d + e*x)**n) + 6*a**2*b**2*x*log(c*(d + e*x)**n)**2 + 24*a*b**3*d*n**
2*log(c*(d + e*x)**n)/e - 12*a*b**3*d*n*log(c*(d + e*x)**n)**2/e + 4*a*b**3
*d*log(c*(d + e*x)**n)**3/e - 24*a*b**3*n**3*x + 24*a*b**3*n**2*x*log(c*(d
+ e*x)**n) - 12*a*b**3*n*x*log(c*(d + e*x)**n)**2 + 4*a*b**3*x*log(c*(d + e
*x)**n)**3 - 24*b**4*d*n**3*log(c*(d + e*x)**n)/e + 12*b**4*d*n**2*log(c*(d
 + e*x)**n)**2/e - 4*b**4*d*n*log(c*(d + e*x)**n)**3/e + b**4*d*log(c*(d +
e*x)**n)**4/e + 24*b**4*n**4*x - 24*b**4*n**3*x*log(c*(d + e*x)**n) + 12*b*
*4*n**2*x*log(c*(d + e*x)**n)**2 - 4*b**4*n*x*log(c*(d + e*x)**n)**3 + b**4
*x*log(c*(d + e*x)**n)**4, Ne(e, 0)), (x*(a + b*log(c*d**n))**4, True))
```

Giac [B] Leaf count of result is larger than twice the leaf count of optimal. 778 vs. 2(135) = 270.
time = 1.97, size = 778, normalized size = 5.94

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] (x*e + d)*b^4*n^4*e^(-1)*log(x*e + d)^4 - 4*(x*e + d)*b^4*n^4*e^(-1)*log(x*
e + d)^3 + 4*(x*e + d)*b^4*n^3*e^(-1)*log(x*e + d)^3*log(c) + 12*(x*e + d)*
b^4*n^4*e^(-1)*log(x*e + d)^2 + 4*(x*e + d)*a*b^3*n^3*e^(-1)*log(x*e + d)^3
 - 12*(x*e + d)*b^4*n^3*e^(-1)*log(x*e + d)^2*log(c) + 6*(x*e + d)*b^4*n^2*
e^(-1)*log(x*e + d)^2*log(c)^2 - 24*(x*e + d)*b^4*n^4*e^(-1)*log(x*e + d) -
 12*(x*e + d)*a*b^3*n^3*e^(-1)*log(x*e + d)^2 + 24*(x*e + d)*b^4*n^3*e^(-1)
*log(x*e + d)*log(c) + 12*(x*e + d)*a*b^3*n^2*e^(-1)*log(x*e + d)^2*log(c)
- 12*(x*e + d)*b^4*n^2*e^(-1)*log(x*e + d)*log(c)^2 + 4*(x*e + d)*b^4*n*e^(
-1)*log(x*e + d)*log(c)^3 + 24*(x*e + d)*b^4*n^4*e^(-1) + 24*(x*e + d)*a*b^
3*n^3*e^(-1)*log(x*e + d) + 6*(x*e + d)*a^2*b^2*n^2*e^(-1)*log(x*e + d)^2 -
 24*(x*e + d)*b^4*n^3*e^(-1)*log(c) - 24*(x*e + d)*a*b^3*n^2*e^(-1)*log(x*e
 + d)*log(c) + 12*(x*e + d)*b^4*n^2*e^(-1)*log(c)^2 + 12*(x*e + d)*a*b^3*n*
e^(-1)*log(x*e + d)*log(c)^2 - 4*(x*e + d)*b^4*n*e^(-1)*log(c)^3 + (x*e + d
)*b^4*e^(-1)*log(c)^4 - 24*(x*e + d)*a*b^3*n^3*e^(-1) - 12*(x*e + d)*a^2*b^
2*n^2*e^(-1)*log(x*e + d) + 24*(x*e + d)*a*b^3*n^2*e^(-1)*log(c) + 12*(x*e
+ d)*a^2*b^2*n*e^(-1)*log(x*e + d)*log(c) - 12*(x*e + d)*a*b^3*n*e^(-1)*log
(c)^2 + 4*(x*e + d)*a*b^3*e^(-1)*log(c)^3 + 12*(x*e + d)*a^2*b^2*n^2*e^(-1)
 + 4*(x*e + d)*a^3*b*n*e^(-1)*log(x*e + d) - 12*(x*e + d)*a^2*b^2*n*e^(-1)*
log(c) + 6*(x*e + d)*a^2*b^2*e^(-1)*log(c)^2 - 4*(x*e + d)*a^3*b*n*e^(-1) +
 4*(x*e + d)*a^3*b*e^(-1)*log(c) + (x*e + d)*a^4*e^(-1)
```

Mupad [B]
time = 0.36, size = 275, normalized size = 2.10

$$\ln\left(c\,{\left(d+e\,x\right)}^n\right)^2\,\left(\frac{6\,\left(d\,a^2\,b^2-2\,d\,a\,b^3\,n+2\,d\,b^4\,n^2\right)}{e}+6\,b^2\,x\,\left(a^2-2\,a\,b\,n+2\,b^2\,n^2\right)\right)+x\,\left(a^4-4\,a^3\,b\,n+12\,a^2\,b^2\,n^2-24\,a\,b^3\,n^3+24\,b^4\,n^4\right)+\ln\left(c\,{\left(d+e\,x\right)}^n\right)^4\,\left(b^4\,x+\frac{b^4\,d}{e}\right)+\ln\left(c\,{\left(d+e\,x\right)}^n\right)^3\,\left(\frac{4\,\left(a\,b^3\,d-b^4\,d\,n\right)}{e}+4\,b^3\,x\,\left(a-b\,n\right)\right)-\frac{\ln\left(d+e\,x\right)\,\left(-4\,d\,a^3\,b\,n+12\,d\,a^2\,b^2\,n^2-24\,d\,a\,b^3\,n^3+24\,d\,b^4\,n^4\right)}{e}+4\,b\,x\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\,\left(a^3-3\,a^2\,b\,n+6\,a\,b^2\,n^2-6\,b^3\,n^3\right)$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

3.18 $\int (a+b\log(c(d+ex)^n))^3\,dx$

Optimal. Leaf size=99

$$6ab^2n^2x-6b^3n^3x+\frac{6b^3n^2(d+ex)\log(c(d+ex)^n)}{e}-\frac{3bn(d+ex)(a+b\log(c(d+ex)^n))^2}{e}+\frac{(d+ex)(a+b\log$$

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

Rubi [A]
time = 0.04, antiderivative size = 99, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 3, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}} = 0.188$, Rules used = {2436, 2333, 2332}

$$6ab^2n^2x-\frac{3bn(d+ex)(a+b\log(c(d+ex)^n))^2}{e}+\frac{(d+ex)(a+b\log(c(d+ex)^n))^3}{e}+\frac{6b^3n^2(d+ex)\log(c(d+ex)^n)}{e}-6b^3n^3x$$

Antiderivative was successfully verified.

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

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

Rule 2332

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

Rule 2333

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

Rule 2436

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

Rubi steps

$$\int (a+b\log(c(d+ex)^n))^3\,dx = \frac{\text{Subst}\left(\int (a+b\log(cx^n))^3\,dx, x, d+ex\right)}{e}$$
$$= \frac{(d+ex)(a+b\log(c(d+ex)^n))^3}{e} - \frac{(3bn)\text{Subst}\left(\int (a+b\log(cx^n))^2\,dx, x$$
$$= -\frac{3bn(d+ex)(a+b\log(c(d+ex)^n))^2}{e} + \frac{(d+ex)(a+b\log(c(d+ex)^n))}{e}$$
$$= 6ab^2n^2x - \frac{3bn(d+ex)(a+b\log(c(d+ex)^n))^2}{e} + \frac{(d+ex)(a+b\log(c(d}{e}$$
$$= 6ab^2n^2x - 6b^3n^3x + \frac{6b^3n^2(d+ex)\log(c(d+ex)^n)}{e} - \frac{3bn(d+ex)(a+b\,}{e}$$

Mathematica [A]
time = 0.01, size = 85, normalized size = 0.86

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

Antiderivative was successfully verified.

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

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

Maple [C] Result contains higher order function than in optimal. Order 9 vs. order 3.
time = 0.55, size = 4872, normalized size = 49.21

method	result	size
risch	Expression too large to display	4872

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))^3,x,method=_RETURNVERBOSE)
```

```
[Out] -3/2*Pi^2*b^3*n*x*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^5-3/4*Pi^2*a*b^2*x*
csgn(I*c)^2*csgn(I*c*(e*x+d)^n)^4+3/2*Pi^2*a*b^2*x*csgn(I*c)*csgn(I*c*(e*x+
d)^n)^5-3/4*Pi^2*a*b^2*x*csgn(I*(e*x+d)^n)^2*csgn(I*c*(e*x+d)^n)^4+3/2*Pi^2
*a*b^2*x*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^5-3/e*ln(c)*b^3*d*n^2*ln(e*x
+d)^2+3/e*ln(c)^2*ln(e*x+d)*b^3*d*n-6/e*ln(c)*ln(e*x+d)*b^3*d*n^2-3/e*a*b^2
*d*n^2*ln(e*x+d)^2-6/e*ln(e*x+d)*a*b^2*d*n^2+3/e*ln(e*x+d)*a^2*b*d*n-1/8*I*
Pi^3*b^3*x*csgn(I*c)^3*csgn(I*c*(e*x+d)^n)^6+3/8*I*Pi^3*b^3*x*csgn(I*c)^2*c
sgn(I*c*(e*x+d)^n)^7-3/8*I*Pi^3*b^3*x*csgn(I*c)*csgn(I*c*(e*x+d)^n)^8-1/8*I
*Pi^3*b^3*x*csgn(I*(e*x+d)^n)^3*csgn(I*c*(e*x+d)^n)^6+3/8*I*Pi^3*b^3*x*csgn
(I*(e*x+d)^n)^2*csgn(I*c*(e*x+d)^n)^7+6*a*b^2*n^2*x+3/4*b*(4*a^2*e*x-4*I*Pi
```

*ln(e*x+d)*b^2*d*n*csgn(I*c*(e*x+d)^n)^3+4*ln(c)^2*b^2*e*x-8*ln(e*x+d)*b^2*
d*n^2+8*b^2*e*n^2*x-4*I*Pi*b^2*e*n*x*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-4*I*Pi
*b^2*e*n*x*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+4*I*Pi*a*b*e*x*csgn(I*c)
*csgn(I*c*(e*x+d)^n)^2+4*I*Pi*a*b*e*x*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)
^2+8*ln(c)*a*b*e*x-8*ln(c)*b^2*e*n*x+8*ln(c)*ln(e*x+d)*b^2*d*n-4*I*Pi*ln(e*
x+d)*b^2*d*n*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+2*Pi^2*b^2*e*x
csgn(I(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^5-8*a*b*e*n*x-Pi^2*b^2*e*x*csgn(I*c*
(e*x+d)^n)^6+4*I*ln(c)*Pi*b^2*e*x*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+4*I*ln(c)
*Pi*b^2*e*x*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-4*b^2*d*n^2*ln(e*x+d)^2
-4*I*ln(c)*Pi*b^2*e*x*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+4*I*P
i*b^2*e*n*x*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-4*I*Pi*a*b*e*x*
csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+4*I*Pi*ln(e*x+d)*b^2*d*n*cs
gn(I*c)*csgn(I*c*(e*x+d)^n)^2+4*I*Pi*ln(e*x+d)*b^2*d*n*csgn(I*(e*x+d)^n)*cs
gn(I*c*(e*x+d)^n)^2+4*I*Pi*b^2*e*n*x*csgn(I*c*(e*x+d)^n)^3-4*I*ln(c)*Pi*b^2
*e*x*csgn(I*c*(e*x+d)^n)^3+8*ln(e*x+d)*a*b*d*n-Pi^2*b^2*e*x*csgn(I*c)^2*csg
n(I*(e*x+d)^n)^2*csgn(I*c*(e*x+d)^n)^2+2*Pi^2*b^2*e*x*csgn(I*c)^2*csgn(I*(e
*x+d)^n)*csgn(I*c*(e*x+d)^n)^3+2*Pi^2*b^2*e*x*csgn(I*c)*csgn(I*(e*x+d)^n)^2
*csgn(I*c*(e*x+d)^n)^3-4*Pi^2*b^2*e*x*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*
(e*x+d)^n)^4-Pi^2*b^2*e*x*csgn(I*c)^2*csgn(I*c*(e*x+d)^n)^4+2*Pi^2*b^2*e*x*
csgn(I*c)*csgn(I*c*(e*x+d)^n)^5-Pi^2*b^2*e*x*csgn(I*(e*x+d)^n)^2*csgn(I*c*(
e*x+d)^n)^4-4*I*Pi*a*b*e*x*csgn(I*c*(e*x+d)^n)^3)/e*ln((e*x+d)^n)-3*I/e*ln(
c)*Pi*ln(e*x+d)*b^3*d*n*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-3*I
/e*Pi*ln(e*x+d)*a*b^2*d*n*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-6
*b^3*n^3*x+a^3*x-3*a^2*b*n*x+1/8*I*Pi^3*b^3*x*csgn(I*c)^3*csgn(I*(e*x+d)^n)
^3*csgn(I*c*(e*x+d)^n)^3-3/8*I*Pi^3*b^3*x*csgn(I*c)^3*csgn(I*(e*x+d)^n)^2*c
sgn(I*c*(e*x+d)^n)^4+3/8*I*Pi^3*b^3*x*csgn(I*c)^3*csgn(I*(e*x+d)^n)*csgn(I*
c*(e*x+d)^n)^5-3/8*I*Pi^3*b^3*x*csgn(I*c)^2*csgn(I*(e*x+d)^n)^3*csgn(I*c*(e
*x+d)^n)^4+9/8*I*Pi^3*b^3*x*csgn(I*c)^2*csgn(I*(e*x+d)^n)^2*csgn(I*c*(e*x+d
)^n)^5-9/8*I*Pi^3*b^3*x*csgn(I*c)^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^6
+3/8*I*Pi^3*b^3*x*csgn(I*c)*csgn(I*(e*x+d)^n)^3*csgn(I*c*(e*x+d)^n)^5+3/2*I
*Pi*a^2*b*x*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-9/8*I*Pi^3*b^3*x*csgn(I
*c)*csgn(I*(e*x+d)^n)^2*csgn(I*c*(e*x+d)^n)^6+9/8*I*Pi^3*b^3*x*csgn(I*c)*cs
gn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^7+3/2*I*ln(c)^2*Pi*b^3*x*csgn(I*c)*csgn
(I*c*(e*x+d)^n)^2+3/2*I*ln(c)^2*Pi*b^3*x*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)
^n)^2+3*I*ln(c)*Pi*b^3*n*x*csgn(I*c*(e*x+d)^n)^3+3*I*Pi*b^3*n^2*x*csgn(I*c)
*csgn(I*c*(e*x+d)^n)^2+3*I*Pi*b^3*n^2*x*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^
n)^2-3*I*ln(c)*Pi*a*b^2*x*csgn(I*c*(e*x+d)^n)^3+3*I*Pi*a*b^2*n*x*csgn(I*c*(
e*x+d)^n)^3+3/2*I*Pi*a^2*b*x*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+3/2*b^2*(-I*Pi
*b*e*x*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+I*Pi*b*e*x*csgn(I*c)
*csgn(I*c*(e*x+d)^n)^2+I*Pi*b*e*x*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-I
*Pi*b*e*x*csgn(I*c*(e*x+d)^n)^3+2*ln(c)*b*e*x+2*ln(e*x+d)*b*d*n-2*b*e*n*x+2
*a*e*x)/e*ln((e*x+d)^n)^2-3/8*I*Pi^3*b^3*x*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+
d)^n)^8-3/2*I*ln(c)^2*Pi*b^3*x*csgn(I*c*(e*x+d)^n)^3-3*I*Pi*b^3*n^2*x*csgn(
I*c*(e*x+d)^n)^3-3/2*I*Pi*a^2*b*x*csgn(I*c*(e*x+d)^n)^3-3*I/e*Pi*b^3*d*n^2*
csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*ln(e*x+d)-3*I/e*Pi*b^3*d*n^2*csgn(I*(e*x+d)

```
^n)*csgn(I*c*(e*x+d)^n)^2*ln(e*x+d)-3*I/e*Pi*ln(e*x+d)*a*b^2*d*n*csgn(I*c*(
e*x+d)^n)^3-3/2*I/e*Pi*b^3*d*n^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*ln(e*x+d)^
2-3/2*I/e*Pi*b^3*d*n^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2*ln(e*x+d)^2-
3*I/e*ln(c)*Pi*ln(e*x+d)*b^3*d*n*csgn(I*c*(e*x+d)^n)^3+3*I*ln(c)*Pi*b^3*n*x
*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-3*I*ln(c)*Pi*a*b^2*x*csgn(
I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+3*I*Pi*a*b^2*n*x*csgn(I*c)*csgn(
I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+3*I*ln(c)*Pi*a*b^2*x*csgn(I*(e*x+d)^n)*csg
n(I*c*(e*x+d)^n)^2-3*I*Pi*a*b^2*n*x*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-3*I*Pi*
a*b^2*n*x*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-3/2*I*Pi*a^2*b*x*csgn(I*c
)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-3/2*I*ln(c)^2*Pi*b^3*x*csgn(I*c)*cs
gn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+3/2*I/e*Pi*b^3*d*n^2*csgn(I*c*(e*x+d)^n
)^3*ln(e*x+d)^2+3*I/e*Pi*b^3*d*n^2*csgn(I*c*(e*...
```

Maxima [B] Leaf count of result is larger than twice the leaf count of optimal. 294 vs. $2(102) = 204$.
time = 0.30, size = 294, normalized size = 2.97

$$b^3x\log\left((xe+d)^nc\right)^3+3\left(de^{(-2)}\log\left(xe+d\right)-xe^{(-1)}\right)a^2bne+3\,ab^2x\log\left((xe+d)^nc\right)^2+3\,a^2bx\log\left((xe+d)^nc\right)-3\left(\left(d\log\left(xe+d\right)^2-2\,xe+2\,d\log\left(xe+d\right)\right)n^2e^{(-1)}-2\left(de^{(-2)}\log\left(xe+d\right)-xe^{(-1)}\right)ne\log\left((xe+d)^nc\right)\right)ab^2+\left(3\left(de^{(-2)}\log\left(xe+d\right)-xe^{(-1)}\right)ne\log\left((xe+d)^nc\right)^2+\left(\left(d\log\left(xe+d\right)^3+3\,d\log\left(xe+d\right)^2-6\,xe+6\,d\log\left(xe+d\right)\right)n^2e^{(-2)}-3\left(d\log\left(xe+d\right)^2-2\,xe+2\,d\log\left(xe+d\right)\right)ne^{(-2)}\log\left((xe+d)^nc\right)\right)ne\right)b^3+a^3x$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] b^3*x*log((x*e + d)^n*c)^3 + 3*(d*e^(-2)*log(x*e + d) - x*e^(-1))*a^2*b*n*e
 + 3*a*b^2*x*log((x*e + d)^n*c)^2 + 3*a^2*b*x*log((x*e + d)^n*c) - 3*((d*lo
g(x*e + d)^2 - 2*x*e + 2*d*log(x*e + d))*n^2*e^(-1) - 2*(d*e^(-2)*log(x*e +
 d) - x*e^(-1))*n*e*log((x*e + d)^n*c))*a*b^2 + (3*(d*e^(-2)*log(x*e + d) -
 x*e^(-1))*n*e*log((x*e + d)^n*c)^2 + ((d*log(x*e + d)^3 + 3*d*log(x*e + d)
^2 - 6*x*e + 6*d*log(x*e + d))*n^2*e^(-2) - 3*(d*log(x*e + d)^2 - 2*x*e + 2
*d*log(x*e + d))*n*e^(-2)*log((x*e + d)^n*c))*n*e)*b^3 + a^3*x
```

Fricas [B] Leaf count of result is larger than twice the leaf count of optimal. 326 vs. $2(102) = 204$.
time = 0.34, size = 326, normalized size = 3.29

$$\left(b^3xe\log\left(c\right)^3-3\left(b^3n-ab^2\right)xe\log\left(c\right)^2+\left(b^3n^3xe+b^3dn^3\right)\log\left(xe+d\right)^3+3\left(2\,b^3n^2-2\,ab^2n+a^2b\right)xe\log\left(c\right)-\left(6\,b^3n^3-6\,ab^2n^2+3\,a^2bn-a^3\right)xe-3\left(b^3dn^3-ab^2dn^2+\left(b^3n^3-ab^2n^2\right)xe-\left(b^3n^2xe+b^3dn^2\right)\log\left(c\right)\right)\log\left(xe+d\right)^2+3\left(2\,b^3dn^3-2\,ab^2dn^2+a^2bdn+\left(2\,b^3n^3-2\,ab^2n^2+a^2bn\right)xe+\left(b^3nxe+b^3dn\right)\log\left(c\right)^2-2\left(b^3dn^2-ab^2dn+\left(b^3n^2-ab^2n\right)xe\right)\log\left(c\right)\right)\log\left(xe+d\right)\right)e^{(-1)}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

Sympy [B] Leaf count of result is larger than twice the leaf count of optimal. 294 vs. $2(95) = 190$.
time = 0.55, size = 294, normalized size = 2.97

$$\begin{cases} a^3x + \frac{3a^2bd\log\left(c(d+ex)^n\right)}{e} - 3a^2bnx + 3a^2bx\log\left(c(d+ex)^n\right) - \frac{6ab^2dn\log\left(c(d+ex)^n\right)}{e} + \frac{3ab^2d\log\left(c(d+ex)^n\right)^2}{e} + 6ab^2n^2x - 6ab^2nx\log\left(c(d+ex)^n\right) + 3ab^2x\log\left(c(d+ex)^n\right)^2 + \frac{6b^3dn^2\log\left(c(d+ex)^n\right)}{e} - \frac{3b^3dn\log\left(c(d+ex)^n\right)^2}{e} + \frac{b^3d\log\left(c(d+ex)^n\right)^3}{e} - 6b^3n^3x + 6b^3n^2x\log\left(c(d+ex)^n\right) - 3b^3nx\log\left(c(d+ex)^n\right)^2 + b^3x\log\left(c(d+ex)^n\right)^3 & \text{for } e \neq 0 \\ x(a + b\log\left(cd^n\right))^3 & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Piecewise((a**3*x + 3*a**2*b*d*log(c*(d + e*x)**n)/e - 3*a**2*b*n*x + 3*a**
2*b*x*log(c*(d + e*x)**n) - 6*a*b**2*d*n*log(c*(d + e*x)**n)/e + 3*a*b**2*d
*log(c*(d + e*x)**n)**2/e + 6*a*b**2*n**2*x - 6*a*b**2*n*x*log(c*(d + e*x)*
*n) + 3*a*b**2*x*log(c*(d + e*x)**n)**2 + 6*b**3*d*n**2*log(c*(d + e*x)**n)
/e - 3*b**3*d*n*log(c*(d + e*x)**n)**2/e + b**3*d*log(c*(d + e*x)**n)**3/e
- 6*b**3*n**3*x + 6*b**3*n**2*x*log(c*(d + e*x)**n) - 3*b**3*n*x*log(c*(d +
 e*x)**n)**2 + b**3*x*log(c*(d + e*x)**n)**3, Ne(e, 0)), (x*(a + b*log(c*d*
*n))**3, True))
```

Giac [B] Leaf count of result is larger than twice the leaf count of optimal. 409 vs. $2(102) = 204$.
time = 3.90, size = 409, normalized size = 4.13

$$(xe+d)b^3n^3e^{(-1)}\log(xe+d)^3 - 3(xe+d)b^3n^3e^{(-1)}\log(xe+d)^2 + 3(xe+d)b^3n^2e^{(-1)}\log(xe+d)^2\log(c) + 6(xe+d)b^3n^3e^{(-1)}\log(xe+d) + 3(xe+d)ab^2n^2e^{(-1)}\log(xe+d)^2 - 6(xe+d)b^3n^2e^{(-1)}\log(xe+d)\log(c) + 3(xe+d)b^3ne^{(-1)}\log(xe+d)\log(c)^2 - 6(xe+d)b^3n^3e^{(-1)} - 6(xe+d)ab^2n^2e^{(-1)}\log(xe+d) + 6(xe+d)b^3n^2e^{(-1)}\log(c) + 6(xe+d)ab^2ne^{(-1)}\log(xe+d)\log(c) - 3(xe+d)b^3ne^{(-1)}\log(c)^2 + (xe+d)b^3e^{(-1)}\log(c)^3 + 6(xe+d)ab^2n^2e^{(-1)} + 3(xe+d)a^2bne^{(-1)}\log(xe+d) - 6(xe+d)ab^2ne^{(-1)}\log(c) + 3(xe+d)ab^2e^{(-1)}\log(c)^2 - 3(xe+d)a^2bne^{(-1)} + 3(xe+d)a^2be^{(-1)}\log(c) + (xe+d)a^3e^{(-1)}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] (x*e + d)*b^3*n^3*e^(-1)*log(x*e + d)^3 - 3*(x*e + d)*b^3*n^3*e^(-1)*log(x*
e + d)^2 + 3*(x*e + d)*b^3*n^2*e^(-1)*log(x*e + d)^2*log(c) + 6*(x*e + d)*b
^3*n^3*e^(-1)*log(x*e + d) + 3*(x*e + d)*a*b^2*n^2*e^(-1)*log(x*e + d)^2 -
6*(x*e + d)*b^3*n^2*e^(-1)*log(x*e + d)*log(c) + 3*(x*e + d)*b^3*n*e^(-1)*l
og(x*e + d)*log(c)^2 - 6*(x*e + d)*b^3*n^3*e^(-1) - 6*(x*e + d)*a*b^2*n^2*e
^(-1)*log(x*e + d) + 6*(x*e + d)*b^3*n^2*e^(-1)*log(c) + 6*(x*e + d)*a*b^2*
n*e^(-1)*log(x*e + d)*log(c) - 3*(x*e + d)*b^3*n*e^(-1)*log(c)^2 + (x*e + d
)*b^3*e^(-1)*log(c)^3 + 6*(x*e + d)*a*b^2*n^2*e^(-1) + 3*(x*e + d)*a^2*b*n*
e^(-1)*log(x*e + d) - 6*(x*e + d)*a*b^2*n*e^(-1)*log(c) + 3*(x*e + d)*a*b^2
*e^(-1)*log(c)^2 - 3*(x*e + d)*a^2*b*n*e^(-1) + 3*(x*e + d)*a^2*b*e^(-1)*lo
g(c) + (x*e + d)*a^3*e^(-1)
```

Mupad [B]
time = 0.26, size = 172, normalized size = 1.74

$$x\left(a^3 - 3a^2bn + 6ab^2n^2 - 6b^3n^3\right) + \ln\left(c(d+ex)^n\right)^3\left(b^3x + \frac{b^3d}{e}\right) + \ln\left(c(d+ex)^n\right)^2\left(\frac{3(ab^2d - b^3dn)}{e} + 3b^2x(a - bn)\right) + \frac{\ln(d+ex)\left(3da^2bn - 6dab^2n^2 + 6db^3n^3\right)}{e} + 3bx\ln\left(c(d+ex)^n\right)\left(a^2 - 2abn + 2b^2n^2\right)$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

3.19 $\int (a+b\log(c(d+ex)^n))^2 \, dx$

Optimal. Leaf size=65

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

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

Rubi [A]
time = 0.03, antiderivative size = 65, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.188, Rules used = {2436, 2333, 2332}

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

Antiderivative was successfully verified.

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

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

Rule 2332

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

Rule 2333

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

Rule 2436

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

Rubi steps

$$\int (a+b\log(c(d+ex)^n))^2\,dx = \frac{\text{Subst}\left(\int (a+b\log(cx^n))^2\,dx, x, d+ex\right)}{e}$$
$$= \frac{(d+ex)(a+b\log(c(d+ex)^n))^2}{e} - \frac{(2bn)\text{Subst}\left(\int (a+b\log(cx^n))\,dx, x,\right.}{e}$$
$$= -2abnx + \frac{(d+ex)(a+b\log(c(d+ex)^n))^2}{e} - \frac{(2b^2n)\,\text{Subst}\left(\int \log(cx^n)\,d\right.}{e}$$
$$= -2abnx + 2b^2n^2x - \frac{2b^2n(d+ex)\log(c(d+ex)^n)}{e} + \frac{(d+ex)(a+b\log(c}{e}$$

Mathematica [A]
time = 0.01, size = 59, normalized size = 0.91

$$\frac{(d+ex)(a+b\log(c(d+ex)^n))^2}{e} - 2bn\left(ax - bnx + \frac{b(d+ex)\log(c(d+ex)^n)}{e}\right)$$

Antiderivative was successfully verified.

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

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

Maple [A]
time = 0.30, size = 130, normalized size = 2.00

method	result
norman	$(2b^2n^2 - 2ban + a^2)x + b^2x\ln\left(c\,e^{n\ln(ex+d)}\right)^2 + (-2b^2n + 2ba)x\ln\left(c\,e^{n\ln(ex+d)}\right) + \frac{b^2d\ln\left(c\,e^{n\ln(ex+d}\right.}{e}$
default	$a^2x + b^2x\ln\left(c\,e^{n\ln(ex+d)}\right)^2 + \frac{b^2d\ln\left(c\,e^{n\ln(ex+d)}\right)^2}{e} + 2b^2n^2x - 2b^2nx\ln\left(c\,e^{n\ln(ex+d)}\right) - \frac{2n^2b^2d\ln(ex+d)}{e}$
risch	Expression too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))^2,x,method=_RETURNVERBOSE)
```

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

Maxima [B] Leaf count of result is larger than twice the leaf count of optimal. 136 vs. 2(67) = 134.
time = 0.27, size = 136, normalized size = 2.09

$$2\left(de^{(-2)}\log(xe+d) - xe^{(-1)}\right)abne + b^2x\log\left((xe+d)^nc\right)^2 + 2\,abx\log\left((xe+d)^nc\right) - \left(\left(d\log(xe+d)^2 - 2\,xe + 2\,d\log(xe+d)\right)n^2e^{(-1)} - 2\left(de^{(-2)}\log(xe+d) - xe^{(-1)}\right)ne\log\left((xe+d)^nc\right)\right)b^2 + a^2x$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

Fricas [B] Leaf count of result is larger than twice the leaf count of optimal. 142 vs. $2(67) = 134$.
time = 0.40, size = 142, normalized size = 2.18

$$\left(b^{2} x e \log\left(c\right)^{2} - 2 \left(b^{2} n - a b\right) x e \log\left(c\right) + \left(2 b^{2} n^{2} - 2 a b n + a^{2}\right) x e + \left(b^{2} n^{2} x e + b^{2} d n^{2}\right) \log\left(x e + d\right)^{2} - 2 \left(b^{2} d n^{2} - a b d n + \left(b^{2} n^{2} - a b n\right) x e - \left(b^{2} n x e + b^{2} d n\right) \log\left(c\right)\right) \log\left(x e + d\right)\right) e^{\left(-1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

Sympy [B] Leaf count of result is larger than twice the leaf count of optimal. 146 vs. $2(63) = 126$.
time = 0.28, size = 146, normalized size = 2.25

$$\begin{cases} a^{2} x + \frac{2 a b d \log\left(c \left(d + e x\right)^{n}\right)}{e} - 2 a b n x + 2 a b x \log\left(c \left(d + e x\right)^{n}\right) - \frac{2 b^{2} d n \log\left(c \left(d + e x\right)^{n}\right)}{e} + \frac{b^{2} d \log\left(c \left(d + e x\right)^{n}\right)^{2}}{e} + 2 b^{2} n^{2} x - 2 b^{2} n x \log\left(c \left(d + e x\right)^{n}\right) + b^{2} x \log\left(c \left(d + e x\right)^{n}\right)^{2} & \text{for}\: e \neq 0 \\ x \left(a + b \log\left(c d^{n}\right)\right)^{2} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Piecewise((a**2*x + 2*a*b*d*log(c*(d + e*x)**n)/e - 2*a*b*n*x + 2*a*b*x*log
(c*(d + e*x)**n) - 2*b**2*d*n*log(c*(d + e*x)**n)/e + b**2*d*log(c*(d + e*x
)**n)**2/e + 2*b**2*n**2*x - 2*b**2*n*x*log(c*(d + e*x)**n) + b**2*x*log(c*
(d + e*x)**n)**2, Ne(e, 0)), (x*(a + b*log(c*d**n))**2, True))
```

Giac [B] Leaf count of result is larger than twice the leaf count of optimal. 178 vs. $2(67) = 134$.
time = 3.45, size = 178, normalized size = 2.74

$$(x e + d) b^{2} n^{2} e^{\left(-1\right)} \log\left(x e + d\right)^{2} - 2 \, (x e + d) b^{2} n^{2} e^{\left(-1\right)} \log\left(x e + d\right) + 2 \, (x e + d) b^{2} n e^{\left(-1\right)} \log\left(x e + d\right) \log\left(c\right) + 2 \, (x e + d) b^{2} n^{2} e^{\left(-1\right)} + 2 \, (x e + d) a b n e^{\left(-1\right)} \log\left(x e + d\right) - 2 \, (x e + d) b^{2} n e^{\left(-1\right)} \log\left(c\right) + (x e + d) b^{2} e^{\left(-1\right)} \log\left(c\right)^{2} - 2 \, (x e + d) a b n e^{\left(-1\right)} + 2 \, (x e + d) a b e^{\left(-1\right)} \log\left(c\right) + (x e + d) a^{2} e^{\left(-1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

```
*e^(-1) + 2*(x*e + d)*a*b*n*e^(-1)*log(x*e + d) - 2*(x*e + d)*b^2*n*e^(-1)*
log(c) + (x*e + d)*b^2*e^(-1)*log(c)^2 - 2*(x*e + d)*a*b*n*e^(-1) + 2*(x*e
+ d)*a*b*e^(-1)*log(c) + (x*e + d)*a^2*e^(-1)
```

Mupad [B]
time = 0.20, size = 94, normalized size = 1.45

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

Verification of antiderivative is not currently implemented for this CAS.

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

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

3.20 $\int (a+b\log (c(d+ex)^n))\,dx$

Optimal. Leaf size=29

$$ax-bnx+\frac{b(d+ex)\log \left(c(d+ex)^n\right)}{e}$$

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

Rubi [A]
time = 0.01, antiderivative size = 29, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}} = 0.143$, Rules used = {2436, 2332}

$$ax+\frac{b(d+ex)\log \left(c(d+ex)^n\right)}{e}-bnx$$

Antiderivative was successfully verified.

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

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

Rule 2332

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

Rule 2436

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

Rubi steps

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

Mathematica [A]
time = 0.01, size = 29, normalized size = 1.00

$$ax-bnx+\frac{b(d+ex)\log \left(c(d+ex)^n\right)}{e}$$

Antiderivative was successfully verified.

```
[In] Integrate[a + b*Log[c*(d + e*x)^n],x]
[Out] a*x - b*n*x + (b*(d + e*x)*Log[c*(d + e*x)^n])/e
```

Maple [A]
time = 0.20, size = 36, normalized size = 1.24

method	result
default	$ax+b\ln\left(c(ex+d)^{n}\right)x-bnx+\frac{bnd\ln(ex+d)}{e}$
norman	$(-bn+a)\,x+bx\ln\left(c\,\mathrm{e}^{n\ln(ex+d)}\right)+\frac{bnd\ln(ex+d)}{e}$
risch	$ax+bx\ln\left((ex+d)^{n}\right)-\frac{ib\pi x\,\mathrm{csgn}(ic)\mathrm{csgn}(i(ex+d)^{n})\mathrm{csgn}(ic(ex+d)^{n})}{2}+\frac{ib\pi x\,\mathrm{csgn}(ic)\mathrm{csgn}(ic(ex+d)^{n})^{2}}{2}+\frac{ib\pi x\,\mathrm{csgn}(i$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(a+b*ln(c*(e*x+d)^n),x,method=_RETURNVERBOSE)
[Out] a*x+b*ln(c*(e*x+d)^n)*x-b*n*x+b/e*n*d*ln(e*x+d)
```

Maxima [A]
time = 0.30, size = 40, normalized size = 1.38

$$\left(de^{(-2)}\log\left(xe+d\right)-xe^{(-1)}\right)bne+bx\log\left((xe+d)^{n}c\right)+ax$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(a+b*log(c*(e*x+d)^n),x, algorithm="maxima")
[Out] (d*e^(-2)*log(x*e + d) - x*e^(-1))*b*n*e + b*x*log((x*e + d)^n*c) + a*x
```

Fricas [A]
time = 0.37, size = 42, normalized size = 1.45

$$(bxe\log\left(c\right)-(bn-a)xe+(bnxe+bdn)\log\left(xe+d\right))e^{(-1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(a+b*log(c*(e*x+d)^n),x, algorithm="fricas")
[Out] (b*x*e*log(c) - (b*n - a)*x*e + (b*n*x*e + b*d*n)*log(x*e + d))*e^(-1)
```

Sympy [A]
time = 0.14, size = 41, normalized size = 1.41

$$ax+b\left(\begin{cases}\frac{d\log\left(c(d+ex)^{n}\right)}{e}-nx+x\log\left(c(d+ex)^{n}\right) & \text{for}\ e\neq 0\\ x\log\left(cd^{n}\right) & \text{otherwise}\end{cases}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(a+b*ln(c*(e*x+d)**n),x)
```

```
[Out] a*x + b*Piecewise((d*log(c*(d + e*x)**n)/e - n*x + x*log(c*(d + e*x)**n), N
e(e, 0)), (x*log(c*d**n), True))
```

Giac [A]
time = 3.57, size = 46, normalized size = 1.59

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

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] ((x*e + d)*n*e^(-1)*log(x*e + d) - (x*e + d)*n*e^(-1) + (x*e + d)*e^(-1)*lo
g(c))*b + a*x
```

Mupad [B]
time = 0.15, size = 35, normalized size = 1.21

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

Verification of antiderivative is not currently implemented for this CAS.

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

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

3.21 $\int \frac{1}{a+b\log(c(d+ex)^n)}\,dx$

Optimal. Leaf size=63

$$\frac{e^{-\frac{a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\text{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{ben}$$

```
[Out] (e*x+d)*Ei((a+b*ln(c*(e*x+d)^n))/b/n)/b/e/exp(a/b/n)/n/((c*(e*x+d)^n)^(1/n)
)
```

Rubi [A]
time = 0.04, antiderivative size = 63, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}} = 0.188$, Rules used = {2436, 2337, 2209}

$$\frac{e^{-\frac{a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\text{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{ben}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^(-1),x]
```

```
[Out] ((d + e*x)*ExpIntegralEi[(a + b*Log[c*(d + e*x)^n])/(b*n)])/(b*e*E^(a/(b*n)
)*n*(c*(d + e*x)^n)^n^(-1))
```

Rule 2209

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/((c_.) + (d_.)*(x_)), x_Symbol] :> Si
mp[(F^(g*(e - c*(f/d)))/d)*ExpIntegralEi[f*g*(c + d*x)*(Log[F]/d)], x] /; F
reeQ[{F, c, d, e, f, g}, x] &&  !TrueQ[$UseGamma]
```

Rule 2337

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

Rule 2436

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

Rubi steps

$$\int \frac{1}{a+b\log\left(c(d+ex)^n\right)}\,dx = \frac{\text{Subst}\left(\int \frac{1}{a+b\log(cx^n)}\,dx, x, d+ex\right)}{e}$$
$$= \frac{\left((d+ex)\left(c(d+ex)^n\right)^{-1/n}\right)\text{Subst}\left(\int \frac{e^{\frac{x}{n}}}{a+bx}\,dx, x, \log\left(c(d+ex)^n\right)\right)}{en}$$
$$= \frac{e^{-\frac{a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\text{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{ben}$$

Mathematica [A]
time = 0.05, size = 63, normalized size = 1.00

$$\frac{e^{-\frac{a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\text{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{ben}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^(-1),x]
```

```
[Out] ((d + e*x)*ExpIntegralEi[(a + b*Log[c*(d + e*x)^n])/(b*n)])/(b*e*E^(a/(b*n)
)*n*(c*(d + e*x)^n)^n^(-1))
```

Maple [C] Result contains higher order function than in optimal. Order 9 vs. order 4.
time = 0.67, size = 311, normalized size = 4.94

method	result
risch	$-\frac{(ex+d)\left((ex+d)^n\right)^{-\frac{1}{n}}c^{-\frac{1}{n}}\mathrm{e}^{-\frac{-ib\pi\,\mathrm{csgn}(ic)\mathrm{csgn}(i(ex+d)^n)\mathrm{csgn}(ic(ex+d)^n)+ib\pi\,\mathrm{csgn}(ic)\mathrm{csgn}(ic(ex+d)^n)^2+ib\pi\,\mathrm{csgn}(i(ex+d)^n)\mathrm{csgn}(ic(ex+d)^n}{2bn}}}{}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+b*ln(c*(e*x+d)^n)),x,method=_RETURNVERBOSE)
```

```
[Out] -1/e/b/n*(e*x+d)*((e*x+d)^n)^(-1/n)*c^(-1/n)*exp(-1/2*(-I*b*Pi*csgn(I*c)*cs
gn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+
I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-I*b*Pi*csgn(I*c*(e*x+d)^n)^3
+2*a)/b/n)*Ei(1,-ln(e*x+d)-1/2*(-I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*
c*(e*x+d)^n)+I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I*b*Pi*csgn(I*(e*x+d)^n
)*csgn(I*c*(e*x+d)^n)^2-I*b*Pi*csgn(I*c*(e*x+d)^n)^3+2*b*ln(c)+2*b*(ln((e*x
+d)^n)-n*ln(e*x+d))+2*a)/b/n)
```

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

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(e*x+d)^n)),x, algorithm="maxima")
[Out] integrate(1/(b*log((x*e + d)^n*c) + a), x)
```

Fricas [A]
time = 0.35, size = 46, normalized size = 0.73

$$\frac{e^{\left(-\frac{b\log(c)+a}{bn}-1\right)}\ \text{log\_integral}\left((xe+d)e^{\left(\frac{b\log(c)+a}{bn}\right)}\right)}{bn}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(e*x+d)^n)),x, algorithm="fricas")
[Out] e^(-(b*log(c) + a)/(b*n) - 1)*log_integral((x*e + d)*e^((b*log(c) + a)/(b*n
)))/(b*n)
```

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

$$\int \frac{1}{a+b\log\left(c\left(d+ex\right)^{n}\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*ln(c*(e*x+d)**n)),x)
[Out] Integral(1/(a + b*log(c*(d + e*x)**n)), x)
```

Giac [A]
time = 3.08, size = 49, normalized size = 0.78

$$\frac{\text{Ei}\left(\frac{\log(c)}{n}+\frac{a}{bn}+\log\left(xe+d\right)\right)e^{\left(-\frac{a}{bn}-1\right)}}{bc^{\left(\frac{1}{n}\right)}n}$$

Verification of antiderivative is not currently implemented for this CAS.

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

Mupad [F]
time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{1}{a+b\,\ln\left(c\left(d+e\,x\right)^{n}\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a + b*log(c*(d + e*x)^n)),x)
[Out] int(1/(a + b*log(c*(d + e*x)^n)), x)
```

3.22 $\int \frac{1}{(a+b\log(c(d+ex)^n))^2}\,dx$

Optimal. Leaf size=96

$$\frac{e^{-\frac{a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\operatorname{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{b^2en^2}-\frac{d+ex}{ben\left(a+b\log\left(c(d+ex)^n\right)\right)}$$

```
[Out] (e*x+d)*Ei((a+b*ln(c*(e*x+d)^n))/b/n)/b^2/e/exp(a/b/n)/n^2/((c*(e*x+d)^n)^(
1/n))+(-e*x-d)/b/e/n/(a+b*ln(c*(e*x+d)^n))
```

Rubi [A]
time = 0.05, antiderivative size = 96, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}} = 0.250$, Rules used = {2436, 2334, 2337, 2209}

$$\frac{e^{-\frac{a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\operatorname{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{b^2en^2}-\frac{d+ex}{ben\left(a+b\log\left(c(d+ex)^n\right)\right)}$$

Antiderivative was successfully verified.

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

```
[Out] ((d + e*x)*ExpIntegralEi[(a + b*Log[c*(d + e*x)^n])/(b*n)])/(b^2*e*E^(a/(b*
n))*n^2*(c*(d + e*x)^n)^n^(-1)) - (d + e*x)/(b*e*n*(a + b*Log[c*(d + e*x)^n
]))
```

Rule 2209

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/((c_.) + (d_.)*(x_)), x_Symbol] :> Si
mp[(F^(g*(e - c*(f/d)))/d)*ExpIntegralEi[f*g*(c + d*x)*(Log[F]/d)], x] /; F
reeQ[{F, c, d, e, f, g}, x] &&  !TrueQ[$UseGamma]
```

Rule 2334

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

Rule 2337

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

Rule 2436

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

Rubi steps

$$\int \frac{1}{(a+b\log(c(d+ex)^n))^2}\,dx = \frac{\text{Subst}\left(\int \frac{1}{(a+b\log(cx^n))^2}\,dx, x, d+ex\right)}{e}$$
$$= -\frac{d+ex}{ben\,(a+b\log(c(d+ex)^n))} + \frac{\text{Subst}\left(\int \frac{1}{a+b\log(cx^n)}\,dx, x, d+ex\right)}{ben}$$
$$= -\frac{d+ex}{ben\,(a+b\log(c(d+ex)^n))} + \frac{\left((d+ex)\,(c(d+ex)^n)^{-1/n}\right)\text{Subst}\left(\int \frac{e^{\frac{x}{n}}}{a+b}\right.}{ben^2}$$
$$= \frac{e^{-\frac{a}{bn}}(d+ex)\,(c(d+ex)^n)^{-1/n}\,\text{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{b^2en^2} - \frac{d+ex}{ben\,(a+b\log(c(d+}$$

Mathematica [A]
time = 0.05, size = 123, normalized size = 1.28

$$-\frac{e^{-\frac{a}{bn}}(d+ex)\,(c(d+ex)^n)^{-1/n}\left(be^{\frac{a}{bn}}n(c(d+ex)^n)^{\frac{1}{n}} - \text{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)(a+b\log(c(d+ex)^n))\right)}{b^2en^2\,(a+b\log(c(d+ex)^n))}$$

Antiderivative was successfully verified.

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

```
[Out] -(((d + e*x)*(b*E^(a/(b*n))*n*(c*(d + e*x)^n)^n^(-1) - ExpIntegralEi[(a + b
*Log[c*(d + e*x)^n])/(b*n)]*(a + b*Log[c*(d + e*x)^n])))/(b^2*e*E^(a/(b*n))
*n^2*(c*(d + e*x)^n)^n^(-1)*(a + b*Log[c*(d + e*x)^n])))
```

Maple [C] Result contains higher order function than in optimal. Order 9 vs. order 4.
time = 0.68, size = 456, normalized size = 4.75

method	result
risch	$-\frac{2(ex+d)}{\left(2a+2b\ln(c)+2b\ln((ex+d)^n)-ib\pi\,\text{csgn}(ic)\text{csgn}(i(ex+d)^n)\text{csgn}(ic(ex+d)^n)+ib\pi\,\text{csgn}(ic)\text{csgn}(ic(ex+d)^n)^2+ib\pi\,\text{csgn}(i(ex+d)^n)\right.}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+b*ln(c*(e*x+d)^n))^2,x,method=_RETURNVERBOSE)
```

[Out] -2/(2*a+2*b*ln(c)+2*b*ln((e*x+d)^n)-I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn (I*c*(e*x+d)^n)+I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-I*b*Pi*csgn(I*c*(e*x+d)^n)^3)/b/n/e*(e*x+d)-1/b^ 2/n^2/e*(e*x+d)*c^(-1/n)*((e*x+d)^n)^(-1/n)*exp(-1/2*(-I*b*Pi*csgn(I*c)*csg n(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I *b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-I*b*Pi*csgn(I*c*(e*x+d)^n)^3+ 2*a)/b/n)*Ei(1,-ln(e*x+d)-1/2*(-I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c *(e*x+d)^n)+I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I*b*Pi*csgn(I*(e*x+d)^n) *csgn(I*c*(e*x+d)^n)^2-I*b*Pi*csgn(I*c*(e*x+d)^n)^3+2*b*ln(c)+2*b*(ln((e*x+ d)^n)-n*ln(e*x+d))+2*a)/b/n)

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

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(1/(a+b*log(c*(e*x+d)^n))^2,x, algorithm="maxima")

[Out] -(x*e + d)/(b^2*n*e*log((x*e + d)^n) + (b^2*n*log(c) + a*b*n)*e) + integrat e(1/(b^2*n*log((x*e + d)^n) + b^2*n*log(c) + a*b*n), x)

Fricas [A]
time = 0.37, size = 124, normalized size = 1.29

$$-\frac{\left((bnxe+bdn)e^{\left(\frac{b\log(c)+a}{bn}\right)}-(bn\log(xe+d)+b\log(c)+a)\,\mathrm{log\_integral}\left((xe+d)e^{\left(\frac{b\log(c)+a}{bn}\right)}\right)\right)e^{\left(-\frac{b\log(c)+a}{bn}\right)}}{b^3n^3e\log(xe+d)+b^3n^2e\log(c)+ab^2n^2e}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(1/(a+b*log(c*(e*x+d)^n))^2,x, algorithm="fricas")

[Out] -((b*n*x*e + b*d*n)*e^((b*log(c) + a)/(b*n)) - (b*n*log(x*e + d) + b*log(c) + a)*log_integral((x*e + d)*e^((b*log(c) + a)/(b*n))))*e^(-(b*log(c) + a)/ (b*n))/(b^3*n^3*e*log(x*e + d) + b^3*n^2*e*log(c) + a*b^2*n^2*e)

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

$$\int \frac{1}{\left(a+b\log\left(c\left(d+ex\right)^{n}\right)\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

[Out] Integral((a + b*log(c*(d + e*x)**n))**(-2), x)

Giac [B] Leaf count of result is larger than twice the leaf count of optimal. 307 vs. 2(98) = 196.
time = 2.72, size = 307, normalized size = 3.20

$$\frac{bn\text{Ei}\left(\frac{\log(c)}{n}+\frac{a}{bn}+\log\left(xe+d\right)\right)e^{\left(-\frac{a}{bn}\right)}\log\left(xe+d\right)}{\left(b^{3}n^{3}e\log\left(xe+d\right)+b^{3}n^{2}e\log\left(c\right)+ab^{2}n^{2}e\right)c^{\left(\frac{1}{n}\right)}}-\frac{(xe+d)bn}{b^{3}n^{3}e\log\left(xe+d\right)+b^{3}n^{2}e\log\left(c\right)+ab^{2}n^{2}e}+\frac{b\text{Ei}\left(\frac{\log(c)}{n}+\frac{a}{bn}+\log\left(xe+d\right)\right)e^{\left(-\frac{a}{bn}\right)}\log\left(c\right)}{\left(b^{3}n^{3}e\log\left(xe+d\right)+b^{3}n^{2}e\log\left(c\right)+ab^{2}n^{2}e\right)c^{\left(\frac{1}{n}\right)}}+\frac{a\text{Ei}\left(\frac{\log(c)}{n}+\frac{a}{bn}+\log\left(xe+d\right)\right)e^{\left(-\frac{a}{bn}\right)}}{\left(b^{3}n^{3}e\log\left(xe+d\right)+b^{3}n^{2}e\log\left(c\right)+ab^{2}n^{2}e\right)c^{\left(\frac{1}{n}\right)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(e*x+d)^n))^2,x, algorithm="giac")
```

```
[Out] b*n*Ei(log(c)/n + a/(b*n) + log(x*e + d))*e^(-a/(b*n))*log(x*e + d)/((b^3*n
^3*e*log(x*e + d) + b^3*n^2*e*log(c) + a*b^2*n^2*e)*c^(1/n)) - (x*e + d)*b*
n/(b^3*n^3*e*log(x*e + d) + b^3*n^2*e*log(c) + a*b^2*n^2*e) + b*Ei(log(c)/n
 + a/(b*n) + log(x*e + d))*e^(-a/(b*n))*log(c)/((b^3*n^3*e*log(x*e + d) + b
^3*n^2*e*log(c) + a*b^2*n^2*e)*c^(1/n)) + a*Ei(log(c)/n + a/(b*n) + log(x*e
 + d))*e^(-a/(b*n))/((b^3*n^3*e*log(x*e + d) + b^3*n^2*e*log(c) + a*b^2*n^2
*e)*c^(1/n))
```

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

$$\int \frac{1}{{\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)}^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] int(1/(a + b*log(c*(d + e*x)^n))^2, x)
```

3.23 $\int \frac{1}{(a+b\log(c(d+ex)^n))^3}\,dx$

Optimal. Leaf size=135

$$\frac{e^{-\frac{a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\operatorname{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{2b^3en^3}-\frac{d+ex}{2ben\left(a+b\log\left(c(d+ex)^n\right)\right)^2}-\frac{d+ex}{2b^2en^2\left(a+b\log\left(c(d+e\right.\right.}$$

```
[Out] 1/2*(e*x+d)*Ei((a+b*ln(c*(e*x+d)^n))/b/n)/b^3/e/exp(a/b/n)/n^3/((c*(e*x+d)^
n)^(1/n))+1/2*(-e*x-d)/b/e/n/(a+b*ln(c*(e*x+d)^n))^2+1/2*(-e*x-d)/b^2/e/n^2
/(a+b*ln(c*(e*x+d)^n))
```

Rubi [A]
time = 0.06, antiderivative size = 135, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}} = 0.250$, Rules used = {2436, 2334, 2337, 2209}

$$\frac{e^{-\frac{a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\operatorname{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{2b^3en^3}-\frac{d+ex}{2b^2en^2\left(a+b\log\left(c(d+ex)^n\right)\right)}-\frac{d+ex}{2ben\left(a+b\log\left(c(d+ex)^n\right)\right)^2}$$

Antiderivative was successfully verified.

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

```
[Out] ((d + e*x)*ExpIntegralEi[(a + b*Log[c*(d + e*x)^n])/(b*n)])/(2*b^3*e*E^(a/(
b*n))*n^3*(c*(d + e*x)^n)^n^(-1)) - (d + e*x)/(2*b*e*n*(a + b*Log[c*(d + e*
x)^n])^2) - (d + e*x)/(2*b^2*e*n^2*(a + b*Log[c*(d + e*x)^n]))
```

Rule 2209

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/((c_.) + (d_.)*(x_)), x_Symbol] :> Si
mp[(F^(g*(e - c*(f/d)))/d)*ExpIntegralEi[f*g*(c + d*x)*(Log[F]/d)], x] /; F
reeQ[{F, c, d, e, f, g}, x] &&  !TrueQ[$UseGamma]
```

Rule 2334

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

Rule 2337

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

Rule 2436

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

Rubi steps

$$\int \frac{1}{(a+b\log(c(d+ex)^n))^3}\,dx = \frac{\text{Subst}\left(\int \frac{1}{(a+b\log(cx^n))^3}\,dx, x, d+ex\right)}{e}$$
$$= -\frac{d+ex}{2ben\,(a+b\log(c(d+ex)^n))^2} + \frac{\text{Subst}\left(\int \frac{1}{(a+b\log(cx^n))^2}\,dx, x, d+ex\right)}{2ben}$$
$$= -\frac{d+ex}{2ben\,(a+b\log(c(d+ex)^n))^2} - \frac{d+ex}{2b^2en^2\,(a+b\log(c(d+ex)^n))} + \frac{\text{Subst}}{}$$
$$= -\frac{d+ex}{2ben\,(a+b\log(c(d+ex)^n))^2} - \frac{d+ex}{2b^2en^2\,(a+b\log(c(d+ex)^n))} + \frac{((d+}{}$$
$$= \frac{e^{-\frac{a}{bn}}(d+ex)\,(c(d+ex)^n)^{-1/n}\,\text{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{2b^3en^3} - \frac{d+ex}{2ben\,(a+b\log(c(d-}$$

Mathematica [A]
time = 0.07, size = 144, normalized size = 1.07

$$-\frac{e^{-\frac{a}{bn}}(d+ex)\,(c(d+ex)^n)^{-1/n}\left(-\text{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)(a+b\log(c(d+ex)^n))^2+be^{\frac{a}{bn}}n(c(d+ex)^n)^{\frac{1}{n}}\,(a+bn+b\log(c(d+ex)^n))\right)}{2b^3en^3\,(a+b\log(c(d+ex)^n))^2}$$

Antiderivative was successfully verified.

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

```
[Out] -1/2*((d + e*x)*(-(ExpIntegralEi[(a + b*Log[c*(d + e*x)^n])/(b*n)]*(a + b*L
og[c*(d + e*x)^n])^2) + b*E^(a/(b*n))*n*(c*(d + e*x)^n)^n^(-1)*(a + b*n + b
*Log[c*(d + e*x)^n])))/(b^3*e*E^(a/(b*n))*n^3*(c*(d + e*x)^n)^n^(-1)*(a + b
*Log[c*(d + e*x)^n])^2)
```

Maple [C] Result contains higher order function than in optimal. Order 9 vs. order 4.
time = 0.70, size = 734, normalized size = 5.44

method	result

risch	$-\frac{2benx+2bdn-i\pi bd\,\mathrm{csgn}(ic(ex+d)^n)^3-i\pi bd\,\mathrm{csgn}(ic)\mathrm{csgn}(i(ex+d)^n)\mathrm{csgn}(ic(ex+d)^n)+i\pi bd\,\mathrm{csgn}(i(ex+d)^n)\mathrm{csgn}(ic(ex+d)^n)^2-i\pi be}{\left(2a+2b\ln(c)+2b\ln((ex+d)^n)-\right.}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+b*ln(c*(e*x+d)^n))^3,x,method=_RETURNVERBOSE)
```

```
[Out] -(2*b*e*n*x+2*b*d*n-I*Pi*b*d*csgn(I*c*(e*x+d)^n)^3-I*Pi*b*d*csgn(I*c)*csgn(
I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+I*Pi*b*d*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d
)^n)^2-I*Pi*b*e*x*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-I*Pi*b*e*
x*csgn(I*c*(e*x+d)^n)^3+I*Pi*b*e*x*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+
I*Pi*b*e*x*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I*Pi*b*d*csgn(I*c)*csgn(I*c*(e*x
+d)^n)^2+2*ln(c)*b*e*x+2*b*e*x*ln((e*x+d)^n)+2*d*b*ln(c)+2*a*e*x+2*b*d*ln((
e*x+d)^n)+2*a*d)/(2*a+2*b*ln(c)+2*b*ln((e*x+d)^n)-I*b*Pi*csgn(I*c)*csgn(I*(
e*x+d)^n)*csgn(I*c*(e*x+d)^n)+I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I*b*Pi
*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-I*b*Pi*csgn(I*c*(e*x+d)^n)^3)^2/b^
2/n^2/e-1/2/b^3/n^3/e*(e*x+d)*((e*x+d)^n)^(-1/n)*c^(-1/n)*exp(-1/2*(-I*b*Pi
*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+I*b*Pi*csgn(I*c)*csgn(I*c*
(e*x+d)^n)^2+I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-I*b*Pi*csgn(I*c
*(e*x+d)^n)^3+2*a)/b/n)*Ei(1,-ln(e*x+d)-1/2*(-I*b*Pi*csgn(I*c)*csgn(I*(e*x+
d)^n)*csgn(I*c*(e*x+d)^n)+I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I*b*Pi*csg
n(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-I*b*Pi*csgn(I*c*(e*x+d)^n)^3+2*b*ln(c)
+2*b*(ln((e*x+d)^n)-n*ln(e*x+d))+2*a)/b/n)
```

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

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(e*x+d)^n))^3,x, algorithm="maxima")
```

```
[Out] -1/2*((b*(n + log(c)) + a)*x*e + (d*n + d*log(c))*b + a*d + (b*x*e + b*d)*l
og((x*e + d)^n))/(b^4*n^2*e*log((x*e + d)^n)^2 + 2*(b^4*n^2*log(c) + a*b^3*
n^2)*e*log((x*e + d)^n) + (b^4*n^2*log(c)^2 + 2*a*b^3*n^2*log(c) + a^2*b^2*
n^2)*e) + integrate(1/2/(b^3*n^2*log((x*e + d)^n) + b^3*n^2*log(c) + a*b^2*
n^2), x)
```

Fricas [B] Leaf count of result is larger than twice the leaf count of optimal. 277 vs. $2(132) = 264$.
time = 0.38, size = 277, normalized size = 2.05

$$-\frac{\left((b^2dn^2+abdn+(b^2n^2+abn)xe+(b^2n^2xe+b^2dn^2)\log(xe+d)+(b^2nxe+b^2dn)\log(c))e^{\left(\frac{b\log(c)+a}{bn}\right)}-(b^2n^2\log(xe+d)^2+b^2\log(c)^2+2ab\log(c)+a^2+2(b^2n\log(c)+abn)\log(xe+d))\,\mathrm{log\_integral}\left((xe+d)e^{\left(\frac{b\log(c)+a}{bn}\right)}\right)\right)e^{\left(-\frac{b\log(c)+a}{bn}\right)}}{2\left(b^5n^5e\log(xe+d)^2+b^5n^3e\log(c)^2+2ab^4n^3e\log(c)+a^2b^3n^3e+2(b^5n^4e\log(c)+ab^4n^4e)\log(xe+d)\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(e*x+d)^n))^3,x, algorithm="fricas")
```

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

Sympy [**F**]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{(a+b\log{(c(d+ex)^n)})^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Integral((a + b*log(c*(d + e*x)**n))**(-3), x)
```

Giac [**B**] Leaf count of result is larger than twice the leaf count of optimal. 1322 vs. 2(132) = 264.
time = 3.33, size = 1322, normalized size = 9.79

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(e*x+d)^n))^3,x, algorithm="giac")
```

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

```
log(c)^2 + 2*a*b^4*n^3*e*log(c) + a^2*b^3*n^3*e) + 1/2*b^2*Ei(log(c)/n + a/
(b*n) + log(x*e + d))*e^(-a/(b*n))*log(c)^2/((b^5*n^5*e*log(x*e + d)^2 + 2*
b^5*n^4*e*log(x*e + d)*log(c) + 2*a*b^4*n^4*e*log(x*e + d) + b^5*n^3*e*log(
c)^2 + 2*a*b^4*n^3*e*log(c) + a^2*b^3*n^3*e)*c^(1/n)) - 1/2*(x*e + d)*a*b*n
/(b^5*n^5*e*log(x*e + d)^2 + 2*b^5*n^4*e*log(x*e + d)*log(c) + 2*a*b^4*n^4*
e*log(x*e + d) + b^5*n^3*e*log(c)^2 + 2*a*b^4*n^3*e*log(c) + a^2*b^3*n^3*e)
 + a*b*Ei(log(c)/n + a/(b*n) + log(x*e + d))*e^(-a/(b*n))*log(c)/((b^5*n^5*
e*log(x*e + d)^2 + 2*b^5*n^4*e*log(x*e + d)*log(c) + 2*a*b^4*n^4*e*log(x*e
+ d) + b^5*n^3*e*log(c)^2 + 2*a*b^4*n^3*e*log(c) + a^2*b^3*n^3*e)*c^(1/n))
+ 1/2*a^2*Ei(log(c)/n + a/(b*n) + log(x*e + d))*e^(-a/(b*n))/((b^5*n^5*e*lo
g(x*e + d)^2 + 2*b^5*n^4*e*log(x*e + d)*log(c) + 2*a*b^4*n^4*e*log(x*e + d)
 + b^5*n^3*e*log(c)^2 + 2*a*b^4*n^3*e*log(c) + a^2*b^3*n^3*e)*c^(1/n))
```

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

$$\int \frac{1}{\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)}^3\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] int(1/(a + b*log(c*(d + e*x)^n))^3, x)
```

3.24 $\int (a+b\log (c(d+ex)^n))^{5/2}\, dx$

Optimal. Leaf size=179

$$-\frac{15b^{5/2}e^{-\frac{a}{bn}}n^{5/2}\sqrt{\pi}\,(d+ex)\,(c(d+ex)^n)^{-1/n}\operatorname{erfi}\left(\frac{\sqrt{a+b\log (c(d+ex)^n)}}{\sqrt{b}\,\sqrt{n}}\right)}{8e}+\frac{15b^2n^2(d+ex)\sqrt{a+b\log}}{4e}$$

```
[Out] -5/2*b*n*(e*x+d)*(a+b*ln(c*(e*x+d)^n))^(3/2)/e+(e*x+d)*(a+b*ln(c*(e*x+d)^n)
)^(5/2)/e-15/8*b^(5/2)*n^(5/2)*(e*x+d)*erfi((a+b*ln(c*(e*x+d)^n))^(1/2)/b^(
1/2)/n^(1/2))*Pi^(1/2)/e/exp(a/b/n)/((c*(e*x+d)^n)^(1/n))+15/4*b^2*n^2*(e*x
+d)*(a+b*ln(c*(e*x+d)^n))^(1/2)/e
```

Rubi [A]
time = 0.11, antiderivative size = 179, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}} = 0.278$, Rules used = {2436, 2333, 2337, 2211, 2235}

$$-\frac{15\sqrt{\pi}\,b^{5/2}n^{5/2}e^{-\frac{a}{bn}}(d+ex)\,(c(d+ex)^n)^{-1/n}\operatorname{Erfi}\left(\frac{\sqrt{a+b\log (c(d+ex)^n)}}{\sqrt{b}\,\sqrt{n}}\right)}{8e}+\frac{15b^2n^2(d+ex)\sqrt{a+b\log (c(d+ex)^n)}}{4e}+\frac{(d+ex)\,(a+b\log (c(d+ex)^n))^{5/2}}{e}-\frac{5bn(d+ex)\,(a+b\log (c(d+ex)^n))^{3/2}}{2e}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^(5/2),x]
```

```
[Out] (-15*b^(5/2)*n^(5/2)*Sqrt[Pi]*(d + e*x)*Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]]
/(Sqrt[b]*Sqrt[n])])/(8*e*E^(a/(b*n))*(c*(d + e*x)^n)^n^(-1)) + (15*b^2*n^2
*(d + e*x)*Sqrt[a + b*Log[c*(d + e*x)^n]])/(4*e) - (5*b*n*(d + e*x)*(a + b*
Log[c*(d + e*x)^n])^(3/2))/(2*e) + ((d + e*x)*(a + b*Log[c*(d + e*x)^n])^(5
/2))/e
```

Rule 2211

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - c*(f/d)) + f*g*(x^2/d)), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !TrueQ[$UseGamma]
```

Rule 2235

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[F^a*Sqrt
[Pi]*(Erfi[(c + d*x)*Rt[b*Log[F], 2]]/(2*d*Rt[b*Log[F], 2])), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2333

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

```
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2337

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

Rule 2436

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

Rubi steps

$$\int (a+b\log(c(d+ex)^n))^{5/2}\,dx = \frac{\text{Subst}\left(\int (a+b\log(cx^n))^{5/2}\,dx, x, d+ex\right)}{e}$$

$$= \frac{(d+ex)(a+b\log(c(d+ex)^n))^{5/2}}{e} - \frac{(5bn)\text{Subst}\left(\int (a+b\log(cx^n))^{3/2}\,d\right.}{2e}$$

$$= -\frac{5bn(d+ex)(a+b\log(c(d+ex)^n))^{3/2}}{2e} + \frac{(d+ex)(a+b\log(c(d+ex)^n}{e}$$

$$= \frac{15b^2n^2(d+ex)\sqrt{a+b\log(c(d+ex)^n)}}{4e} - \frac{5bn(d+ex)(a+b\log(c(d+e}{2e}$$

$$= \frac{15b^2n^2(d+ex)\sqrt{a+b\log(c(d+ex)^n)}}{4e} - \frac{5bn(d+ex)(a+b\log(c(d+e}{2e}$$

$$= \frac{15b^2n^2(d+ex)\sqrt{a+b\log(c(d+ex)^n)}}{4e} - \frac{5bn(d+ex)(a+b\log(c(d+e}{2e}$$

$$= -\frac{15b^{5/2}e^{-\frac{a}{bn}}n^{5/2}\sqrt{\pi}(d+ex)(c(d+ex)^n)^{-1/n}\,\text{erfi}\left(\frac{\sqrt{a+b\log(c(d+ex}}{\sqrt{b}\sqrt{n}}\right.}{8e}$$

Mathematica [A]

time = 0.15, size = 152, normalized size = 0.85

$$\frac{(d+ex)\left(8(a+b\log(c(d+ex)^n))^{5/2}-5bn\left(3b^{3/2}e^{-\frac{a}{bn}}n^{3/2}\sqrt{\pi}(c(d+ex)^n)^{-1/n}\,\text{erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)+2\sqrt{a+b\log(c(d+ex)^n)}(2a-3bn+2b\log(c(d+ex)^n))\right)\right)}{8e}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^(5/2),x]
```

```
[Out] ((d + e*x)*(8*(a + b*Log[c*(d + e*x)^n])^(5/2) - 5*b*n*((3*b^(3/2)*n^(3/2)*
Sqrt[Pi]*Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]]/(Sqrt[b]*Sqrt[n])])/(E^(a/(b*n
))*(c*(d + e*x)^n)^n^(-1)) + 2*Sqrt[a + b*Log[c*(d + e*x)^n]]*(2*a - 3*b*n
+ 2*b*Log[c*(d + e*x)^n]))))/(8*e)
```

Maple [**F**]
time = 0.05, size = 0, normalized size = 0.00

$$\int (a + b\ln (c(ex + d)^{n}))^{\frac{5}{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))^(5/2),x)
```

```
[Out] int((a+b*ln(c*(e*x+d)^n))^(5/2),x)
```

Maxima [**F**]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(5/2),x, algorithm="maxima")
```

```
[Out] integrate((b*log((x*e + d)^n*c) + a)^(5/2), x)
```

Fricas [**F(-2)**]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(5/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [**F**]
time = 0.00, size = 0, normalized size = 0.00

$$\int (a + b\log (c(d + ex)^{n}))^{\frac{5}{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**(5/2),x)
```

```
[Out] Integral((a + b*log(c*(d + e*x)**n))**(5/2), x)
```

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

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(5/2),x, algorithm="giac")
```

```
[Out] integrate((b*log((x*e + d)^n*c) + a)^(5/2), x)
```

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

$$\int (a+b\,\ln \left(c\,{\left(d+e\,x\right)}^n\right))^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))^(5/2),x)
```

```
[Out] int((a + b*log(c*(d + e*x)^n))^(5/2), x)
```

3.25 $\int (a+b\log(c(d+ex)^n))^{3/2}\,dx$

Optimal. Leaf size=143

$$\frac{3b^{3/2}e^{-\frac{a}{bn}}n^{3/2}\sqrt{\pi}\,(d+ex)\,(c(d+ex)^n)^{-1/n}\,\mathrm{erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\,\sqrt{n}}\right)}{4e}-\frac{3bn(d+ex)\sqrt{a+b\log(c(d+}{2e}$$

```
[Out] (e*x+d)*(a+b*ln(c*(e*x+d)^n))^(3/2)/e+3/4*b^(3/2)*n^(3/2)*(e*x+d)*erfi((a+b
*ln(c*(e*x+d)^n))^(1/2)/b^(1/2)/n^(1/2))*Pi^(1/2)/e/exp(a/b/n)/((c*(e*x+d)^
n)^(1/n))-3/2*b*n*(e*x+d)*(a+b*ln(c*(e*x+d)^n))^(1/2)/e
```

Rubi [A]
time = 0.09, antiderivative size = 143, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}} = 0.278$, Rules used = {2436, 2333, 2337, 2211, 2235}

$$\frac{3\sqrt{\pi}\,b^{3/2}n^{3/2}e^{-\frac{a}{bn}}(d+ex)\,(c(d+ex)^n)^{-1/n}\,\mathrm{Erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\,\sqrt{n}}\right)}{4e}+\frac{(d+ex)\,(a+b\log(c(d+ex)^n))^{3/2}}{e}-\frac{3bn(d+ex)\sqrt{a+b\log(c(d+ex)^n)}}{2e}$$

Antiderivative was successfully verified.

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

```
[Out] (3*b^(3/2)*n^(3/2)*Sqrt[Pi]*(d + e*x)*Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]]/(
Sqrt[b]*Sqrt[n])])/(4*e*E^(a/(b*n))*(c*(d + e*x)^n)^n^(-1)) - (3*b*n*(d + e
*x)*Sqrt[a + b*Log[c*(d + e*x)^n]])/(2*e) + ((d + e*x)*(a + b*Log[c*(d + e*
x)^n])^(3/2))/e
```

Rule 2211

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - c*(f/d)) + f*g*(x^2/d)), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !TrueQ[$UseGamma]
```

Rule 2235

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[F^a*Sqrt
[Pi]*(Erfi[(c + d*x)*Rt[b*Log[F], 2]]/(2*d*Rt[b*Log[F], 2])), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2333

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

Rule 2337

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

Rule 2436

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

Rubi steps

$$\int (a+b\log(c(d+ex)^n))^{3/2}\,dx = \frac{\text{Subst}\left(\int (a+b\log(cx^n))^{3/2}\,dx, x, d+ex\right)}{e}$$

$$= \frac{(d+ex)(a+b\log(c(d+ex)^n))^{3/2}}{e} - \frac{(3bn)\text{Subst}\left(\int \sqrt{a+b\log(cx^n)}\,dx\right.}{2e}$$

$$= -\frac{3bn(d+ex)\sqrt{a+b\log(c(d+ex)^n)}}{2e} + \frac{(d+ex)(a+b\log(c(d+ex)^n)}{e}$$

$$= -\frac{3bn(d+ex)\sqrt{a+b\log(c(d+ex)^n)}}{2e} + \frac{(d+ex)(a+b\log(c(d+ex)^n)}{e}$$

$$= -\frac{3bn(d+ex)\sqrt{a+b\log(c(d+ex)^n)}}{2e} + \frac{(d+ex)(a+b\log(c(d+ex)^n)}{e}$$

$$= \frac{3b^{3/2}e^{-\frac{a}{bn}}n^{3/2}\sqrt{\pi}\,(d+ex)\,(c(d+ex)^n)^{-1/n}\,\text{erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right.}{4e}$$

Mathematica [A]
time = 0.05, size = 127, normalized size = 0.89

$$\frac{(d+ex)\left(3b^{3/2}e^{-\frac{a}{bn}}n^{3/2}\sqrt{\pi}\,(c(d+ex)^n)^{-1/n}\,\text{erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)+2\sqrt{a+b\log(c(d+ex)^n)}\,(2a-3bn+2b\log(c(d+ex)^n))\right)}{4e}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^(3/2),x]
[Out] ((d + e*x)*((3*b^(3/2)*n^(3/2)*Sqrt[Pi]*Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]]
/(Sqrt[b]*Sqrt[n])])/(E^(a/(b*n))*(c*(d + e*x)^n)^n^(-1)) + 2*Sqrt[a + b*Lo
g[c*(d + e*x)^n]]*(2*a - 3*b*n + 2*b*Log[c*(d + e*x)^n])))/(4*e)
```

Maple [**F**]
time = 0.04, size = 0, normalized size = 0.00

$$\int \left(a + b \ln \left(c(ex + d)^{n}\right)\right)^{\frac{3}{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

Maxima [**F**]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(3/2),x, algorithm="maxima")
[Out] integrate((b*log((x*e + d)^n*c) + a)^(3/2), x)
```

Fricas [**F(-2)**]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(3/2),x, algorithm="fricas")
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [**F**]
time = 0.00, size = 0, normalized size = 0.00

$$\int \left(a + b \log \left(c(d + ex)^{n}\right)\right)^{\frac{3}{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**(3/2),x)
[Out] Integral((a + b*log(c*(d + e*x)**n))**(3/2), x)
```

Giac [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(3/2),x, algorithm="giac")
```

```
[Out] integrate((b*log((x*e + d)^n*c) + a)^(3/2), x)
```

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

$$\int (a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right))^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] int((a + b*log(c*(d + e*x)^n))^(3/2), x)
```

3.26 $\int \sqrt{a+b\log\left(c(d+ex)^n\right)}\,dx$

Optimal. Leaf size=111

$$-\frac{\sqrt{b}\,e^{-\frac{a}{bn}}\sqrt{n}\,\sqrt{\pi}\,(d+ex)\left(c(d+ex)^n\right)^{-1/n}\operatorname{erfi}\left(\frac{\sqrt{a+b\log\left(c(d+ex)^n\right)}}{\sqrt{b}\,\sqrt{n}}\right)}{2e}+\frac{(d+ex)\sqrt{a+b\log\left(c(d+e\right.}}{e}$$

```
[Out] -1/2*(e*x+d)*erfi((a+b*ln(c*(e*x+d)^n))^(1/2)/b^(1/2)/n^(1/2))*b^(1/2)*n^(1
/2)*Pi^(1/2)/e/exp(a/b/n)/((c*(e*x+d)^n)^(1/n))+(e*x+d)*(a+b*ln(c*(e*x+d)^n
))^(1/2)/e
```

Rubi [A]
time = 0.07, antiderivative size = 111, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}} = 0.278$, Rules used = {2436, 2333, 2337, 2211, 2235}

$$\frac{(d+ex)\sqrt{a+b\log\left(c(d+ex)^n\right)}}{e}-\frac{\sqrt{\pi}\,\sqrt{b}\,\sqrt{n}\,e^{-\frac{a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\operatorname{Erfi}\left(\frac{\sqrt{a+b\log\left(c(d+ex)^n\right)}}{\sqrt{b}\,\sqrt{n}}\right)}{2e}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[a + b*Log[c*(d + e*x)^n]],x]
```

```
[Out] -1/2*(Sqrt[b]*Sqrt[n]*Sqrt[Pi]*(d + e*x)*Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]
]/(Sqrt[b]*Sqrt[n])])/(e*E^(a/(b*n))*(c*(d + e*x)^n)^n^(-1)) + ((d + e*x)*S
qrt[a + b*Log[c*(d + e*x)^n]])/e
```

Rule 2211

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - c*(f/d)) + f*g*(x^2/d)), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !TrueQ[$UseGamma]
```

Rule 2235

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[F^a*Sqrt
[Pi]*(Erfi[(c + d*x)*Rt[b*Log[F], 2]]/(2*d*Rt[b*Log[F], 2])), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2333

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

Rule 2337

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

Rule 2436

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

Rubi steps

$$\int \sqrt{a+b\log\left(c(d+ex)^n\right)}\,dx = \frac{\text{Subst}\left(\int \sqrt{a+b\log\left(cx^n\right)}\,dx, x, d+ex\right)}{e}$$

$$= \frac{(d+ex)\sqrt{a+b\log\left(c(d+ex)^n\right)}}{e} - \frac{(bn)\text{Subst}\left(\int \frac{1}{\sqrt{a+b\log\left(cx^n\right)}}\,dx, x,\right.}{2e}$$

$$= \frac{(d+ex)\sqrt{a+b\log\left(c(d+ex)^n\right)}}{e} - \frac{\left(b(d+ex)\left(c(d+ex)^n\right)^{-1/n}\right)\text{Subst}\left(\int\right.}{2e}$$

$$= \frac{(d+ex)\sqrt{a+b\log\left(c(d+ex)^n\right)}}{e} - \frac{\left((d+ex)\left(c(d+ex)^n\right)^{-1/n}\right)\text{Subst}\left(\int e\right.}{}$$

$$= -\frac{\sqrt{b}\,e^{-\frac{a}{bn}}\sqrt{n}\sqrt{\pi}\,(d+ex)\left(c(d+ex)^n\right)^{-1/n}\text{erfi}\left(\frac{\sqrt{a+b\log\left(c(d+ex)^n\right)}}{\sqrt{b}\sqrt{n}}\right.}{2e}$$

Mathematica [A]
time = 0.03, size = 106, normalized size = 0.95

$$\frac{(d+ex)\left(-\sqrt{b}\,e^{-\frac{a}{bn}}\sqrt{n}\sqrt{\pi}\left(c(d+ex)^n\right)^{-1/n}\text{erfi}\left(\frac{\sqrt{a+b\log\left(c(d+ex)^n\right)}}{\sqrt{b}\sqrt{n}}\right)+2\sqrt{a+b\log\left(c(d+ex)^n\right)}\right)}{2e}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[a + b*Log[c*(d + e*x)^n]],x]
```

```
[Out] ((d + e*x)*(-((Sqrt[b]*Sqrt[n]*Sqrt[Pi]*Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]]
/(Sqrt[b]*Sqrt[n])])/(E^(a/(b*n))*(c*(d + e*x)^n)^n^(-1))) + 2*Sqrt[a + b*L
og[c*(d + e*x)^n]]))/(2*e)
```

Maple [F]
time = 0.03, size = 0, normalized size = 0.00

$$\int \sqrt{a+b\ln\left(c\left(ex+d\right)^{n}\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] int((a+b*ln(c*(e*x+d)^n))^(1/2),x)
```

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

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="maxima")
```

```
[Out] integrate(sqrt(b*log((x*e + d)^n*c) + a), x)
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

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

$$\int \sqrt{a+b\log\left(c\left(d+ex\right)^{n}\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Integral(sqrt(a + b*log(c*(d + e*x)**n)), x)
```

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

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="giac")
```

```
[Out] integrate(sqrt(b*log((x*e + d)^n*c) + a), x)
```

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

$$\int \sqrt{a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] int((a + b*log(c*(d + e*x)^n))^(1/2), x)
```

3.27 $\int \frac{1}{\sqrt{a+b\log\left(c(d+ex)^n\right)}}\,dx$

Optimal. Leaf size=80

$$\frac{e^{-\frac{a}{bn}}\sqrt{\pi}\,(d+ex)\left(c(d+ex)^n\right)^{-1/n}\operatorname{erfi}\left(\frac{\sqrt{a+b\log\left(c(d+ex)^n\right)}}{\sqrt{b}\,\sqrt{n}}\right)}{\sqrt{b}\,e\sqrt{n}}$$

```
[Out] (e*x+d)*erfi((a+b*ln(c*(e*x+d)^n))^(1/2)/b^(1/2)/n^(1/2))*Pi^(1/2)/e/exp(a/
b/n)/((c*(e*x+d)^n)^(1/n))/b^(1/2)/n^(1/2)
```

Rubi [A]
time = 0.06, antiderivative size = 80, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}} = 0.222$, Rules used = {2436, 2337, 2211, 2235}

$$\frac{\sqrt{\pi}\,e^{-\frac{a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\operatorname{Erfi}\left(\frac{\sqrt{a+b\log\left(c(d+ex)^n\right)}}{\sqrt{b}\,\sqrt{n}}\right)}{\sqrt{b}\,e\sqrt{n}}$$

Antiderivative was successfully verified.

```
[In] Int[1/Sqrt[a + b*Log[c*(d + e*x)^n]],x]
```

```
[Out] (Sqrt[Pi]*(d + e*x)*Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]]/(Sqrt[b]*Sqrt[n])])
/(Sqrt[b]*e*E^(a/(b*n))*Sqrt[n]*(c*(d + e*x)^n)^n^(-1))
```

Rule 2211

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - c*(f/d)) + f*g*(x^2/d)), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !TrueQ[$UseGamma]
```

Rule 2235

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[F^a*Sqrt
[Pi]*(Erfi[(c + d*x)*Rt[b*Log[F], 2]]/(2*d*Rt[b*Log[F], 2])), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2337

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

Rule 2436

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

Rubi steps

$$\int \frac{1}{\sqrt{a+b\log\left(c(d+ex)^n\right)}}\,dx = \frac{\text{Subst}\left(\int \frac{1}{\sqrt{a+b\log\left(cx^n\right)}}\,dx, x, d+ex\right)}{e}$$
$$= \frac{\left((d+ex)\left(c(d+ex)^n\right)^{-1/n}\right)\text{Subst}\left(\int \frac{e^{\frac{x}{n}}}{\sqrt{a+bx}}\,dx, x, \log\left(c(d+ex)^n\right)\right)}{en}$$
$$= \frac{\left(2(d+ex)\left(c(d+ex)^n\right)^{-1/n}\right)\text{Subst}\left(\int e^{-\frac{a}{bn}+\frac{x^2}{bn}}\,dx, x, \sqrt{a+b\log\left(c(d+ex\right.}\right.}{ben}$$
$$= \frac{e^{-\frac{a}{bn}}\sqrt{\pi}\,(d+ex)\left(c(d+ex)^n\right)^{-1/n}\text{erfi}\left(\frac{\sqrt{a+b\log\left(c(d+ex)^n\right)}}{\sqrt{b}\sqrt{n}}\right)}{\sqrt{b}\,e\sqrt{n}}$$

Mathematica [A]
time = 0.01, size = 80, normalized size = 1.00

$$\frac{e^{-\frac{a}{bn}}\sqrt{\pi}\,(d+ex)\left(c(d+ex)^n\right)^{-1/n}\text{erfi}\left(\frac{\sqrt{a+b\log\left(c(d+ex)^n\right)}}{\sqrt{b}\sqrt{n}}\right)}{\sqrt{b}\,e\sqrt{n}}$$

Antiderivative was successfully verified.

```
[In] Integrate[1/Sqrt[a + b*Log[c*(d + e*x)^n]],x]
[Out] (Sqrt[Pi]*(d + e*x)*Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]]/(Sqrt[b]*Sqrt[n])])
/(Sqrt[b]*e*E^(a/(b*n))*Sqrt[n]*(c*(d + e*x)^n)^n^(-1))
```

Maple [F]
time = 0.02, size = 0, normalized size = 0.00

$$\int \frac{1}{\sqrt{a+b\ln\left(c\left(ex+d\right)^{n}\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] int(1/(a+b*ln(c*(e*x+d)^n))^(1/2),x)
```

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

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="maxima")
[Out] integrate(1/sqrt(b*log((x*e + d)^n*c) + a), x)
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="fricas")
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

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

$$\int \frac{1}{\sqrt{a + b \log{\left(c \left(d + e x\right)^{n} \right)}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*ln(c*(e*x+d)**n))**(1/2),x)
[Out] Integral(1/sqrt(a + b*log(c*(d + e*x)**n)), x)
```

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

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="giac")
[Out] integrate(1/sqrt(b*log((x*e + d)^n*c) + a), x)
```

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

$$\int \frac{1}{\sqrt{a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

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

3.28 $\int \frac{1}{(a+b\log(c(d+ex)^n))^{3/2}}\,dx$

Optimal. Leaf size=116

$$\frac{2e^{-\frac{a}{bn}}\sqrt{\pi}\,(d+ex)\,(c(d+ex)^n)^{-1/n}\operatorname{erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\,\sqrt{n}}\right)}{b^{3/2}en^{3/2}}-\frac{2(d+ex)}{ben\sqrt{a+b\log(c(d+ex)^n)}}$$

```
[Out] 2*(e*x+d)*erfi((a+b*ln(c*(e*x+d)^n))^(1/2)/b^(1/2)/n^(1/2))*Pi^(1/2)/b^(3/2
)/e/exp(a/b/n)/n^(3/2)/((c*(e*x+d)^n)^(1/n))-2*(e*x+d)/b/e/n/(a+b*ln(c*(e*x
+d)^n))^(1/2)
```

Rubi [A]

time = 0.08, antiderivative size = 116, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.278, Rules used = {2436, 2334, 2337, 2211, 2235}

$$\frac{2\sqrt{\pi}\,e^{-\frac{a}{bn}}(d+ex)\,(c(d+ex)^n)^{-1/n}\operatorname{Erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\,\sqrt{n}}\right)}{b^{3/2}en^{3/2}}-\frac{2(d+ex)}{ben\sqrt{a+b\log(c(d+ex)^n)}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^(-3/2),x]
```

```
[Out] (2*Sqrt[Pi]*(d + e*x)*Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]]/(Sqrt[b]*Sqrt[n])
])/(b^(3/2)*e*E^(a/(b*n))*n^(3/2)*(c*(d + e*x)^n)^n^(-1)) - (2*(d + e*x))/(
b*e*n*Sqrt[a + b*Log[c*(d + e*x)^n]])
```

Rule 2211

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - c*(f/d)) + f*g*(x^2/d)), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !TrueQ[$UseGamma]
```

Rule 2235

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[F^a*Sqrt
[Pi]*(Erfi[(c + d*x)*Rt[b*Log[F], 2]]/(2*d*Rt[b*Log[F], 2])), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2334

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

```
gerQ[2*p]
```

Rule 2337

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

Rule 2436

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

Rubi steps

$$\int \frac{1}{(a+b\log(c(d+ex)^n))^{3/2}}\,dx = \frac{\text{Subst}\left(\int \frac{1}{(a+b\log(cx^n))^{3/2}}\,dx, x, d+ex\right)}{e}$$

$$= -\frac{2(d+ex)}{ben\sqrt{a+b\log(c(d+ex)^n)}} + \frac{2\text{Subst}\left(\int \frac{1}{\sqrt{a+b\log(cx^n)}}\,dx, x, d+\right.}{ben}$$

$$= -\frac{2(d+ex)}{ben\sqrt{a+b\log(c(d+ex)^n)}} + \frac{\left(2(d+ex)\left(c(d+ex)^n\right)^{-1/n}\right)\text{Subst}\left(\int\right.}{ben^2}$$

$$= -\frac{2(d+ex)}{ben\sqrt{a+b\log(c(d+ex)^n)}} + \frac{\left(4(d+ex)\left(c(d+ex)^n\right)^{-1/n}\right)\text{Subst}\left(\int e\right.}{b^2e}$$

$$= \frac{2e^{-\frac{a}{bn}}\sqrt{\pi}\,(d+ex)\left(c(d+ex)^n\right)^{-1/n}\text{erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{b^{3/2}en^{3/2}} - \frac{}{be}$$

Mathematica [A]
time = 0.09, size = 139, normalized size = 1.20

$$-\frac{2e^{-\frac{a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\left(e^{\frac{a}{bn}}\left(c(d+ex)^n\right)^{\frac{1}{n}}-\Gamma\left(\frac{1}{2},-\frac{a+b\log(c(d+ex)^n)}{bn}\right)\sqrt{-\frac{a+b\log(c(d+ex)^n)}{bn}}\right)}{ben\sqrt{a+b\log(c(d+ex)^n)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^(-3/2),x]
```

```
[Out] (-2*(d + e*x)*(E^(a/(b*n))*(c*(d + e*x)^n)^n^(-1) - Gamma[1/2, -((a + b*Log
[c*(d + e*x)^n])/(b*n))]*Sqrt[-((a + b*Log[c*(d + e*x)^n])/(b*n))]))/(b*e*E
^(a/(b*n))*n*(c*(d + e*x)^n)^n^(-1)*Sqrt[a + b*Log[c*(d + e*x)^n]])
```

Maple [F]
time = 0.03, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(a+b\ln \left(c \left(e x +d \right)^{n}\right)\right)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(e*x+d)^n))^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((b*log((x*e + d)^n*c) + a)^(-3/2), x)
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(e*x+d)^n))^(3/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

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

$$\int \frac{1}{\left(a + b \log{\left(c \left(d + e x\right)^{n} \right)}\right)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(e*x+d)^n))^(3/2),x, algorithm="giac")
[Out] integrate((b*log((x*e + d)^n*c) + a)^(-3/2), x)
```

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

$$\int \frac{1}{\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

3.29 $\int \frac{1}{(a+b\log(c(d+ex)^n))^{5/2}}\,dx$

Optimal. Leaf size=156

$$\frac{4e^{-\frac{a}{bn}}\sqrt{\pi}\,(d+ex)\,(c(d+ex)^n)^{-1/n}\,\text{erfi}\left(\frac{\sqrt{a+b\log\left(c(d+ex)^n\right)}}{\sqrt{b}\,\sqrt{n}}\right)}{3b^{5/2}en^{5/2}}-\frac{2(d+ex)}{3ben\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}}-3b^2e$$

```
[Out] -2/3*(e*x+d)/b/e/n/(a+b*ln(c*(e*x+d)^n))^(3/2)+4/3*(e*x+d)*erfi((a+b*ln(c*(
e*x+d)^n))^(1/2)/b^(1/2)/n^(1/2))*Pi^(1/2)/b^(5/2)/e/exp(a/b/n)/n^(5/2)/((c
*(e*x+d)^n)^(1/n))-4/3*(e*x+d)/b^2/e/n^2/(a+b*ln(c*(e*x+d)^n))^(1/2)
```

Rubi [A]
time = 0.09, antiderivative size = 156, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}} = 0.278$, Rules used = {2436, 2334, 2337, 2211, 2235}

$$\frac{4\sqrt{\pi}\,e^{-\frac{a}{bn}}(d+ex)\,(c(d+ex)^n)^{-1/n}\,\text{Erfi}\left(\frac{\sqrt{a+b\log\left(c(d+ex)^n\right)}}{\sqrt{b}\,\sqrt{n}}\right)}{3b^{5/2}en^{5/2}}-\frac{4(d+ex)}{3b^2en^2\sqrt{a+b\log\left(c(d+ex)^n\right)}}-\frac{2(d+ex)}{3ben\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^(-5/2),x]
```

```
[Out] (4*Sqrt[Pi]*(d + e*x)*Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]]/(Sqrt[b]*Sqrt[n])
])/(3*b^(5/2)*e*E^(a/(b*n))*n^(5/2)*(c*(d + e*x)^n)^n^(-1)) - (2*(d + e*x))
/(3*b*e*n*(a + b*Log[c*(d + e*x)^n])^(3/2)) - (4*(d + e*x))/(3*b^2*e*n^2*Sq
rt[a + b*Log[c*(d + e*x)^n]])
```

Rule 2211

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - c*(f/d)) + f*g*(x^2/d)), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !TrueQ[$UseGamma]
```

Rule 2235

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[F^a*Sqrt
[Pi]*(Erfi[(c + d*x)*Rt[b*Log[F], 2]]/(2*d*Rt[b*Log[F], 2])), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2334

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

```
gerQ[2*p]
```

Rule 2337

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

Rule 2436

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

Rubi steps

$$\int \frac{1}{(a+b\log(c(d+ex)^n))^{5/2}}\,dx = \frac{\text{Subst}\left(\int \frac{1}{(a+b\log(cx^n))^{5/2}}\,dx, x, d+ex\right)}{e}$$

$$= -\frac{2(d+ex)}{3ben\,(a+b\log(c(d+ex)^n))^{3/2}} + \frac{2\text{Subst}\left(\int \frac{1}{(a+b\log(cx^n))^{3/2}}\,dx, x, d+ex\right.}{3ben}$$

$$= -\frac{2(d+ex)}{3ben\,(a+b\log(c(d+ex)^n))^{3/2}} - \frac{4(d+ex)}{3b^2en^2\sqrt{a+b\log(c(d+ex)^n)}} + \frac{4\text{S}}{}$$

$$= -\frac{2(d+ex)}{3ben\,(a+b\log(c(d+ex)^n))^{3/2}} - \frac{4(d+ex)}{3b^2en^2\sqrt{a+b\log(c(d+ex)^n)}} + \frac{(4}{}$$

$$= -\frac{2(d+ex)}{3ben\,(a+b\log(c(d+ex)^n))^{3/2}} - \frac{4(d+ex)}{3b^2en^2\sqrt{a+b\log(c(d+ex)^n)}} + \frac{(8}{}$$

$$= \frac{4e^{-\frac{a}{bn}}\sqrt{\pi}\,(d+ex)\,(c(d+ex)^n)^{-1/n}\,\text{erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\,\sqrt{n}}\right)}{3b^{5/2}en^{5/2}} - \frac{}{3b}$$

Mathematica [A]
time = 0.12, size = 163, normalized size = 1.04

$$-\frac{2e^{-\frac{a}{bn}}(d+ex)\,(c(d+ex)^n)^{-1/n}\left(2bn\Gamma\left(\frac{1}{2},-\frac{a+b\log(c(d+ex)^n)}{bn}\right)\left(-\frac{a+b\log(c(d+ex)^n)}{bn}\right)^{3/2}+e^{\frac{a}{bn}}(c(d+ex)^n)^{\frac{1}{n}}\,(2a+bn+2b\log(c(d+ex)^n))\right)}{3b^2en^2\,(a+b\log(c(d+ex)^n))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^(-5/2),x]
```

```
[Out] (-2*(d + e*x)*(2*b*n*Gamma[1/2, -((a + b*Log[c*(d + e*x)^n])/(b*n))]*(-((a
+ b*Log[c*(d + e*x)^n])/(b*n)))^(3/2) + E^(a/(b*n))*(c*(d + e*x)^n)^n^(-1)*
(2*a + b*n + 2*b*Log[c*(d + e*x)^n])))/(3*b^2*e*E^(a/(b*n))*n^2*(c*(d + e*x
)^n)^n^(-1)*(a + b*Log[c*(d + e*x)^n])^(3/2))
```

Maple [F]
time = 0.03, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(a+b\ln\left(c\left(ex+d\right)^{n}\right)\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+b*ln(c*(e*x+d)^n))^(5/2),x)
```

```
[Out] int(1/(a+b*ln(c*(e*x+d)^n))^(5/2),x)
```

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

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(e*x+d)^n))^(5/2),x, algorithm="maxima")
```

```
[Out] integrate((b*log((x*e + d)^n*c) + a)^(-5/2), x)
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(e*x+d)^n))^(5/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

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

$$\int \frac{1}{\left(a+b\log\left(c\left(d+ex\right)^{n}\right)\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*ln(c*(e*x+d)**n))**(5/2),x)
[Out] Integral((a + b*log(c*(d + e*x)**n))**(-5/2), x)
```

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

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(e*x+d)^n))^(5/2),x, algorithm="giac")
[Out] integrate((b*log((x*e + d)^n*c) + a)^(-5/2), x)
```

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

$$\int \frac{1}{\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a + b*log(c*(d + e*x)^n))^(5/2),x)
[Out] int(1/(a + b*log(c*(d + e*x)^n))^(5/2), x)
```

3.30 $\int \frac{1}{(a+b\log(c(d+ex)^n))^{7/2}}\,dx$

Optimal. Leaf size=192

$$\frac{8e^{-\frac{a}{bn}}\sqrt{\pi}\,(d+ex)\,(c(d+ex)^n)^{-1/n}\operatorname{erfi}\left(\frac{\sqrt{a+b\log\left(c(d+ex)^n\right)}}{\sqrt{b}\,\sqrt{n}}\right)}{15b^{7/2}en^{7/2}}-\frac{2(d+ex)}{5ben\left(a+b\log\left(c(d+ex)^n\right)\right)^{5/2}}-\frac{\ldots}{15b\ldots}$$

```
[Out] -2/5*(e*x+d)/b/e/n/(a+b*ln(c*(e*x+d)^n))^(5/2)-4/15*(e*x+d)/b^2/e/n^2/(a+b*
ln(c*(e*x+d)^n))^(3/2)+8/15*(e*x+d)*erfi((a+b*ln(c*(e*x+d)^n))^(1/2)/b^(1/2
)/n^(1/2))*Pi^(1/2)/b^(7/2)/e/exp(a/b/n)/n^(7/2)/((c*(e*x+d)^n)^(1/n))-8/15
*(e*x+d)/b^3/e/n^3/(a+b*ln(c*(e*x+d)^n))^(1/2)
```

Rubi [A]
time = 0.11, antiderivative size = 192, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}} = 0.278$, Rules used = {2436, 2334, 2337, 2211, 2235}

$$\frac{8\sqrt{\pi}\,e^{-\frac{a}{bn}}(d+ex)\,(c(d+ex)^n)^{-1/n}\operatorname{Erfi}\left(\frac{\sqrt{a+b\log\left(c(d+ex)^n\right)}}{\sqrt{b}\,\sqrt{n}}\right)}{15b^{7/2}en^{7/2}}-\frac{8(d+ex)}{15b^3en^3\sqrt{a+b\log\left(c(d+ex)^n\right)}}-\frac{4(d+ex)}{15b^2en^2\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}}-\frac{2(d+ex)}{5ben\left(a+b\log\left(c(d+ex)^n\right)\right)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^(-7/2),x]
```

```
[Out] (8*Sqrt[Pi]*(d + e*x)*Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]]/(Sqrt[b]*Sqrt[n])
])/(15*b^(7/2)*e*E^(a/(b*n))*n^(7/2)*(c*(d + e*x)^n)^n^(-1)) - (2*(d + e*x)
)/(5*b*e*n*(a + b*Log[c*(d + e*x)^n])^(5/2)) - (4*(d + e*x))/(15*b^2*e*n^2*
(a + b*Log[c*(d + e*x)^n])^(3/2)) - (8*(d + e*x))/(15*b^3*e*n^3*Sqrt[a + b*
Log[c*(d + e*x)^n]])
```

Rule 2211

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - c*(f/d)) + f*g*(x^2/d)), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !TrueQ[$UseGamma]
```

Rule 2235

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[F^a*Sqrt
[Pi]*(Erfi[(c + d*x)*Rt[b*Log[F], 2]]/(2*d*Rt[b*Log[F], 2])), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2334

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Simp[x*((a + b
*Log[c*x^n])^(p + 1)/(b*n*(p + 1))), x] - Dist[1/(b*n*(p + 1)), Int[(a + b*
```

```
Log[c*x^n])^(p + 1), x], x] /; FreeQ[{a, b, c, n}, x] && LtQ[p, -1] && Inte
gerQ[2*p]
```

Rule 2337

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

Rule 2436

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

Rubi steps

$$\int \frac{1}{(a+b\log(c(d+ex)^n))^{7/2}}\,dx = \frac{\text{Subst}\left(\int \frac{1}{(a+b\log(cx^n))^{7/2}}\,dx, x, d+ex\right)}{e}$$

$$= -\frac{2(d+ex)}{5ben\,(a+b\log(c(d+ex)^n))^{5/2}} + \frac{2\text{Subst}\left(\int \frac{1}{(a+b\log(cx^n))^{5/2}}\,dx, x, d+ex\right.}{5ben}$$

$$= -\frac{2(d+ex)}{5ben\,(a+b\log(c(d+ex)^n))^{5/2}} - \frac{4(d+ex)}{15b^2en^2\,(a+b\log(c(d+ex)^n))^{3/2}} +$$

$$= -\frac{2(d+ex)}{5ben\,(a+b\log(c(d+ex)^n))^{5/2}} - \frac{4(d+ex)}{15b^2en^2\,(a+b\log(c(d+ex)^n))^{3/2}} -$$

$$= -\frac{2(d+ex)}{5ben\,(a+b\log(c(d+ex)^n))^{5/2}} - \frac{4(d+ex)}{15b^2en^2\,(a+b\log(c(d+ex)^n))^{3/2}} -$$

$$= -\frac{2(d+ex)}{5ben\,(a+b\log(c(d+ex)^n))^{5/2}} - \frac{4(d+ex)}{15b^2en^2\,(a+b\log(c(d+ex)^n))^{3/2}} -$$

$$= \frac{8e^{-\frac{a}{bn}}\sqrt{\pi}\,(d+ex)\,(c(d+ex)^n)^{-1/n}\,\text{erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\,\sqrt{n}}\right)}{15b^{7/2}en^{7/2}} - \frac{}{5b}$$

Mathematica [A]

time = 0.15, size = 203, normalized size = 1.06

$$-\frac{2e^{-\frac{a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\left(-4b^2n^2\Gamma\left(\frac{1}{2},-\frac{a+b\log(c(d+ex)^n)}{bn}\right)\left(-\frac{a+b\log(c(d+ex)^n)}{bn}\right)^{5/2}+e^{\frac{a}{bn}}\left(c(d+ex)^n\right)^{\frac{1}{n}}\left(4a^2+2abn+3b^2n^2+2b(4a+bn)\log\left(c(d+ex)^n\right)+4b^2\log^2\left(c(d+ex)^n\right)\right)\right)}{15b^3en^3\left(a+b\log\left(c(d+ex)^n\right)\right)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^(-7/2),x]
```

```
[Out] (-2*(d + e*x)*(-4*b^2*n^2*Gamma[1/2, -((a + b*Log[c*(d + e*x)^n])/(b*n))]*(
-((a + b*Log[c*(d + e*x)^n])/(b*n)))^(5/2) + E^(a/(b*n))*(c*(d + e*x)^n)^n^
(-1)*(4*a^2 + 2*a*b*n + 3*b^2*n^2 + 2*b*(4*a + b*n)*Log[c*(d + e*x)^n] + 4*
b^2*Log[c*(d + e*x)^n]^2)))/(15*b^3*e*E^(a/(b*n))*n^3*(c*(d + e*x)^n)^n^(-1
)*(a + b*Log[c*(d + e*x)^n])^(5/2))
```

Maple [F]
time = 0.02, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(a+b\ln\left(c\left(ex+d\right)^{n}\right)\right)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+b*ln(c*(e*x+d)^n))^(7/2),x)
```

```
[Out] int(1/(a+b*ln(c*(e*x+d)^n))^(7/2),x)
```

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

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(e*x+d)^n))^(7/2),x, algorithm="maxima")
```

```
[Out] integrate((b*log((x*e + d)^n*c) + a)^(-7/2), x)
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(e*x+d)^n))^(7/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: HeuristicGCDFailed

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*ln(c*(e*x+d)**n))**(7/2),x)
[Out] Exception raised: HeuristicGCDFailed >> no luck
```

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

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(e*x+d)^n))^(7/2),x, algorithm="giac")
[Out] integrate((b*log((x*e + d)^n*c) + a)^(-7/2), x)
```

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

$$\int \frac{1}{\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)^{7/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a + b*log(c*(d + e*x)^n))^(7/2),x)
[Out] int(1/(a + b*log(c*(d + e*x)^n))^(7/2), x)
```

3.31 $\int (a+b\log(c(d+ex)^n))^p\,dx$

Optimal. Leaf size=103

$$\frac{e^{-\frac{a}{bn}}(d+ex)\,(c(d+ex)^n)^{-1/n}\,\Gamma\left(1+p,-\frac{a+b\log(c(d+ex)^n)}{bn}\right)(a+b\log(c(d+ex)^n))^p\left(-\frac{a+b\log(c(d+ex)^n)}{bn}\right)^{-p}}{e}$$

```
[Out] (e*x+d)*GAMMA(1+p,(-a-b*ln(c*(e*x+d)^n))/b/n)*(a+b*ln(c*(e*x+d)^n))^p/e/exp
(a/b/n)/((c*(e*x+d)^n)^(1/n))/(((-a-b*ln(c*(e*x+d)^n))/b/n)^p)
```

Rubi [A]

time = 0.04, antiderivative size = 103, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}} = 0.188$, Rules used = {2436, 2337, 2212}

$$\frac{e^{-\frac{a}{bn}}(d+ex)\,(c(d+ex)^n)^{-1/n}\,(a+b\log(c(d+ex)^n))^p\left(-\frac{a+b\log(c(d+ex)^n)}{bn}\right)^{-p}\text{Gamma}\left(p+1,-\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{e}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^p,x]
```

```
[Out] ((d + e*x)*Gamma[1 + p, -((a + b*Log[c*(d + e*x)^n])/(b*n))]*(a + b*Log[c*(
d + e*x)^n])^p)/(e*E^(a/(b*n))*(c*(d + e*x)^n)^n^(-1)*(-((a + b*Log[c*(d +
e*x)^n])/(b*n)))^p)
```

Rule 2212

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))*((c_.) + (d_.)*(x_))^(m_), x_Symbol]
:> Simp[(-F^(g*(e - c*(f/d))))*((c + d*x)^FracPart[m]/(d*((-f)*g*(Log[F]/d)
)^(IntPart[m] + 1)*((-f)*g*Log[F]*((c + d*x)/d))^FracPart[m]))*Gamma[m + 1,
 ((-f)*g*(Log[F]/d))*(c + d*x)], x] /; FreeQ[{F, c, d, e, f, g, m}, x] &&
!IntegerQ[m]
```

Rule 2337

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

Rule 2436

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

Rubi steps

$$\int (a+b\log(c(d+ex)^n))^p\,dx = \frac{\text{Subst}\left(\int (a+b\log(cx^n))^p\,dx, x, d+ex\right)}{e}$$
$$= \frac{\left((d+ex)\left(c(d+ex)^n\right)^{-1/n}\right)\text{Subst}\left(\int e^{\frac{x}{n}}(a+bx)^p\,dx, x, \log(c(d+ex)^n)\right)}{en}$$
$$= \frac{e^{-\frac{a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\Gamma\left(1+p, -\frac{a+b\log(c(d+ex)^n)}{bn}\right)(a+b\log(c(d+\text{e}}{e}$$

Mathematica [A]
time = 0.08, size = 103, normalized size = 1.00

$$\frac{e^{-\frac{a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\Gamma\left(1+p, -\frac{a+b\log(c(d+ex)^n)}{bn}\right)(a+b\log(c(d+ex)^n))^p\left(-\frac{a+b\log(c(d+ex)^n)}{bn}\right)^{-p}}{e}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^p,x]
```

```
[Out] ((d + e*x)*Gamma[1 + p, -((a + b*Log[c*(d + e*x)^n])/(b*n))]*(a + b*Log[c*(
d + e*x)^n])^p)/(e*E^(a/(b*n))*(c*(d + e*x)^n)^n^(-1)*(-((a + b*Log[c*(d +
e*x)^n])/(b*n)))^p)
```

Maple [F]
time = 0.03, size = 0, normalized size = 0.00

$$\int (a+b\ln(c(ex+d)^n))^p\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))^p,x)
```

```
[Out] int((a+b*ln(c*(e*x+d)^n))^p,x)
```

Maxima [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Exception raised: RuntimeError >> ECL says: In function CAR, the value of t
he first argument is  0which is not of the expected type LIST
```

Fricas [A]
time = 0.09, size = 59, normalized size = 0.57

$$e^{\left(-\frac{bnp\log\left(-\frac{1}{bn}\right)+b\log(c)+a}{bn}-1\right)}\Gamma\left(p+1,-\frac{bn\log\left(xe+d\right)+b\log\left(c\right)+a}{bn}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^p,x, algorithm="fricas")
[Out] e^(-(b*n*p*log(-1/(b*n)) + b*log(c) + a)/(b*n) - 1)*gamma(p + 1, -(b*n*log(
x*e + d) + b*log(c) + a)/(b*n))
```

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

$$\int\left(a+b\log\left(c(d+ex)^n\right)\right)^p\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**p,x)
[Out] Integral((a + b*log(c*(d + e*x)**n))**p, x)
```

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

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^p,x, algorithm="giac")
[Out] integrate((b*log((x*e + d)^n*c) + a)^p, x)
```

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

$$\int{\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)}^p\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))^p,x)
[Out] int((a + b*log(c*(d + e*x)^n))^p, x)
```

3.32 $\int \left(a+b\log\left(c\sqrt{d+ex}\right)\right)^p\,dx$

Optimal. Leaf size=88

$$\frac{2^{-p}e^{-\frac{2a}{b}}\Gamma\left(1+p,-\frac{2\left(a+b\log\left(c\sqrt{d+ex}\right)\right)}{b}\right)\left(a+b\log\left(c\sqrt{d+ex}\right)\right)^p\left(-\frac{a+b\log\left(c\sqrt{d+ex}\right)}{b}\right)^{-p}}{c^2e}$$

```
[Out] GAMMA(1+p,-2*(a+b*ln(c*(e*x+d)^(1/2)))/b)*(a+b*ln(c*(e*x+d)^(1/2)))^p/(2^p)
/c^2/e/exp(2*a/b)/(((-a-b*ln(c*(e*x+d)^(1/2)))/b)^p)
```

Rubi [A]
time = 0.05, antiderivative size = 88, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}} = 0.167$, Rules used = {2436, 2336, 2212}

$$\frac{2^{-p}e^{-\frac{2a}{b}}\left(a+b\log\left(c\sqrt{d+ex}\right)\right)^p\left(-\frac{a+b\log\left(c\sqrt{d+ex}\right)}{b}\right)^{-p}\text{Gamma}\left(p+1,-\frac{2\left(a+b\log\left(c\sqrt{d+ex}\right)\right)}{b}\right)}{c^2e}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*Sqrt[d + e*x]])^p,x]
```

```
[Out] (Gamma[1 + p, (-2*(a + b*Log[c*Sqrt[d + e*x]]))/b]*(a + b*Log[c*Sqrt[d + e*
x]])^p)/(2^p*c^2*e*E^((2*a)/b)*(-((a + b*Log[c*Sqrt[d + e*x]])/b))^p)
```

Rule 2212

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))*((c_.) + (d_.)*(x_))^(m_), x_Symbol]
:> Simp[(-F^(g*(e - c*(f/d))))*((c + d*x)^FracPart[m]/(d*((-f)*g*(Log[F]/d)
)^(IntPart[m] + 1)*((-f)*g*Log[F]*((c + d*x)/d))^FracPart[m]))*Gamma[m + 1,
 ((-f)*g*(Log[F]/d))*(c + d*x)], x] /; FreeQ[{F, c, d, e, f, g, m}, x] &&
!IntegerQ[m]
```

Rule 2336

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

Rule 2436

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

Rubi steps

$$\int \left(a+b\log\left(c\sqrt{d+ex}\right)\right)^p\,dx = \frac{\text{Subst}\left(\int \left(a+b\log\left(c\sqrt{x}\right)\right)^p\,dx, x, d+ex\right)}{e}$$
$$= \frac{2\text{Subst}\left(\int e^{2x}(a+bx)^p\,dx, x, \log\left(c\sqrt{d+ex}\right)\right)}{c^2e}$$
$$= \frac{2^{-p}e^{-\frac{2a}{b}}\Gamma\left(1+p,-\frac{2\left(a+b\log\left(c\sqrt{d+ex}\right)\right)}{b}\right)\left(a+b\log\left(c\sqrt{d+ex}\right)\right)^p \left(\right.}{c^2e}$$

Mathematica [A]
time = 0.04, size = 88, normalized size = 1.00

$$\frac{2^{-p}e^{-\frac{2a}{b}}\Gamma\left(1+p,-\frac{2\left(a+b\log\left(c\sqrt{d+ex}\right)\right)}{b}\right)\left(a+b\log\left(c\sqrt{d+ex}\right)\right)^p\left(-\frac{a+b\log\left(c\sqrt{d+ex}\right)}{b}\right)^{-p}}{c^2e}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*Sqrt[d + e*x]])^p,x]
[Out] (Gamma[1 + p, (-2*(a + b*Log[c*Sqrt[d + e*x]]))/b]*(a + b*Log[c*Sqrt[d + e*
x]])^p)/(2^p*c^2*e*E^((2*a)/b)*(-((a + b*Log[c*Sqrt[d + e*x]])/b))^p)
```

Maple [F]
time = 0.04, size = 0, normalized size = 0.00

$$\int \left(a+b\ln\left(c\sqrt{ex+d}\right)\right)^p\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

Maxima [A]
time = 0.05, size = 60, normalized size = 0.68

$$-\frac{2\left(b\log\left(\sqrt{xe+d}\,c\right)+a\right)^{p+1}e^{\left(-\frac{2a}{b}-1\right)}E_{-p}\left(-\frac{2\left(b\log\left(\sqrt{xe+d}\,c\right)+a\right)}{b}\right)}{bc^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^(1/2)))^p,x, algorithm="maxima")
```

```
[Out] -2*(b*log(sqrt(x*e + d)*c) + a)^(p + 1)*e^(-2*a/b - 1)*exp_integral_e(-p, -2*(b*log(sqrt(x*e + d)*c) + a)/b)/(b*c^2)
```

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

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^(1/2)))^p,x, algorithm="fricas")
```

```
[Out] integral((b*log(sqrt(x*e + d)*c) + a)^p, x)
```

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

$$\int \left(a + b \log \left(c\sqrt{d + ex}\right)\right)^p \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Integral((a + b*log(c*sqrt(d + e*x)))**p, x)
```

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

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^(1/2)))^p,x, algorithm="giac")
```

```
[Out] integrate((b*log(sqrt(x*e + d)*c) + a)^p, x)
```

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

$$\int {\left(a+b\,\ln\left(c\,\sqrt{d+e\,x}\right)\right)}^p \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] int((a + b*log(c*(d + e*x)^(1/2)))^p, x)
```

3.33 $\int \frac{(e+fx)^{-1+p}}{\log(d(e+fx)^p)}\,dx$

Optimal. Leaf size=20

$$\frac{\text{li}(d(e+fx)^p)}{dfp}$$

```
[Out] Li(d*(f*x+e)^p)/d/f/p
```

Rubi [A]
time = 0.03, antiderivative size = 20, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.136$, Rules used = {2437, 2344, 2335}

$$\frac{\text{li}(d(e+fx)^p)}{dfp}$$

Antiderivative was successfully verified.

```
[In] Int[(e + f*x)^(-1 + p)/Log[d*(e + f*x)^p],x]
```

```
[Out] LogIntegral[d*(e + f*x)^p]/(d*f*p)
```

Rule 2335

```
Int[Log[(c_.)*(x_)]^(-1), x_Symbol] :> Simp[LogIntegral[c*x]/c, x] /; FreeQ
[c, x]
```

Rule 2344

```
Int[(x_)^(m_.)/Log[(c_.)*(x_)^(n_)], x_Symbol] :> Dist[1/n, Subst[Int[1/Log
[c*x], x], x, x^n], x] /; FreeQ[{c, m, n}, x] && EqQ[m, n - 1]
```

Rule 2437

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

Rubi steps

$$\int \frac{(e+fx)^{-1+p}}{\log (d(e+fx)^p)} \, dx = \frac{\text{Subst}\left(\int \frac{x^{-1+p}}{\log(dx^p)} \, dx, x, e+fx\right)}{f}$$
$$= \frac{\text{Subst}\left(\int \frac{1}{\log(dx)} \, dx, x, (e+fx)^p\right)}{fp}$$
$$= \frac{\text{li}(d(e+fx)^p)}{dfp}$$

Mathematica [A]
time = 0.03, size = 21, normalized size = 1.05

$$\frac{\text{Ei}(\log (d(e+fx)^p))}{dfp}$$

Antiderivative was successfully verified.

```
[In] Integrate[(e + f*x)^(-1 + p)/Log[d*(e + f*x)^p],x]
[Out] ExpIntegralEi[Log[d*(e + f*x)^p]]/(d*f*p)
```

Maple [A]
time = 1.59, size = 26, normalized size = 1.30

method	result
default	$-\frac{\text{expIntegral}(1,-\ln(d(fx+e)^p))}{pfd}$
risch	$-\frac{e^{\frac{i\pi \,\text{csgn}\left(id(fx+e)^p\right)\left(-\text{csgn}\left(id(fx+e)^p\right)+\text{csgn}(id)\right)\left(-\text{csgn}\left(id(fx+e)^p\right)+\text{csgn}\left(i(fx+e)^p\right)\right)}{2}} \text{expIntegral}\left(1,-\ln(d)-\ln((fx+e)^p)-\frac{i\pi \,\text{csgn}(i(fx}{}\right.}{pfd}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^(-1+p)/ln(d*(f*x+e)^p),x,method=_RETURNVERBOSE)
[Out] -1/p/f/d*Ei(1,-ln(d*(f*x+e)^p))
```

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

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

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

Fricas [A]
time = 0.36, size = 23, normalized size = 1.15

$$\frac{\operatorname{Ei}(p\log{(fx+e)}+\log{(d)})}{dfp}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^(-1+p)/log(d*(f*x+e)^p),x, algorithm="fricas")
```

```
[Out] Ei(p*log(f*x + e) + log(d))/(d*f*p)
```

Sympy [B] Leaf count of result is larger than twice the leaf count of optimal. 42 vs. 2(14) = 28.
time = 3.42, size = 42, normalized size = 2.10

$$\begin{cases} -\frac{\begin{cases} -\frac{\log{(e+fx)}}{\log{(d)}} & \text{for } p=0 \\ -\frac{\operatorname{li}{(d(e+fx)^p)}}{dp} & \text{otherwise} \end{cases}}{f} & \text{for } f\neq 0 \\ \frac{e^{p-1}x}{\log{(de^p)}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**(-1+p)/ln(d*(f*x+e)**p),x)
```

```
[Out] Piecewise((-Piecewise((-log(e + f*x)/log(d), Eq(p, 0)), (-li(d*(e + f*x)**p
)/(d*p), True))/f, Ne(f, 0)), (e**(p - 1)*x/log(d*e**p), True))
```

Giac [A]
time = 4.51, size = 23, normalized size = 1.15

$$\frac{\operatorname{Ei}(p\log{(fx+e)}+\log{(d)})}{dfp}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Ei(p*log(f*x + e) + log(d))/(d*f*p)
```

Mupad [B]
time = 0.20, size = 20, normalized size = 1.00

$$\frac{\operatorname{logint}(d\,(e+f\,x)^p)}{d\,f\,p}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e + f*x)^(p - 1)/log(d*(e + f*x)^p),x)
```

```
[Out] logint(d*(e + f*x)^p)/(d*f*p)
```

3.34 $\int \frac{(eg+fgx)^{-1+p}}{\log(d(e+fx)^p)}\,dx$

Optimal. Leaf size=42

$$\frac{(e+fx)^{1-p}(g(e+fx))^{-1+p}\mathrm{li}(d(e+fx)^p)}{dfp}$$

```
[Out] (f*x+e)^(1-p)*(g*(f*x+e))^(-1+p)*Li(d*(f*x+e)^p)/d/f/p
```

Rubi [A]
time = 0.05, antiderivative size = 42, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.160$, Rules used = {2437, 2345, 2344, 2335}

$$\frac{(e+fx)^{1-p}(g(e+fx))^{p-1}\mathrm{li}(d(e+fx)^p)}{dfp}$$

Antiderivative was successfully verified.

```
[In] Int[(e*g + f*g*x)^(-1 + p)/Log[d*(e + f*x)^p],x]
```

```
[Out] ((e + f*x)^(1 - p)*(g*(e + f*x))^(-1 + p)*LogIntegral[d*(e + f*x)^p])/(d*f*
p)
```

Rule 2335

```
Int[Log[(c_.)*(x_)]^(-1), x_Symbol] :> Simp[LogIntegral[c*x]/c, x] /; FreeQ
[c, x]
```

Rule 2344

```
Int[(x_)^(m_.)/Log[(c_.)*(x_)^(n_)], x_Symbol] :> Dist[1/n, Subst[Int[1/Log
[c*x], x], x, x^n], x] /; FreeQ[{c, m, n}, x] && EqQ[m, n - 1]
```

Rule 2345

```
Int[((d_)*(x_))^(m_.)/Log[(c_.)*(x_)^(n_)], x_Symbol] :> Dist[(d*x)^m/x^m,
Int[x^m/Log[c*x^n], x], x] /; FreeQ[{c, d, m, n}, x] && EqQ[m, n - 1]
```

Rule 2437

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

Rubi steps

$$\int \frac{(eg+fgx)^{-1+p}}{\log (d(e+fx)^p)}\,dx = \frac{\text{Subst}\left(\int \frac{(gx)^{-1+p}}{\log(dx^p)}\,dx, x, e+fx\right)}{f}$$
$$= \frac{((e+fx)^{1-p}(g(e+fx))^{-1+p})\,\text{Subst}\left(\int \frac{x^{-1+p}}{\log(dx^p)}\,dx, x, e+fx\right)}{f}$$
$$= \frac{((e+fx)^{1-p}(g(e+fx))^{-1+p})\,\text{Subst}\left(\int \frac{1}{\log(dx)}\,dx, x, (e+fx)^p\right)}{fp}$$
$$= \frac{(e+fx)^{1-p}(g(e+fx))^{-1+p}\text{li}(d(e+fx)^p)}{dfp}$$

Mathematica [A]
time = 0.03, size = 43, normalized size = 1.02

$$\frac{(e+fx)^{1-p}(g(e+fx))^{-1+p}\text{Ei}(\log (d(e+fx)^p))}{dfp}$$

Antiderivative was successfully verified.

```
[In] Integrate[(e*g + f*g*x)^(-1 + p)/Log[d*(e + f*x)^p],x]
```

```
[Out] ((e + f*x)^(1 - p)*(g*(e + f*x))^(-1 + p)*ExpIntegralEi[Log[d*(e + f*x)^p]]
)/(d*f*p)
```

Maple [F]
time = 0.18, size = 0, normalized size = 0.00

$$\int \frac{(fgx+eg)^{-1+p}}{\ln (d(fx+e)^p)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*g*x+e*g)^(-1+p)/ln(d*(f*x+e)^p),x)
```

```
[Out] int((f*g*x+e*g)^(-1+p)/ln(d*(f*x+e)^p),x)
```

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

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*g*x+e*g)^(-1+p)/log(d*(f*x+e)^p),x, algorithm="maxima")
```

```
[Out] integrate((f*g*x + g*e)^(p - 1)/log((f*x + e)^p*d), x)
```

Fricas [A]
time = 0.37, size = 28, normalized size = 0.67

$$\frac{g^{p-1}\mathrm{Ei}(p\log{(fx+e)}+\log{(d)})}{dfp}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*g*x+e*g)^(-1+p)/log(d*(f*x+e)^p),x, algorithm="fricas")
```

```
[Out] g^(p - 1)*Ei(p*log(f*x + e) + log(d))/(d*f*p)
```

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

$$\int\frac{(g(e+fx))^{p-1}}{\log{(d\,(e+fx)^{p})}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*g*x+e*g)**(-1+p)/ln(d*(f*x+e)**p),x)
```

```
[Out] Integral((g*(e + f*x))**(p - 1)/log(d*(e + f*x)**p), x)
```

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

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate((f*g*x + g*e)^(p - 1)/log((f*x + e)^p*d), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.02

$$\int\frac{(e\,g+f\,g\,x)^{p-1}}{\ln{(d\,(e+f\,x)^{p})}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*g + f*g*x)^(p - 1)/log(d*(e + f*x)^p),x)
```

```
[Out] int((e*g + f*g*x)^(p - 1)/log(d*(e + f*x)^p), x)
```

3.35 $\int (f+gx)^4 (a+b\log (c(d+ex)^n))\,dx$

Optimal. Leaf size=178

$$-\frac{b(ef-dg)^4nx}{5e^4}-\frac{b(ef-dg)^3n(f+gx)^2}{10e^3g}-\frac{b(ef-dg)^2n(f+gx)^3}{15e^2g}-\frac{b(ef-dg)n(f+gx)^4}{20eg}-\frac{bn(f+gx)^5}{25g}-$$

```
[Out] -1/5*b*(-d*g+e*f)^4*n*x/e^4-1/10*b*(-d*g+e*f)^3*n*(g*x+f)^2/e^3/g-1/15*b*(-
d*g+e*f)^2*n*(g*x+f)^3/e^2/g-1/20*b*(-d*g+e*f)*n*(g*x+f)^4/e/g-1/25*b*n*(g*
x+f)^5/g-1/5*b*(-d*g+e*f)^5*n*ln(e*x+d)/e^5/g+1/5*(g*x+f)^5*(a+b*ln(c*(e*x+
d)^n))/g
```

Rubi [A]
time = 0.07, antiderivative size = 178, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$, Rules used = {2442, 45}

$$\frac{(f+gx)^5 (a+b\log (c(d+ex)^n))}{5g}-\frac{bn(ef-dg)^5\log(d+ex)}{5e^5g}-\frac{bnx(ef-dg)^4}{5e^4}-\frac{bn(f+gx)^2(ef-dg)^3}{10e^3g}-\frac{bn(f+gx)^3(ef-dg)^2}{15e^2g}-\frac{bn(f+gx)^4(ef-dg)}{20eg}-\frac{bn(f+gx)^5}{25g}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)^4*(a + b*Log[c*(d + e*x)^n]),x]
```

```
[Out] -1/5*(b*(e*f - d*g)^4*n*x)/e^4 - (b*(e*f - d*g)^3*n*(f + g*x)^2)/(10*e^3*g)
 - (b*(e*f - d*g)^2*n*(f + g*x)^3)/(15*e^2*g) - (b*(e*f - d*g)*n*(f + g*x)^
4)/(20*e*g) - (b*n*(f + g*x)^5)/(25*g) - (b*(e*f - d*g)^5*n*Log[d + e*x])/(
5*e^5*g) + ((f + g*x)^5*(a + b*Log[c*(d + e*x)^n]))/(5*g)
```

Rule 45

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

Rule 2442

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

Rubi steps

$$\int (f+gx)^4 (a+b\log(c(d+ex)^n))\,dx = \frac{(f+gx)^5(a+b\log(c(d+ex)^n))}{5g} - \frac{(ben)\int \frac{(f+gx)^5}{d+ex}\,dx}{5g}$$
$$= \frac{(f+gx)^5(a+b\log(c(d+ex)^n))}{5g} - \frac{(ben)\int \left(\frac{g(ef-dg)^4}{e^5} + \frac{(ef-dg)^5}{e^5(d+ex)} + \right.}{}$$
$$= -\frac{b(ef-dg)^4nx}{5e^4} - \frac{b(ef-dg)^3n(f+gx)^2}{10e^3g} - \frac{b(ef-dg)^2n(f+gx}{15e^2g}$$

Mathematica [A]
time = 0.21, size = 315, normalized size = 1.77

$$\frac{ex(60ae^4(5f^4+10f^3gx+10f^2g^2x^2+5fg^3x^3+g^4x^4)-bn(60d^4g^4-30d^3eg^3(10f+gx)+10d^2e^2g^2(60f^2+15fgx+2g^2x^2)-5de^3g(120f^3+60f^2gx+20fg^2x^2+3g^3x^3)+e^4(300f^4+300f^3gx+200f^2g^2x^2+75fg^3x^3+12g^4x^4)))+60bd^2g(-10e^3f^3+10de^2f^2g-5d^2efg^2+d^3g^3)\,n\log(d+ex)+60be^4(5df^4+ex(5f^4+10f^3gx+10f^2g^2x^2+5fg^3x^3+g^4x^4))\log(c(d+ex)^n)}{300e^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)^4*(a + b*Log[c*(d + e*x)^n]),x]
```

```
[Out] (e*x*(60*a*e^4*(5*f^4 + 10*f^3*g*x + 10*f^2*g^2*x^2 + 5*f*g^3*x^3 + g^4*x^4
) - b*n*(60*d^4*g^4 - 30*d^3*e*g^3*(10*f + g*x) + 10*d^2*e^2*g^2*(60*f^2 +
15*f*g*x + 2*g^2*x^2) - 5*d*e^3*g*(120*f^3 + 60*f^2*g*x + 20*f*g^2*x^2 + 3*
g^3*x^3) + e^4*(300*f^4 + 300*f^3*g*x + 200*f^2*g^2*x^2 + 75*f*g^3*x^3 + 12
*g^4*x^4))) + 60*b*d^2*g*(-10*e^3*f^3 + 10*d*e^2*f^2*g - 5*d^2*e*f*g^2 + d^
3*g^3)*n*Log[d + e*x] + 60*b*e^4*(5*d*f^4 + e*x*(5*f^4 + 10*f^3*g*x + 10*f^
2*g^2*x^2 + 5*f*g^3*x^3 + g^4*x^4))*Log[c*(d + e*x)^n])/(300*e^5)
```

Maple [C] Result contains higher order function than in optimal. Order 9 vs. order 3.
time = 0.41, size = 1105, normalized size = 6.21

method	result	size
risch	Expression too large to display	1105

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^4*(a+b*ln(c*(e*x+d)^n)),x,method=_RETURNVERBOSE)
```

```
[Out] -b*f^4*n*x-1/2*I*g^3*Pi*b*f*x^4*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d
)^n)-I*g^2*Pi*b*f^2*x^3*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-I*g
*Pi*b*f^3*x^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+1/5*(g*x+f)^5
*b/g*ln((e*x+d)^n)+b*f^4/e*n*d*ln(e*x+d)+1/5/e^5*g^4*ln(e*x+d)*b*d^5*n-1/10
*I*g^4*Pi*b*x^5*csgn(I*c*(e*x+d)^n)^3-1/2*I*Pi*b*f^4*x*csgn(I*c*(e*x+d)^n)^
3+1/5*a*g^4*x^5+x*a*f^4+1/3/e*g^3*b*d*f*n*x^3-1/2/e^2*g^3*b*d^2*f*n*x^2+1/e
*g^2*b*d*f^2*n*x^2+1/e^3*g^3*b*d^3*f*n*x-2/e^2*g^2*b*d^2*f^2*n*x+2/e*g*b*d*
f^3*n*x-2/e^2*g*ln(e*x+d)*b*d^2*f^3*n-1/e^4*g^3*ln(e*x+d)*b*d^4*f*n+2/e^3*g
```

```
^2*ln(e*x+d)*b*d^3*f^2*n+1/2*I*Pi*b*f^4*x*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d
)^n)^2+1/2*I*Pi*b*f^4*x*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+1/10*I*g^4*Pi*b*x^5
*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-1/2*I*g^3*Pi*b*f*x^4*csgn(I*c*(e*x
+d)^n)^3+I*g*Pi*b*f^3*x^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+I*g^2*Pi*
b*f^2*x^3*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+I*g*Pi*b*f^3*x^2*csgn(I*c
)*csgn(I*c*(e*x+d)^n)^2+1/2*I*g^3*Pi*b*f*x^4*csgn(I*(e*x+d)^n)*csgn(I*c*(e*
x+d)^n)^2-1/10*I*g^4*Pi*b*x^5*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^
n)+1/2*I*g^3*Pi*b*f*x^4*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-1/2*I*Pi*b*f^4*x*cs
gn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-1/25*g^4*b*n*x^5+g^3*a*f*x^4+
2*g^2*a*f^2*x^3+2*g*a*f^3*x^2+g^3*ln(c)*b*f*x^4+2*g^2*ln(c)*b*f^2*x^3+2*g*l
n(c)*b*f^3*x^2-1/5/g*ln(e*x+d)*b*f^5*n+I*g^2*Pi*b*f^2*x^3*csgn(I*c)*csgn(I*
c*(e*x+d)^n)^2-I*g^2*Pi*b*f^2*x^3*csgn(I*c*(e*x+d)^n)^3-I*g*Pi*b*f^3*x^2*cs
gn(I*c*(e*x+d)^n)^3+1/10*I*g^4*Pi*b*x^5*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+1/2
0/e*g^4*b*d*n*x^4-1/4*g^3*b*f*n*x^4+1/5*g^4*ln(c)*b*x^5+ln(c)*b*f^4*x-1/15/
e^2*g^4*b*d^2*n*x^3-2/3*g^2*b*f^2*n*x^3+1/10/e^3*g^4*b*d^3*n*x^2-g*b*f^3*n*
x^2-1/5/e^4*g^4*b*d^4*n*x
```

Maxima [B] Leaf count of result is larger than twice the leaf count of optimal. 395 vs. $2(166) = 332$.
time = 0.28, size = 395, normalized size = 2.22

$$\frac{1}{5}bg^4x^5\log\left((xe+d)^nc\right)+\frac{1}{5}ag^4x^5+bfg^3x^4\log\left((xe+d)^nc\right)+afg^3x^4+2bf^2g^2x^3\log\left((xe+d)^nc\right)+2af^2g^2x^3+\left(de^{(-2)}\log(xe+d)-xe^{(-1)}\right)bf^4ne-\left(2d^2e^{(-3)}\log(xe+d)+\left(x^2e-2dx\right)e^{(-2)}\right)bf^3gne+\frac{1}{3}\left(6d^3e^{(-4)}\log(xe+d)-\left(2x^3e^2-3dx^2e+6d^2x\right)e^{(-3)}\right)bf^2g^2ne-\frac{1}{12}\left(12d^4e^{(-5)}\log(xe+d)+\left(3x^4e^3-4dx^3e^2+6d^2x^2e-12d^3x\right)e^{(-4)}\right)bfg^3ne+\frac{1}{300}\left(60d^5e^{(-6)}\log(xe+d)-\left(12x^5e^4-15dx^4e^3+20d^2x^3e^2-30d^3x^2e+60d^4x\right)e^{(-5)}\right)bg^4ne+2bf^3gx^2\log\left((xe+d)^nc\right)+2af^3gx^2+bf^4x\log\left((xe+d)^nc\right)+af^4x$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/5*b*g^4*x^5*log((x*e + d)^n*c) + 1/5*a*g^4*x^5 + b*f*g^3*x^4*log((x*e + d
)^n*c) + a*f*g^3*x^4 + 2*b*f^2*g^2*x^3*log((x*e + d)^n*c) + 2*a*f^2*g^2*x^3
 + (d*e^(-2)*log(x*e + d) - x*e^(-1))*b*f^4*n*e - (2*d^2*e^(-3)*log(x*e + d
) + (x^2*e - 2*d*x)*e^(-2))*b*f^3*g*n*e + 1/3*(6*d^3*e^(-4)*log(x*e + d) -
(2*x^3*e^2 - 3*d*x^2*e + 6*d^2*x)*e^(-3))*b*f^2*g^2*n*e - 1/12*(12*d^4*e^(-
5)*log(x*e + d) + (3*x^4*e^3 - 4*d*x^3*e^2 + 6*d^2*x^2*e - 12*d^3*x)*e^(-4)
)*b*f*g^3*n*e + 1/300*(60*d^5*e^(-6)*log(x*e + d) - (12*x^5*e^4 - 15*d*x^4*
e^3 + 20*d^2*x^3*e^2 - 30*d^3*x^2*e + 60*d^4*x)*e^(-5))*b*g^4*n*e + 2*b*f^3
*g*x^2*log((x*e + d)^n*c) + 2*a*f^3*g*x^2 + b*f^4*x*log((x*e + d)^n*c) + a*
f^4*x
```

Fricas [B] Leaf count of result is larger than twice the leaf count of optimal. 427 vs. $2(166) = 332$.
time = 0.42, size = 427, normalized size = 2.40

$$-\frac{1}{300}\left(60bd^4g^4nxe-60\left(bg^4x^5+5bfg^3x^4+10bf^2g^2x^3+10bf^3gx^2+5bf^4x\right)e^5\log(c)+\left(12\left(bg^4n-5ag^4\right)x^5+75\left(bfg^3n-4afg^3\right)x^4+200\left(bf^2g^2n-3af^2g^2\right)x^3+300\left(bf^3gn-2af^3g\right)x^2+300\left(bf^4n-af^4\right)x\right)e^5-5\left(3bdg^4nx^4+20bdfg^3nx^3+60bdf^2g^2nx^2+120bdf^3gnx\right)e^4+10\left(2bd^2g^4nx^3+15bd^2fg^3nx^2+60bd^2f^2g^2nx\right)e^3-30\left(bd^3g^4nx^2+10bd^3fg^3nx\right)e^2-60\left(bd^5g^4n-5bd^4fg^3ne+10bd^3f^2g^2ne^2-10bd^2f^3gne^3+5bdf^4ne^4+\left(bg^4nx^5+5bfg^3nx^4+10bf^2g^2nx^3+10bf^3gnx^2+5bf^4nx\right)e^5\right)\log(xe+d)\right)e^{(-5)}$$

Verification of antiderivative is not currently implemented for this CAS.

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

[Out] -1/300*(60*b*d^4*g^4*n*x*e - 60*(b*g^4*x^5 + 5*b*f*g^3*x^4 + 10*b*f^2*g^2*x^3 + 10*b*f^3*g*x^2 + 5*b*f^4*x)*e^5*log(c) + (12*(b*g^4*n - 5*a*g^4)*x^5 + 75*(b*f*g^3*n - 4*a*f*g^3)*x^4 + 200*(b*f^2*g^2*n - 3*a*f^2*g^2)*x^3 + 300*(b*f^3*g*n - 2*a*f^3*g)*x^2 + 300*(b*f^4*n - a*f^4)*x)*e^5 - 5*(3*b*d*g^4*n*x^4 + 20*b*d*f*g^3*n*x^3 + 60*b*d*f^2*g^2*n*x^2 + 120*b*d*f^3*g*n*x)*e^4 + 10*(2*b*d^2*g^4*n*x^3 + 15*b*d^2*f*g^3*n*x^2 + 60*b*d^2*f^2*g^2*n*x)*e^3 - 30*(b*d^3*g^4*n*x^2 + 10*b*d^3*f*g^3*n*x)*e^2 - 60*(b*d^5*g^4*n - 5*b*d^4*f*g^3*n*e + 10*b*d^3*f^2*g^2*n*e^2 - 10*b*d^2*f^3*g*n*e^3 + 5*b*d*f^4*n*e^4 + (b*g^4*n*x^5 + 5*b*f*g^3*n*x^4 + 10*b*f^2*g^2*n*x^3 + 10*b*f^3*g*n*x^2 + 5*b*f^4*n*x)*e^5)*log(x*e + d))*e^(-5)

Sympy [B] Leaf count of result is larger than twice the leaf count of optimal. 568 vs. $2(153) = 306$.
time = 2.45, size = 568, normalized size = 3.19

$$\begin{cases} af^4x + 2af^3gx^2 + 2af^2g^2x^3 + afg^3x^4 + \frac{ag^4x^5}{5} + \frac{bd^5g^4\log(c(d+ex)^n)}{5e^5} - \frac{bd^4fg^3\log(c(d+ex)^n)}{e^4} - \frac{bd^4g^4nx}{5e^4} + \frac{2bd^3f^2g^2\log(c(d+ex)^n)}{e^3} + \frac{bd^3fg^3nx}{e^3} + \frac{bd^3g^4nx^2}{10e^3} - \frac{2bd^2f^3g\log(c(d+ex)^n)}{e^2} - \frac{2bd^2f^2g^2nx}{e^2} - \frac{bd^2fg^3nx^2}{2e^2} - \frac{bd^2g^4nx^3}{15e^2} + \frac{bdf^4\log(c(d+ex)^n)}{e} + \frac{2bdf^3gnx}{e} + \frac{bdf^2g^2nx^2}{e} + \frac{bdfg^3nx^3}{3e} + \frac{bdg^4nx^4}{20e} - bf^4nx + bf^4x\log(c(d+ex)^n) - bf^3gnx^2 + 2bf^3gx^2\log(c(d+ex)^n) - \frac{2bf^2g^2nx^3}{3} + 2bf^2g^2x^3\log(c(d+ex)^n) - \frac{bfg^3nx^4}{4} + bfg^3x^4\log(c(d+ex)^n) - \frac{bg^4nx^5}{25} + \frac{bg^4x^5\log(c(d+ex)^n)}{5} & \text{for } e \neq 0 \\ (a + b\log(cd^n))\left(f^4x + 2f^3gx^2 + 2f^2g^2x^3 + fg^3x^4 + \frac{g^4x^5}{5}\right) & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((g*x+f)**4*(a+b*ln(c*(e*x+d)**n)),x)

[Out] Piecewise((a*f**4*x + 2*a*f**3*g*x**2 + 2*a*f**2*g**2*x**3 + a*f*g**3*x**4 + a*g**4*x**5/5 + b*d**5*g**4*log(c*(d + e*x)**n)/(5*e**5) - b*d**4*f*g**3*log(c*(d + e*x)**n)/e**4 - b*d**4*g**4*n*x/(5*e**4) + 2*b*d**3*f**2*g**2*log(c*(d + e*x)**n)/e**3 + b*d**3*f*g**3*n*x/e**3 + b*d**3*g**4*n*x**2/(10*e**3) - 2*b*d**2*f**3*g*log(c*(d + e*x)**n)/e**2 - 2*b*d**2*f**2*g**2*n*x/e**2 - b*d**2*f*g**3*n*x**2/(2*e**2) - b*d**2*g**4*n*x**3/(15*e**2) + b*d*f**4*log(c*(d + e*x)**n)/e + 2*b*d*f**3*g*n*x/e + b*d*f**2*g**2*n*x**2/e + b*d*f*g**3*n*x**3/(3*e) + b*d*g**4*n*x**4/(20*e) - b*f**4*n*x + b*f**4*x*log(c*(d + e*x)**n) - b*f**3*g*n*x**2 + 2*b*f**3*g*x**2*log(c*(d + e*x)**n) - 2*b*f**2*g**2*n*x**3/3 + 2*b*f**2*g**2*x**3*log(c*(d + e*x)**n) - b*f*g**3*n*x**4/4 + b*f*g**3*x**4*log(c*(d + e*x)**n) - b*g**4*n*x**5/25 + b*g**4*x**5*log(c*(d + e*x)**n)/5, Ne(e, 0)), ((a + b*log(c*d**n))*(f**4*x + 2*f**3*g*x**2 + 2*f**2*g**2*x**3 + f*g**3*x**4 + g**4*x**5/5), True))

Giac [B] Leaf count of result is larger than twice the leaf count of optimal. 1224 vs. $2(166) = 332$.
time = 5.84, size = 1224, normalized size = 6.88

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((g*x+f)^4*(a+b*log(c*(e*x+d)^n)),x, algorithm="giac")

[Out] 1/5*(x*e + d)^5*b*g^4*n*e^(-5)*log(x*e + d) - (x*e + d)^4*b*d*g^4*n*e^(-5)*log(x*e + d) + 2*(x*e + d)^3*b*d^2*g^4*n*e^(-5)*log(x*e + d) - 2*(x*e + d)^2*b*d^3*g^4*n*e^(-5)*log(x*e + d) + (x*e + d)*b*d^4*g^4*n*e^(-5)*log(x*e +

```
d) - 1/25*(x*e + d)^5*b*g^4*n*e^(-5) + 1/4*(x*e + d)^4*b*d*g^4*n*e^(-5) - 2
/3*(x*e + d)^3*b*d^2*g^4*n*e^(-5) + (x*e + d)^2*b*d^3*g^4*n*e^(-5) - (x*e +
 d)*b*d^4*g^4*n*e^(-5) + (x*e + d)^4*b*f*g^3*n*e^(-4)*log(x*e + d) - 4*(x*e
 + d)^3*b*d*f*g^3*n*e^(-4)*log(x*e + d) + 6*(x*e + d)^2*b*d^2*f*g^3*n*e^(-4
)*log(x*e + d) - 4*(x*e + d)*b*d^3*f*g^3*n*e^(-4)*log(x*e + d) + 1/5*(x*e +
 d)^5*b*g^4*e^(-5)*log(c) - (x*e + d)^4*b*d*g^4*e^(-5)*log(c) + 2*(x*e + d)
^3*b*d^2*g^4*e^(-5)*log(c) - 2*(x*e + d)^2*b*d^3*g^4*e^(-5)*log(c) + (x*e +
 d)*b*d^4*g^4*e^(-5)*log(c) - 1/4*(x*e + d)^4*b*f*g^3*n*e^(-4) + 4/3*(x*e +
 d)^3*b*d*f*g^3*n*e^(-4) - 3*(x*e + d)^2*b*d^2*f*g^3*n*e^(-4) + 4*(x*e + d)
*b*d^3*f*g^3*n*e^(-4) + 1/5*(x*e + d)^5*a*g^4*e^(-5) - (x*e + d)^4*a*d*g^4*
e^(-5) + 2*(x*e + d)^3*a*d^2*g^4*e^(-5) - 2*(x*e + d)^2*a*d^3*g^4*e^(-5) +
(x*e + d)*a*d^4*g^4*e^(-5) + 2*(x*e + d)^3*b*f^2*g^2*n*e^(-3)*log(x*e + d)
- 6*(x*e + d)^2*b*d*f^2*g^2*n*e^(-3)*log(x*e + d) + 6*(x*e + d)*b*d^2*f^2*g
^2*n*e^(-3)*log(x*e + d) + (x*e + d)^4*b*f*g^3*e^(-4)*log(c) - 4*(x*e + d)^
3*b*d*f*g^3*e^(-4)*log(c) + 6*(x*e + d)^2*b*d^2*f*g^3*e^(-4)*log(c) - 4*(x*
e + d)*b*d^3*f*g^3*e^(-4)*log(c) - 2/3*(x*e + d)^3*b*f^2*g^2*n*e^(-3) + 3*(
x*e + d)^2*b*d*f^2*g^2*n*e^(-3) - 6*(x*e + d)*b*d^2*f^2*g^2*n*e^(-3) + (x*e
 + d)^4*a*f*g^3*e^(-4) - 4*(x*e + d)^3*a*d*f*g^3*e^(-4) + 6*(x*e + d)^2*a*d
^2*f*g^3*e^(-4) - 4*(x*e + d)*a*d^3*f*g^3*e^(-4) + 2*(x*e + d)^2*b*f^3*g*n*
e^(-2)*log(x*e + d) - 4*(x*e + d)*b*d*f^3*g*n*e^(-2)*log(x*e + d) + 2*(x*e
+ d)^3*b*f^2*g^2*e^(-3)*log(c) - 6*(x*e + d)^2*b*d*f^2*g^2*e^(-3)*log(c) +
6*(x*e + d)*b*d^2*f^2*g^2*e^(-3)*log(c) - (x*e + d)^2*b*f^3*g*n*e^(-2) + 4*
(x*e + d)*b*d*f^3*g*n*e^(-2) + 2*(x*e + d)^3*a*f^2*g^2*e^(-3) - 6*(x*e + d)
^2*a*d*f^2*g^2*e^(-3) + 6*(x*e + d)*a*d^2*f^2*g^2*e^(-3) + (x*e + d)*b*f^4*
n*e^(-1)*log(x*e + d) + 2*(x*e + d)^2*b*f^3*g*e^(-2)*log(c) - 4*(x*e + d)*b
*d*f^3*g*e^(-2)*log(c) - (x*e + d)*b*f^4*n*e^(-1) + 2*(x*e + d)^2*a*f^3*g*e
^(-2) - 4*(x*e + d)*a*d*f^3*g*e^(-2) + (x*e + d)*b*f^4*e^(-1)*log(c) + (x*e
 + d)*a*f^4*e^(-1)
```

Mupad [B]

time = 0.42, size = 526, normalized size = 2.96

$$x\left(\frac{5aef^4+20adf^3g-5bef^4n}{5e}-\frac{d\left(\frac{d\left(\frac{d\left(\frac{g^3(adg+4aef-befn)}{e}-\frac{dg^4(5a-bn)}{5e}\right)}{e}-\frac{2fg^2(2adg+3aef-befn)}{e}\right)}{e}+\frac{2f^2g(3adg+2aef-befn)}{e}\right)}{e}\right)-x^3\left(\frac{d\left(\frac{g^3(adg+4aef-befn)}{e}-\frac{dg^4(5a-bn)}{5e}\right)}{3e}-\frac{2fg^2(2adg+3aef-befn)}{3e}\right)+x^4\left(\frac{g^3(adg+4aef-befn)}{4e}-\frac{dg^4(5a-bn)}{20e}\right)+\ln\left(c(d+ex)^n\right)\left(bf^4x+2bf^3gx^2+2bf^2g^2x^3+bfg^3x^4+\frac{bg^4x^5}{5}\right)+x^2\left(\frac{d\left(\frac{d\left(\frac{g^3(adg+4aef-befn)}{e}-\frac{dg^4(5a-bn)}{5e}\right)}{e}-\frac{2fg^2(2adg+3aef-befn)}{e}\right)}{2e}+\frac{f^2g(3adg+2aef-befn)}{e}\right)+\frac{g^4x^5(5a-bn)}{25}+\frac{\ln(d+ex)\left(bnd^5g^4-5bnd^4efg^3+10bnd^3e^2f^2g^2-10bnd^2e^3f^3g+5bnde^4f^4\right)}{5e^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)^4*(a + b*log(c*(d + e*x)^n)),x)
```

```
[Out] x*((5*a*e*f^4 + 20*a*d*f^3*g - 5*b*e*f^4*n)/(5*e) - (d*((d*((d*((g^3*(a*d*g
 + 4*a*e*f - b*e*f*n))/e - (d*g^4*(5*a - b*n))/(5*e)))/e - (2*f*g^2*(2*a*d*
g + 3*a*e*f - b*e*f*n))/e))/e + (2*f^2*g*(3*a*d*g + 2*a*e*f - b*e*f*n))/e))
/e) - x^3*((d*((g^3*(a*d*g + 4*a*e*f - b*e*f*n))/e - (d*g^4*(5*a - b*n))/(5
*e)))/(3*e) - (2*f*g^2*(2*a*d*g + 3*a*e*f - b*e*f*n))/(3*e)) + x^4*((g^3*(a
*d*g + 4*a*e*f - b*e*f*n))/(4*e) - (d*g^4*(5*a - b*n))/(20*e)) + log(c*(d +
 e*x)^n)*((b*g^4*x^5)/5 + b*f^4*x + 2*b*f^2*g^2*x^3 + 2*b*f^3*g*x^2 + b*f*g
^3*x^4) + x^2*((d*((d*((g^3*(a*d*g + 4*a*e*f - b*e*f*n))/e - (d*g^4*(5*a -
```

```
b*n))/(5*e)))/e - (2*f*g^2*(2*a*d*g + 3*a*e*f - b*e*f*n))/e))/(2*e) + (f^2*
g*(3*a*d*g + 2*a*e*f - b*e*f*n))/e) + (g^4*x^5*(5*a - b*n))/25 + (log(d + e
*x)*(b*d^5*g^4*n + 5*b*d*e^4*f^4*n + 10*b*d^3*e^2*f^2*g^2*n - 5*b*d^4*e*f*g
^3*n - 10*b*d^2*e^3*f^3*g*n))/(5*e^5)
```

3.36 $\int (f+gx)^3 (a+b\log(c(d+ex)^n))\, dx$

Optimal. Leaf size=149

$$-\frac{b(ef-dg)^3nx}{4e^3}-\frac{b(ef-dg)^2n(f+gx)^2}{8e^2g}-\frac{b(ef-dg)n(f+gx)^3}{12eg}-\frac{bn(f+gx)^4}{16g}-\frac{b(ef-dg)^4n\log(d+ex)}{4e^4g}$$

```
[Out] -1/4*b*(-d*g+e*f)^3*n*x/e^3-1/8*b*(-d*g+e*f)^2*n*(g*x+f)^2/e^2/g-1/12*b*(-d
*g+e*f)*n*(g*x+f)^3/e/g-1/16*b*n*(g*x+f)^4/g-1/4*b*(-d*g+e*f)^4*n*ln(e*x+d)
/e^4/g+1/4*(g*x+f)^4*(a+b*ln(c*(e*x+d)^n))/g
```

Rubi [A]
time = 0.05, antiderivative size = 149, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$, Rules used = {2442, 45}

$$\frac{(f+gx)^4(a+b\log(c(d+ex)^n))}{4g}-\frac{bn(ef-dg)^4\log(d+ex)}{4e^4g}-\frac{bnx(ef-dg)^3}{4e^3}-\frac{bn(f+gx)^2(ef-dg)^2}{8e^2g}-\frac{bn(f+gx)^3(ef-dg)}{12eg}-\frac{bn(f+gx)^4}{16g}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)^3*(a + b*Log[c*(d + e*x)^n]),x]
```

```
[Out] -1/4*(b*(e*f - d*g)^3*n*x)/e^3 - (b*(e*f - d*g)^2*n*(f + g*x)^2)/(8*e^2*g)
- (b*(e*f - d*g)*n*(f + g*x)^3)/(12*e*g) - (b*n*(f + g*x)^4)/(16*g) - (b*(e
*f - d*g)^4*n*Log[d + e*x])/(4*e^4*g) + ((f + g*x)^4*(a + b*Log[c*(d + e*x)
^n]))/(4*g)
```

Rule 45

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

Rule 2442

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

Rubi steps

$$\int (f+gx)^3 \left(a+b\log\left(c(d+ex)^n\right)\right)\,dx = \frac{(f+gx)^4\left(a+b\log\left(c(d+ex)^n\right)\right)}{4g} - \frac{(ben)\int \frac{(f+gx)^4}{d+ex}\,dx}{4g}$$

$$= \frac{(f+gx)^4\left(a+b\log\left(c(d+ex)^n\right)\right)}{4g} - \frac{(ben)\int \left(\frac{g(ef-dg)^3}{e^4} + \frac{(ef-dg)^4}{e^4(d+ex)} + \right.}{}$$

$$= -\frac{b(ef-dg)^3nx}{4e^3} - \frac{b(ef-dg)^2n(f+gx)^2}{8e^2g} - \frac{b(ef-dg)n(f+gx)}{12eg}$$

Mathematica [A]
time = 0.16, size = 226, normalized size = 1.52

$$\frac{ex(12ae^3(4f^3+6f^2gx+4fg^2x^2+g^3x^3)-bn(-12d^3g^3+6d^2eg^2(8f+gx)-4de^2g(18f^2+6fgx+g^2x^2)+e^3(48f^3+36f^2gx+16fg^2x^2+3g^3x^3)))-12bd^2g(6e^2f^2-4defg+d^2g^2)\,n\log(d+ex)+12be^3(4df^3+ex(4f^3+6f^2gx+4fg^2x^2+g^3x^3))\log\left(c(d+ex)^n\right)}{48e^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)^3*(a + b*Log[c*(d + e*x)^n]),x]
```

```
[Out] (e*x*(12*a*e^3*(4*f^3 + 6*f^2*g*x + 4*f*g^2*x^2 + g^3*x^3) - b*n*(-12*d^3*g
^3 + 6*d^2*e*g^2*(8*f + g*x) - 4*d*e^2*g*(18*f^2 + 6*f*g*x + g^2*x^2) + e^3
*(48*f^3 + 36*f^2*g*x + 16*f*g^2*x^2 + 3*g^3*x^3))) - 12*b*d^2*g*(6*e^2*f^2
 - 4*d*e*f*g + d^2*g^2)*n*Log[d + e*x] + 12*b*e^3*(4*d*f^3 + e*x*(4*f^3 + 6
*f^2*g*x + 4*f*g^2*x^2 + g^3*x^3))*Log[c*(d + e*x)^n])/(48*e^4)
```

Maple [C] Result contains higher order function than in optimal. Order 9 vs. order 3.
time = 0.38, size = 836, normalized size = 5.61

method	result
risch	$\frac{b\,f^3nd\ln(ex+d)}{e} - \frac{i\pi b\,f^3x\,\mathrm{csgn}(ic)\mathrm{csgn}(i(ex+d)^n)\mathrm{csgn}(ic(ex+d)^n)}{2} + \frac{ig^2\pi bf\,x^3\mathrm{csgn}(i(ex+d)^n)\mathrm{csgn}(ic(ex+d)^n)^2}{2} + \frac{3ig\pi b\,f^2x^2}{}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^3*(a+b*ln(c*(e*x+d)^n)),x,method=_RETURNVERBOSE)
```

```
[Out] b*f^3/e*n*d*ln(e*x+d)+1/4*a*g^3*x^4+x*a*f^3-b*f^3*n*x+1/4*(g*x+f)^4*b/g*ln(
(e*x+d)^n)+3/2*g*ln(c)*b*f^2*x^2+ln(c)*b*f^3*x+1/4*g^3*ln(c)*b*x^4+1/2/e*g^
2*b*d*f*n*x^2-1/e^2*g^2*b*d^2*f*n*x+3/2/e*g*b*d*f^2*n*x+1/e^3*g^2*ln(e*x+d)
*b*d^3*f*n-3/2/e^2*g*ln(e*x+d)*b*d^2*f^2*n-3/4*I*g*Pi*b*f^2*x^2*csgn(I*c)*c
sgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-1/2*I*g^2*Pi*b*f*x^3*csgn(I*c)*csgn(I*
(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-3/4*g*b*f^2*n*x^2+1/4/e^3*g^3*b*d^3*n*x-1/3*
g^2*b*f*n*x^3-1/8/e^2*g^3*b*d^2*n*x^2-1/2*I*Pi*b*f^3*x*csgn(I*c)*csgn(I*(e*
x+d)^n)*csgn(I*c*(e*x+d)^n)+1/2*I*g^2*Pi*b*f*x^3*csgn(I*(e*x+d)^n)*csgn(I*c
*(e*x+d)^n)^2+3/4*I*g*Pi*b*f^2*x^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+3/4*I*g*
Pi*b*f^2*x^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+1/2*I*g^2*Pi*b*f*x^3*c
```

```
sgn(I*c)*csgn(I*c*(e*x+d)^n)^2-1/8*I*g^3*Pi*b*x^4*csgn(I*c)*csgn(I*(e*x+d)^
n)*csgn(I*c*(e*x+d)^n)-1/16*g^3*b*n*x^4+g^2*a*f*x^3+3/2*g*a*f^2*x^2-1/4/g*l
n(e*x+d)*b*f^4*n+g^2*ln(c)*b*f*x^3+1/12/e*g^3*b*d*n*x^3-1/4/e^4*g^3*ln(e*x+
d)*b*d^4*n-1/2*I*Pi*b*f^3*x*csgn(I*c*(e*x+d)^n)^3-1/8*I*g^3*Pi*b*x^4*csgn(I
*c*(e*x+d)^n)^3-3/4*I*g*Pi*b*f^2*x^2*csgn(I*c*(e*x+d)^n)^3+1/8*I*g^3*Pi*b*x
^4*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+1/2*I*Pi*b*f^3*x*csgn(I*c)*csgn(I*c*(e*x
+d)^n)^2+1/2*I*Pi*b*f^3*x*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+1/8*I*g^3
*Pi*b*x^4*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-1/2*I*g^2*Pi*b*f*x^3*csgn
(I*c*(e*x+d)^n)^3
```

Maxima [**B**] Leaf count of result is larger than twice the leaf count of optimal. 287 vs. $2(139) = 278$.
time = 0.28, size = 287, normalized size = 1.93

$$\frac{1}{4}\,bg^3x^4\log\left((xe+d)^nc\right)+\frac{1}{4}\,ag^3x^4+bfg^2x^3\log\left((xe+d)^nc\right)+afg^2x^3+\left(de^{(-2)}\log\left(xe+d\right)-xe^{(-1)}\right)bf^3ne-\frac{3}{4}\left(2\,d^2e^{(-3)}\log\left(xe+d\right)+\left(x^2e-2\,dx\right)e^{(-2)}\right)bf^2gne+\frac{1}{6}\left(6\,d^3e^{(-4)}\log\left(xe+d\right)-\left(2\,x^3e^2-3\,dx^2e+6\,d^2x\right)e^{(-3)}\right)bfg^2ne-\frac{1}{48}\left(12\,d^4e^{(-5)}\log\left(xe+d\right)+\left(3\,x^4e^3-4\,dx^3e^2+6\,d^2x^2e-12\,d^3x\right)e^{(-4)}\right)bg^3ne+\frac{3}{2}\,bf^2gx^2\log\left((xe+d)^nc\right)+\frac{3}{2}\,af^2gx^2+bf^3x\log\left((xe+d)^nc\right)+af^3x$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/4*b*g^3*x^4*log((x*e + d)^n*c) + 1/4*a*g^3*x^4 + b*f*g^2*x^3*log((x*e + d
)^n*c) + a*f*g^2*x^3 + (d*e^(-2)*log(x*e + d) - x*e^(-1))*b*f^3*n*e - 3/4*(
2*d^2*e^(-3)*log(x*e + d) + (x^2*e - 2*d*x)*e^(-2))*b*f^2*g*n*e + 1/6*(6*d^
3*e^(-4)*log(x*e + d) - (2*x^3*e^2 - 3*d*x^2*e + 6*d^2*x)*e^(-3))*b*f*g^2*n
*e - 1/48*(12*d^4*e^(-5)*log(x*e + d) + (3*x^4*e^3 - 4*d*x^3*e^2 + 6*d^2*x^
2*e - 12*d^3*x)*e^(-4))*b*g^3*n*e + 3/2*b*f^2*g*x^2*log((x*e + d)^n*c) + 3/
2*a*f^2*g*x^2 + b*f^3*x*log((x*e + d)^n*c) + a*f^3*x
```

Fricas [**B**] Leaf count of result is larger than twice the leaf count of optimal. 304 vs. $2(139) = 278$.
time = 0.40, size = 304, normalized size = 2.04

$$\frac{1}{48}\left(12\,bd^3g^3nxe+12\left(bg^3x^4+4\,bfg^2x^3+6\,bf^2gx^2+4\,bf^3x\right)e^4\log\left(c\right)-\left(3\left(bg^3n-4\,ag^3\right)x^4+16\left(bfg^2n-3\,afg^2\right)x^3+36\left(bf^2gn-2\,af^2g\right)x^2+48\left(bf^3n-af^3\right)x\right)e^4+4\left(bdg^3nx^3+6\,bdfg^2nx^2+18\,bdf^2gnx\right)e^3-6\left(bd^2g^3nx^2+8\,bd^2fg^2nx\right)e^2-12\left(bd^4g^3n-4\,bd^3fg^2ne+6\,bd^2f^2gne^2-4\,bdf^3ne^3-\left(bg^3nx^4+4\,bfg^2nx^3+6\,bf^2gnx^2+4\,bf^3nx\right)e^4\right)\log\left(xe+d\right)\right)e^{(-4)}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/48*(12*b*d^3*g^3*n*x*e + 12*(b*g^3*x^4 + 4*b*f*g^2*x^3 + 6*b*f^2*g*x^2 +
4*b*f^3*x)*e^4*log(c) - (3*(b*g^3*n - 4*a*g^3)*x^4 + 16*(b*f*g^2*n - 3*a*f*
g^2)*x^3 + 36*(b*f^2*g*n - 2*a*f^2*g)*x^2 + 48*(b*f^3*n - a*f^3)*x)*e^4 + 4
*(b*d*g^3*n*x^3 + 6*b*d*f*g^2*n*x^2 + 18*b*d*f^2*g*n*x)*e^3 - 6*(b*d^2*g^3*
n*x^2 + 8*b*d^2*f*g^2*n*x)*e^2 - 12*(b*d^4*g^3*n - 4*b*d^3*f*g^2*n*e + 6*b*
d^2*f^2*g*n*e^2 - 4*b*d*f^3*n*e^3 - (b*g^3*n*x^4 + 4*b*f*g^2*n*x^3 + 6*b*f^
2*g*n*x^2 + 4*b*f^3*n*x)*e^4)*log(x*e + d))*e^(-4)
```

Sympy [**B**] Leaf count of result is larger than twice the leaf count of optimal. 410 vs. $2(128) = 256$.

time = 1.28, size = 410, normalized size = 2.75

$$\begin{cases} af^3x + \frac{3af^2gx^2}{2} + afg^2x^3 + \frac{ag^3x^4}{4} - \frac{bd^4g^3\log(c(d+ex)^n)}{4e^4} + \frac{bd^3fg^2\log(c(d+ex)^n)}{e^3} + \frac{bd^3g^3nx}{4e^3} - \frac{3bd^2f^2g\log(c(d+ex)^n)}{2e^2} - \frac{bd^2fg^2nx}{e^2} - \frac{bd^2g^3nx^2}{8e^2} + \frac{bdf^3\log(c(d+ex)^n)}{e} + \frac{3bdf^2gnx}{2e} + \frac{bdfg^2nx^2}{2e} + \frac{bdg^3nx^3}{12e} - bf^3nx + bf^3x\log(c(d+ex)^n) - \frac{3bf^2gnx^2}{4} + \frac{3bf^2gx^2\log(c(d+ex)^n)}{2} - \frac{bfg^2nx^3}{3} + bfg^2x^3\log(c(d+ex)^n) - \frac{bg^3nx^4}{16} + \frac{bg^3x^4\log(c(d+ex)^n)}{4} & \text{for } e \neq 0 \\ (a + b\log(cd^n))\left(f^3x + \frac{3f^2gx^2}{2} + fg^2x^3 + \frac{g^3x^4}{4}\right) & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**3*(a+b*ln(c*(e*x+d)**n)),x)
```

```
[Out] Piecewise((a*f**3*x + 3*a*f**2*g*x**2/2 + a*f*g**2*x**3 + a*g**3*x**4/4 - b
*d**4*g**3*log(c*(d + e*x)**n)/(4*e**4) + b*d**3*f*g**2*log(c*(d + e*x)**n)
/e**3 + b*d**3*g**3*n*x/(4*e**3) - 3*b*d**2*f**2*g*log(c*(d + e*x)**n)/(2*e
**2) - b*d**2*f*g**2*n*x/e**2 - b*d**2*g**3*n*x**2/(8*e**2) + b*d*f**3*log(
c*(d + e*x)**n)/e + 3*b*d*f**2*g*n*x/(2*e) + b*d*f*g**2*n*x**2/(2*e) + b*d*
g**3*n*x**3/(12*e) - b*f**3*n*x + b*f**3*x*log(c*(d + e*x)**n) - 3*b*f**2*g
*n*x**2/4 + 3*b*f**2*g*x**2*log(c*(d + e*x)**n)/2 - b*f*g**2*n*x**3/3 + b*f
*g**2*x**3*log(c*(d + e*x)**n) - b*g**3*n*x**4/16 + b*g**3*x**4*log(c*(d +
e*x)**n)/4, Ne(e, 0)), ((a + b*log(c*d**n))*(f**3*x + 3*f**2*g*x**2/2 + f*g
**2*x**3 + g**3*x**4/4), True))
```

Giac [B] Leaf count of result is larger than twice the leaf count of optimal. 780 vs. 2(139) = 278.

time = 4.25, size = 780, normalized size = 5.23

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/4*(x*e + d)^4*b*g^3*n*e^(-4)*log(x*e + d) - (x*e + d)^3*b*d*g^3*n*e^(-4)*
log(x*e + d) + 3/2*(x*e + d)^2*b*d^2*g^3*n*e^(-4)*log(x*e + d) - (x*e + d)*
b*d^3*g^3*n*e^(-4)*log(x*e + d) - 1/16*(x*e + d)^4*b*g^3*n*e^(-4) + 1/3*(x*
e + d)^3*b*d*g^3*n*e^(-4) - 3/4*(x*e + d)^2*b*d^2*g^3*n*e^(-4) + (x*e + d)*
b*d^3*g^3*n*e^(-4) + (x*e + d)^3*b*f*g^2*n*e^(-3)*log(x*e + d) - 3*(x*e + d
)^2*b*d*f*g^2*n*e^(-3)*log(x*e + d) + 3*(x*e + d)*b*d^2*f*g^2*n*e^(-3)*log(
x*e + d) + 1/4*(x*e + d)^4*b*g^3*e^(-4)*log(c) - (x*e + d)^3*b*d*g^3*e^(-4)
*log(c) + 3/2*(x*e + d)^2*b*d^2*g^3*e^(-4)*log(c) - (x*e + d)*b*d^3*g^3*e^(
-4)*log(c) - 1/3*(x*e + d)^3*b*f*g^2*n*e^(-3) + 3/2*(x*e + d)^2*b*d*f*g^2*n
*e^(-3) - 3*(x*e + d)*b*d^2*f*g^2*n*e^(-3) + 1/4*(x*e + d)^4*a*g^3*e^(-4) -
 (x*e + d)^3*a*d*g^3*e^(-4) + 3/2*(x*e + d)^2*a*d^2*g^3*e^(-4) - (x*e + d)*
a*d^3*g^3*e^(-4) + 3/2*(x*e + d)^2*b*f^2*g*n*e^(-2)*log(x*e + d) - 3*(x*e +
 d)*b*d*f^2*g*n*e^(-2)*log(x*e + d) + (x*e + d)^3*b*f*g^2*e^(-3)*log(c) - 3
*(x*e + d)^2*b*d*f*g^2*e^(-3)*log(c) + 3*(x*e + d)*b*d^2*f*g^2*e^(-3)*log(c
) - 3/4*(x*e + d)^2*b*f^2*g*n*e^(-2) + 3*(x*e + d)*b*d*f^2*g*n*e^(-2) + (x*
e + d)^3*a*f*g^2*e^(-3) - 3*(x*e + d)^2*a*d*f*g^2*e^(-3) + 3*(x*e + d)*a*d^
2*f*g^2*e^(-3) + (x*e + d)*b*f^3*n*e^(-1)*log(x*e + d) + 3/2*(x*e + d)^2*b*
f^2*g*e^(-2)*log(c) - 3*(x*e + d)*b*d*f^2*g*e^(-2)*log(c) - (x*e + d)*b*f^3
```

```
*n*e^(-1) + 3/2*(x*e + d)^2*a*f^2*g*e^(-2) - 3*(x*e + d)*a*d*f^2*g*e^(-2) +
 (x*e + d)*b*f^3*e^(-1)*log(c) + (x*e + d)*a*f^3*e^(-1)
```

Mupad [B]
time = 0.35, size = 352, normalized size = 2.36

$$x\left(\frac{4aef^3+12adf^2g-4bef^3n}{4e}+\frac{d\left(\frac{d\left(\frac{g^2(adg+3aef-befn)}{e}-\frac{dg^3(4a-bn)}{4e}\right)}{e}-\frac{3fg(2adg+2aef-befn)}{2e}\right)}{e}\right)+x^3\left(\frac{g^2(adg+3aef-befn)}{3e}-\frac{dg^3(4a-bn)}{12e}\right)+\ln\left(c(d+ex)^n\right)\left(bf^3x+\frac{3bf^2gx^2}{2}+bfg^2x^3+\frac{bg^3x^4}{4}\right)-x^2\left(\frac{d\left(\frac{g^2(adg+3aef-befn)}{e}-\frac{dg^3(4a-bn)}{4e}\right)}{2e}-\frac{3fg(2adg+2aef-befn)}{4e}\right)-\frac{\ln(d+ex)\left(bnd^4g^3-4bnd^3efg^2+6bnd^2e^2f^2g-4bnde^3f^3\right)}{4e^4}+\frac{g^3x^4(4a-bn)}{16}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)^3*(a + b*log(c*(d + e*x)^n)),x)
```

```
[Out] x*((4*a*e*f^3 + 12*a*d*f^2*g - 4*b*e*f^3*n)/(4*e) + (d*((d*((g^2*(a*d*g + 3
*a*e*f - b*e*f*n))/e - (d*g^3*(4*a - b*n))/(4*e)))/e - (3*f*g*(2*a*d*g + 2*
a*e*f - b*e*f*n))/(2*e)))/e) + x^3*((g^2*(a*d*g + 3*a*e*f - b*e*f*n))/(3*e)
 - (d*g^3*(4*a - b*n))/(12*e)) + log(c*(d + e*x)^n)*((b*g^3*x^4)/4 + b*f^3*
x + (3*b*f^2*g*x^2)/2 + b*f*g^2*x^3) - x^2*((d*((g^2*(a*d*g + 3*a*e*f - b*e
*f*n))/e - (d*g^3*(4*a - b*n))/(4*e)))/(2*e) - (3*f*g*(2*a*d*g + 2*a*e*f -
b*e*f*n))/(4*e)) - (log(d + e*x)*(b*d^4*g^3*n - 4*b*d*e^3*f^3*n - 4*b*d^3*e
*f*g^2*n + 6*b*d^2*e^2*f^2*g*n))/(4*e^4) + (g^3*x^4*(4*a - b*n))/16
```

3.37 $\int (f+gx)^2 (a+b\log (c(d+ex)^n))\,dx$

Optimal. Leaf size=120

$$-\frac{b(ef-dg)^2nx}{3e^2}-\frac{b(ef-dg)n(f+gx)^2}{6eg}-\frac{bn(f+gx)^3}{9g}-\frac{b(ef-dg)^3n\log(d+ex)}{3e^3g}+\frac{(f+gx)^3(a+b\log(c(d$$

```
[Out] -1/3*b*(-d*g+e*f)^2*n*x/e^2-1/6*b*(-d*g+e*f)*n*(g*x+f)^2/e/g-1/9*b*n*(g*x+f
)^3/g-1/3*b*(-d*g+e*f)^3*n*ln(e*x+d)/e^3/g+1/3*(g*x+f)^3*(a+b*ln(c*(e*x+d)^
n))/g
```

Rubi [A]
time = 0.04, antiderivative size = 120, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$, Rules used = {2442, 45}

$$\frac{(f+gx)^3(a+b\log(c(d+ex)^n))}{3g}-\frac{bn(ef-dg)^3\log(d+ex)}{3e^3g}-\frac{bnx(ef-dg)^2}{3e^2}-\frac{bn(f+gx)^2(ef-dg)}{6eg}-\frac{bn(f+gx)^3}{9g}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)^2*(a + b*Log[c*(d + e*x)^n]),x]
```

```
[Out] -1/3*(b*(e*f - d*g)^2*n*x)/e^2 - (b*(e*f - d*g)*n*(f + g*x)^2)/(6*e*g) - (b
*n*(f + g*x)^3)/(9*g) - (b*(e*f - d*g)^3*n*Log[d + e*x])/(3*e^3*g) + ((f +
g*x)^3*(a + b*Log[c*(d + e*x)^n]))/(3*g)
```

Rule 45

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

Rule 2442

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

Rubi steps

$$\int (f+gx)^2 \left(a+b\log \left(c(d+ex)^n\right)\right) \, dx = \frac{(f+gx)^3 \left(a+b\log \left(c(d+ex)^n\right)\right)}{3g} - \frac{(ben)\int \frac{(f+gx)^3}{d+ex} \, dx}{3g}$$
$$= \frac{(f+gx)^3 \left(a+b\log \left(c(d+ex)^n\right)\right)}{3g} - \frac{(ben)\int \left(\frac{g(ef-dg)^2}{e^3} + \frac{(ef-dg)^3}{e^3(d+ex)}\right.}{}$$
$$= -\frac{b(ef-dg)^2nx}{3e^2} - \frac{b(ef-dg)n(f+gx)^2}{6eg} - \frac{bn(f+gx)^3}{9g} - \frac{b(ef}{}$$

Mathematica [A]
time = 0.10, size = 150, normalized size = 1.25

$$\frac{6bd^2g(-3ef+dg)n\log(d+ex)+e(x(6ae^2(3f^2+3fgx+g^2x^2)-bn(6d^2g^2-3deg(6f+gx)+e^2(18f^2+9fgx+2g^2x^2)))+6be(3df^2+ex(3f^2+3fgx+g^2x^2))\log\left(c(d+ex)^n\right))}{18e^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)^2*(a + b*Log[c*(d + e*x)^n]),x]
```

```
[Out] (6*b*d^2*g*(-3*e*f + d*g)*n*Log[d + e*x] + e*(x*(6*a*e^2*(3*f^2 + 3*f*g*x +
 g^2*x^2) - b*n*(6*d^2*g^2 - 3*d*e*g*(6*f + g*x) + e^2*(18*f^2 + 9*f*g*x +
2*g^2*x^2))) + 6*b*e*(3*d*f^2 + e*x*(3*f^2 + 3*f*g*x + g^2*x^2))*Log[c*(d +
 e*x)^n]))/(18*e^3)
```

Maple [C] Result contains higher order function than in optimal. Order 9 vs. order 3.
time = 0.37, size = 585, normalized size = 4.88

method	result
risch	$-\frac{ig^2\pi b\,x^3\text{csgn}(ic(ex+d)^n)^3}{6} - \frac{i\pi b\,f^2x\text{csgn}(ic(ex+d)^n)^3}{2} + \frac{a\,g^2x^3}{3} + \frac{b\,f^2nd\ln(ex+d)}{e} + \frac{(gx+f)^3b\ln((ex+d)^n)}{3g} + xa\,f^2$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^2*(a+b*ln(c*(e*x+d)^n)),x,method=_RETURNVERBOSE)
```

```
[Out] 1/3*a*g^2*x^3+b*f^2/e*n*d*ln(e*x+d)+1/3*(g*x+f)^3*b/g*ln((e*x+d)^n)+x*a*f^2
-b*f^2*n*x+1/6/e*g^2*b*d*n*x^2+1/3*g^2*ln(c)*b*x^3+ln(c)*b*f^2*x+1/e*g*b*d*
f*n*x-1/e^2*g*ln(e*x+d)*b*d^2*f*n-1/9*g^2*b*n*x^3+g*a*f*x^2+g*ln(c)*b*f*x^2
-1/3/g*ln(e*x+d)*b*f^3*n+1/2*I*Pi*b*f^2*x*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d
)^n)^2+1/2*I*Pi*b*f^2*x*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+1/6*I*g^2*Pi*b*x^3*
csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+1/6*I*g^2*Pi*b*x^3*csgn(I*c)*csgn(I
*c*(e*x+d)^n)^2-1/2*I*g*Pi*b*f*x^2*csgn(I*c*(e*x+d)^n)^3-1/2*I*g*Pi*b*f*x^2
*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-1/2*g*b*f*n*x^2-1/3/e^2*g^
2*b*d^2*n*x+1/3/e^3*g^2*ln(e*x+d)*b*d^3*n-1/6*I*g^2*Pi*b*x^3*csgn(I*c*(e*x+
d)^n)^3-1/2*I*Pi*b*f^2*x*csgn(I*c*(e*x+d)^n)^3-1/2*I*Pi*b*f^2*x*csgn(I*c)*c
sgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-1/6*I*g^2*Pi*b*x^3*csgn(I*c)*csgn(I*(e
```

```
*x+d)^n)*csgn(I*c*(e*x+d)^n)+1/2*I*g*Pi*b*f*x^2*csgn(I*(e*x+d)^n)*csgn(I*c*
(e*x+d)^n)^2+1/2*I*g*Pi*b*f*x^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2
```

Maxima [A]
time = 0.28, size = 190, normalized size = 1.58

$$\frac{1}{3}bg^2x^3\log\left((xe+d)^nc\right)+\frac{1}{3}ag^2x^3+\left(de^{(-2)}\log(xe+d)-xe^{(-1)}\right)bf^2ne-\frac{1}{2}\left(2d^2e^{(-3)}\log(xe+d)+\left(x^2e-2dx\right)e^{(-2)}\right)bfgne+\frac{1}{18}\left(6d^3e^{(-4)}\log(xe+d)-\left(2x^3e^2-3dx^2e+6d^2x\right)e^{(-3)}\right)bg^2ne+bfgx^2\log\left((xe+d)^nc\right)+afgx^2+bf^2x\log\left((xe+d)^nc\right)+af^2x$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/3*b*g^2*x^3*log((x*e + d)^n*c) + 1/3*a*g^2*x^3 + (d*e^(-2)*log(x*e + d) -
 x*e^(-1))*b*f^2*n*e - 1/2*(2*d^2*e^(-3)*log(x*e + d) + (x^2*e - 2*d*x)*e^(
-2))*b*f*g*n*e + 1/18*(6*d^3*e^(-4)*log(x*e + d) - (2*x^3*e^2 - 3*d*x^2*e +
 6*d^2*x)*e^(-3))*b*g^2*n*e + b*f*g*x^2*log((x*e + d)^n*c) + a*f*g*x^2 + b*
f^2*x*log((x*e + d)^n*c) + a*f^2*x
```

Fricas [A]
time = 0.36, size = 195, normalized size = 1.62

$$-\frac{1}{18}\left(6bd^2g^2nxe-6\left(bg^2x^3+3bfgx^2+3bf^2x\right)e^3\log(c)+\left(2\left(bg^2n-3ag^2\right)x^3+9\left(bfgn-2afg\right)x^2+18\left(bf^2n-af^2\right)x\right)e^3-3\left(bdg^2nx^2+6bdfgnx\right)e^2-6\left(bd^3g^2n-3bd^2fgne+3bdf^2ne^2+\left(bg^2nx^3+3bfgnx^2+3bf^2nx\right)e^3\right)\log(xe+d)\right)e^{(-3)}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -1/18*(6*b*d^2*g^2*n*x*e - 6*(b*g^2*x^3 + 3*b*f*g*x^2 + 3*b*f^2*x)*e^3*log(
c) + (2*(b*g^2*n - 3*a*g^2)*x^3 + 9*(b*f*g*n - 2*a*f*g)*x^2 + 18*(b*f^2*n -
 a*f^2)*x)*e^3 - 3*(b*d*g^2*n*x^2 + 6*b*d*f*g*n*x)*e^2 - 6*(b*d^3*g^2*n - 3
*b*d^2*f*g*n*e + 3*b*d*f^2*n*e^2 + (b*g^2*n*x^3 + 3*b*f*g*n*x^2 + 3*b*f^2*n
*x)*e^3)*log(x*e + d))*e^(-3)
```

Sympy [B] Leaf count of result is larger than twice the leaf count of optimal. 252 vs. 2(102) = 204.
time = 0.69, size = 252, normalized size = 2.10

$$\begin{cases} af^2x+afgx^2+\frac{ag^2x^3}{3}+\frac{bd^3g^2\log\left(c(d+ex)^n\right)}{3e^3}-\frac{bd^2fg\log\left(c(d+ex)^n\right)}{e^2}-\frac{bd^2g^2nx}{3e^2}+\frac{bdf^2\log\left(c(d+ex)^n\right)}{e}+\frac{bdfgnx}{e}+\frac{bdg^2nx^2}{6e}-bf^2nx+bf^2x\log\left(c(d+ex)^n\right)-\frac{bfgnx^2}{2}+bfgx^2\log\left(c(d+ex)^n\right)-\frac{bg^2nx^3}{9}+\frac{bg^2x^3\log\left(c(d+ex)^n\right)}{3} & \text{for } e\neq 0 \\ \left(a+b\log\left(cd^n\right)\right)\left(f^2x+fgx^2+\frac{g^2x^3}{3}\right) & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**2*(a+b*ln(c*(e*x+d)**n)),x)
```

```
[Out] Piecewise((a*f**2*x + a*f*g*x**2 + a*g**2*x**3/3 + b*d**3*g**2*log(c*(d + e
*x)**n)/(3*e**3) - b*d**2*f*g*log(c*(d + e*x)**n)/e**2 - b*d**2*g**2*n*x/(3
*e**2) + b*d*f**2*log(c*(d + e*x)**n)/e + b*d*f*g*n*x/e + b*d*g**2*n*x**2/(
6*e) - b*f**2*n*x + b*f**2*x*log(c*(d + e*x)**n) - b*f*g*n*x**2/2 + b*f*g*x
**2*log(c*(d + e*x)**n) - b*g**2*n*x**3/9 + b*g**2*x**3*log(c*(d + e*x)**n)
```

```
/3, Ne(e, 0)), ((a + b*log(c*d**n))*(f**2*x + f*g*x**2 + g**2*x**3/3), True
))
```

Giac [B] Leaf count of result is larger than twice the leaf count of optimal. 430 vs. $2(112) = 224$.
time = 4.13, size = 430, normalized size = 3.58

$$\frac{1}{3}\,(xe+d)^3bg^2ne^{(-3)}\log\left(xe+d\right)-(xe+d)^2bdg^2ne^{(-3)}\log\left(xe+d\right)+(xe+d)bd^2g^2ne^{(-3)}\log\left(xe+d\right)-\frac{1}{9}\,(xe+d)^3bg^2ne^{(-3)}+\frac{1}{2}\,(xe+d)^2bdg^2ne^{(-3)}-(xe+d)bd^2g^2ne^{(-3)}+(xe+d)^2bfgne^{(-2)}\log\left(xe+d\right)-2\,(xe+d)bdfgne^{(-2)}\log\left(xe+d\right)+\frac{1}{3}\,(xe+d)^3bg^2e^{(-3)}\log\left(c\right)-(xe+d)^2bdg^2e^{(-3)}\log\left(c\right)+(xe+d)bd^2g^2e^{(-3)}\log\left(c\right)-\frac{1}{2}\,(xe+d)^2bfgne^{(-2)}+2\,(xe+d)bdfgne^{(-2)}+\frac{1}{3}\,(xe+d)^3ag^2e^{(-3)}-(xe+d)^2adg^2e^{(-3)}+(xe+d)ad^2g^2e^{(-3)}+(xe+d)bf^2ne^{(-1)}\log\left(xe+d\right)+(xe+d)^2bfge^{(-2)}\log\left(c\right)-2\,(xe+d)bdfge^{(-2)}\log\left(c\right)-(xe+d)bf^2ne^{(-1)}+(xe+d)^2afge^{(-2)}-2\,(xe+d)adfge^{(-2)}+(xe+d)bf^2e^{(-1)}\log\left(c\right)+(xe+d)af^2e^{(-1)}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/3*(x*e + d)^3*b*g^2*n*e^(-3)*log(x*e + d) - (x*e + d)^2*b*d*g^2*n*e^(-3)*
log(x*e + d) + (x*e + d)*b*d^2*g^2*n*e^(-3)*log(x*e + d) - 1/9*(x*e + d)^3*
b*g^2*n*e^(-3) + 1/2*(x*e + d)^2*b*d*g^2*n*e^(-3) - (x*e + d)*b*d^2*g^2*n*e
^(-3) + (x*e + d)^2*b*f*g*n*e^(-2)*log(x*e + d) - 2*(x*e + d)*b*d*f*g*n*e^(
-2)*log(x*e + d) + 1/3*(x*e + d)^3*b*g^2*e^(-3)*log(c) - (x*e + d)^2*b*d*g^
2*e^(-3)*log(c) + (x*e + d)*b*d^2*g^2*e^(-3)*log(c) - 1/2*(x*e + d)^2*b*f*g
*n*e^(-2) + 2*(x*e + d)*b*d*f*g*n*e^(-2) + 1/3*(x*e + d)^3*a*g^2*e^(-3) - (
x*e + d)^2*a*d*g^2*e^(-3) + (x*e + d)*a*d^2*g^2*e^(-3) + (x*e + d)*b*f^2*n*
e^(-1)*log(x*e + d) + (x*e + d)^2*b*f*g*e^(-2)*log(c) - 2*(x*e + d)*b*d*f*g
*e^(-2)*log(c) - (x*e + d)*b*f^2*n*e^(-1) + (x*e + d)^2*a*f*g*e^(-2) - 2*(x
*e + d)*a*d*f*g*e^(-2) + (x*e + d)*b*f^2*e^(-1)*log(c) + (x*e + d)*a*f^2*e^
(-1)
```

Mupad [B]
time = 0.27, size = 212, normalized size = 1.77

$$x^2\left(\frac{g\,\left(a\,d\,g+2\,a\,e\,f-b\,e\,f\,n\right)}{2\,e}-\frac{d\,g^2\,\left(3\,a-b\,n\right)}{6\,e}\right)+x\,\left(\frac{3\,a\,e\,f^2-3\,b\,e\,f^2\,n+6\,a\,d\,f\,g}{3\,e}-\frac{d\,\left(\frac{g\,\left(a\,d\,g+2\,a\,e\,f-b\,e\,f\,n\right)}{e}-\frac{d\,g^2\,\left(3\,a-b\,n\right)}{3\,e}\right)}{e}\right)+\ln\left(c\,{\left(d+e\,x\right)}^n\right)\,\left(b\,f^2\,x+b\,f\,g\,x^2+\frac{b\,g^2\,x^3}{3}\right)+\frac{g^2\,x^3\,\left(3\,a-b\,n\right)}{9}+\frac{\ln\left(d+e\,x\right)\,\left(b\,n\,d^3\,g^2-3\,b\,n\,d^2\,e\,f\,g+3\,b\,n\,d\,e^2\,f^2\right)}{3\,e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)^2*(a + b*log(c*(d + e*x)^n)),x)
```

```
[Out] x^2*((g*(a*d*g + 2*a*e*f - b*e*f*n))/(2*e) - (d*g^2*(3*a - b*n))/(6*e)) + x
*((3*a*e*f^2 - 3*b*e*f^2*n + 6*a*d*f*g)/(3*e) - (d*((g*(a*d*g + 2*a*e*f - b
*e*f*n))/e - (d*g^2*(3*a - b*n))/(3*e)))/e) + log(c*(d + e*x)^n)*((b*g^2*x^
3)/3 + b*f^2*x + b*f*g*x^2) + (g^2*x^3*(3*a - b*n))/9 + (log(d + e*x)*(b*d^
3*g^2*n + 3*b*d*e^2*f^2*n - 3*b*d^2*e*f*g*n))/(3*e^3)
```

3.38 $\int (f + gx) (a + b \log (c(d + ex)^n)) \, dx$

Optimal. Leaf size=91

$$-\frac{b(ef-dg)nx}{2e}-\frac{bn(f+gx)^2}{4g}-\frac{b(ef-dg)^2n\log(d+ex)}{2e^2g}+\frac{(f+gx)^2\left(a+b\log\left(c(d+ex)^n\right)\right)}{2g}$$

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

Rubi [A]
time = 0.03, antiderivative size = 91, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.100$, Rules used = {2442, 45}

$$\frac{(f+gx)^2\left(a+b\log\left(c(d+ex)^n\right)\right)}{2g}-\frac{bn(ef-dg)^2\log(d+ex)}{2e^2g}-\frac{bnx(ef-dg)}{2e}-\frac{bn(f+gx)^2}{4g}$$

Antiderivative was successfully verified.

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

```
[Out] -1/2*(b*(e*f - d*g)*n*x)/e - (b*n*(f + g*x)^2)/(4*g) - (b*(e*f - d*g)^2*n*L
og[d + e*x])/(2*e^2*g) + ((f + g*x)^2*(a + b*Log[c*(d + e*x)^n]))/(2*g)
```

Rule 45

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

Rule 2442

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

Rubi steps

$$\int (f+gx)\left(a+b\log\left(c(d+ex)^n\right)\right)dx = \frac{(f+gx)^2\left(a+b\log\left(c(d+ex)^n\right)\right)}{2g} - \frac{(ben)\int \frac{(f+gx)^2}{d+ex}dx}{2g}$$

$$= \frac{(f+gx)^2\left(a+b\log\left(c(d+ex)^n\right)\right)}{2g} - \frac{(ben)\int \left(\frac{g(ef-dg)}{e^2} + \frac{(ef-dg)^2}{e^2(d+ex)} + \right.}{2g}$$

$$= -\frac{b(ef-dg)nx}{2e} - \frac{bn(f+gx)^2}{4g} - \frac{b(ef-dg)^2 n\log(d+ex)}{2e^2g} + \frac{(f+}{}$$

Mathematica [A]
time = 0.04, size = 101, normalized size = 1.11

$$afx - bfnx + \frac{bdgnx}{2e} + \frac{1}{2}agx^2 - \frac{1}{4}bgnx^2 - \frac{bd^2gn\log(d+ex)}{2e^2} + \frac{1}{2}bgx^2\log\left(c(d+ex)^n\right) + \frac{bf(d+ex)\log\left(c(d+ex)^n\right)}{e}$$

Antiderivative was successfully verified.

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

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

Maple [A]
time = 0.24, size = 101, normalized size = 1.11

method	result
norman	$\left(-\frac{1}{4}bgn+\frac{1}{2}ag\right)x^2 + bfx\ln\left(c\,e^{n\ln(ex+d)}\right) + \frac{(bdgn-2befn+2aef)x}{2e} + \frac{bg\,x^2\ln\left(c\,e^{n\ln(ex+d)}\right)}{2} - \frac{n\left(b\,d^2g-2bdef\right)\ln}{2e^2}$
default	$xaf + \frac{ag\,x^2}{2} + bf\ln\left(c(ex+d)^n\right)x - bfnx + \frac{bfnd\ln(ex+d)}{e} + \frac{bg\,x^2\ln\left(c\,e^{n\ln(ex+d)}\right)}{2} - \frac{bgn\,x^2}{4} - \frac{nb\,d^2g\ln(ex+}{2e^2}$
risch	$\frac{bx(gx+2f)\ln\left((ex+d)^n\right)}{2} + \frac{i\pi bg\,x^2\mathrm{csgn}(ic)\mathrm{csgn}\left(ic(ex+d)^n\right)^2}{4} + \frac{i\pi bg\,x^2\mathrm{csgn}\left(i(ex+d)^n\right)\mathrm{csgn}\left(ic(ex+d)^n\right)^2}{4} - \frac{i\pi bg\,x^2\mathrm{csgn}(ic)\mathrm{csgn}}{}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(a+b*ln(c*(e*x+d)^n)),x,method=_RETURNVERBOSE)
```

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

Maxima [A]
time = 0.28, size = 104, normalized size = 1.14

$$\left(de^{(-2)}\log(xe+d) - xe^{(-1)}\right)bfne - \frac{1}{4}\left(2\,d^2e^{(-3)}\log(xe+d) + \left(x^2e - 2\,dx\right)e^{(-2)}\right)bgne + \frac{1}{2}bgx^2\log\left((xe+d)^n c\right) + \frac{1}{2}agx^2 + bfx\log\left((xe+d)^n c\right) + afx$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

Fricas [A]
time = 0.39, size = 105, normalized size = 1.15

$$\frac{1}{4}\left(2\,bdgnxe+2\left(bgx^2+2\,bfx\right)e^2\log\left(c\right)-\left((bgn-2\,ag)x^2+4\,(bfn-af)x\right)e^2-2\left(bd^2gn-2\,bdfne-\left(bgnx^2+2\,bfnx\right)e^2\right)\log\left(xe+d\right)\right)e^{(-2)}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

Sympy [A]
time = 0.40, size = 134, normalized size = 1.47

$$\begin{cases} afx+\frac{agx^2}{2}-\frac{bd^2g\log\left(c(d+ex)^n\right)}{2e^2}+\frac{bdf\log\left(c(d+ex)^n\right)}{e}+\frac{bdgnx}{2e}-bfnx+bfx\log\left(c(d+ex)^n\right)-\frac{bgnx^2}{4}+\frac{bgx^2\log\left(c(d+ex)^n\right)}{2} & \text{for } e\neq 0\\ \left(a+b\log\left(cd^n\right)\right)\left(fx+\frac{gx^2}{2}\right) & \text{otherwise}\end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Piecewise((a*f*x + a*g*x**2/2 - b*d**2*g*log(c*(d + e*x)**n)/(2*e**2) + b*d
*f*log(c*(d + e*x)**n)/e + b*d*g*n*x/(2*e) - b*f*n*x + b*f*x*log(c*(d + e*x
)**n) - b*g*n*x**2/4 + b*g*x**2*log(c*(d + e*x)**n)/2, Ne(e, 0)), ((a + b*l
og(c*d**n))*(f*x + g*x**2/2), True))
```

Giac [B] Leaf count of result is larger than twice the leaf count of optimal. 186 vs. 2(85) = 170.
time = 3.75, size = 186, normalized size = 2.04

$$\frac{1}{2}\,(xe+d)^2bgne^{(-2)}\log\left(xe+d\right)-(xe+d)bdgne^{(-2)}\log\left(xe+d\right)-\frac{1}{4}\,(xe+d)^2bgne^{(-2)}+(xe+d)bdgne^{(-2)}+(xe+d)bfne^{(-1)}\log\left(xe+d\right)+\frac{1}{2}\,(xe+d)^2bge^{(-2)}\log\left(c\right)-(xe+d)bdge^{(-2)}\log\left(c\right)-(xe+d)bfne^{(-1)}+\frac{1}{2}\,(xe+d)^2age^{(-2)}-(xe+d)adge^{(-2)}+(xe+d)bfe^{(-1)}\log\left(c\right)+(xe+d)afe^{(-1)}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

```
*b*d*g*e^(-2)*log(c) - (x*e + d)*b*f*n*e^(-1) + 1/2*(x*e + d)^2*a*g*e^(-2)
- (x*e + d)*a*d*g*e^(-2) + (x*e + d)*b*f*e^(-1)*log(c) + (x*e + d)*a*f*e^(-
1)
```

Mupad [B]
time = 0.25, size = 104, normalized size = 1.14

$$x\left(\frac{2\,a\,d\,g+2\,a\,e\,f-2\,b\,e\,f\,n}{2\,e}-\frac{d\,g\,\left(2\,a-b\,n\right)}{2\,e}\right)+\ln\left(c\,{\left(d+e\,x\right)}^n\right)\,\left(\frac{b\,g\,x^2}{2}+b\,f\,x\right)-\frac{\ln\left(d+e\,x\right)\,\left(b\,d^2\,g\,n-2\,b\,d\,e\,f\,n\right)}{2\,e^2}+\frac{g\,x^2\,\left(2\,a-b\,n\right)}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

3.39 $\int (a+b\log(c(d+ex)^n))\,dx$

Optimal. Leaf size=29

$$ax-bnx+\frac{b(d+ex)\log(c(d+ex)^n)}{e}$$

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

Rubi [A]
time = 0.01, antiderivative size = 29, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}} = 0.143$, Rules used = {2436, 2332}

$$ax+\frac{b(d+ex)\log(c(d+ex)^n)}{e}-bnx$$

Antiderivative was successfully verified.

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

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

Rule 2332

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

Rule 2436

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

Rubi steps

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

Mathematica [A]
time = 0.01, size = 29, normalized size = 1.00

$$ax-bnx+\frac{b(d+ex)\log(c(d+ex)^n)}{e}$$

Antiderivative was successfully verified.

```
[In] Integrate[a + b*Log[c*(d + e*x)^n],x]
[Out] a*x - b*n*x + (b*(d + e*x)*Log[c*(d + e*x)^n])/e
```

Maple [A]
time = 0.05, size = 36, normalized size = 1.24

method	result
default	$ax+b\ln\left(c(ex+d)^{n}\right)x-bnx+\frac{bnd\ln(ex+d)}{e}$
norman	$(-bn+a)\,x+bx\ln\left(c\,\mathrm{e}^{n\ln(ex+d)}\right)+\frac{bnd\ln(ex+d)}{e}$
risch	$ax+bx\ln\left((ex+d)^{n}\right)-\frac{ib\pi x\,\mathrm{csgn}(ic)\mathrm{csgn}(i(ex+d)^{n})\mathrm{csgn}(ic(ex+d)^{n})}{2}+\frac{ib\pi x\,\mathrm{csgn}(ic)\mathrm{csgn}(ic(ex+d)^{n})^{2}}{2}+\frac{ib\pi x\,\mathrm{csgn}(i$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(a+b*ln(c*(e*x+d)^n),x,method=_RETURNVERBOSE)
[Out] a*x+b*ln(c*(e*x+d)^n)*x-b*n*x+b/e*n*d*ln(e*x+d)
```

Maxima [A]
time = 0.30, size = 40, normalized size = 1.38

$$\left(de^{(-2)}\log\left(xe+d\right)-xe^{(-1)}\right)bne+bx\log\left((xe+d)^{n}c\right)+ax$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(a+b*log(c*(e*x+d)^n),x, algorithm="maxima")
[Out] (d*e^(-2)*log(x*e + d) - x*e^(-1))*b*n*e + b*x*log((x*e + d)^n*c) + a*x
```

Fricas [A]
time = 0.35, size = 42, normalized size = 1.45

$$(bxe\log\left(c\right)-(bn-a)xe+(bnxe+bdn)\log\left(xe+d\right))e^{(-1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(a+b*log(c*(e*x+d)^n),x, algorithm="fricas")
[Out] (b*x*e*log(c) - (b*n - a)*x*e + (b*n*x*e + b*d*n)*log(x*e + d))*e^(-1)
```

Sympy [A]
time = 0.17, size = 41, normalized size = 1.41

$$ax+b\left(\begin{cases}\frac{d\log\left(c(d+ex)^{n}\right)}{e}-nx+x\log\left(c(d+ex)^{n}\right) & \text{for}\ e\neq 0\\ x\log\left(cd^{n}\right) & \text{otherwise}\end{cases}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(a+b*ln(c*(e*x+d)**n),x)
```

```
[Out] a*x + b*Piecewise((d*log(c*(d + e*x)**n)/e - n*x + x*log(c*(d + e*x)**n), N
e(e, 0)), (x*log(c*d**n), True))
```

Giac [A]
time = 5.52, size = 46, normalized size = 1.59

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

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] ((x*e + d)*n*e^(-1)*log(x*e + d) - (x*e + d)*n*e^(-1) + (x*e + d)*e^(-1)*lo
g(c))*b + a*x
```

Mupad [B]
time = 0.00, size = 35, normalized size = 1.21

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

Verification of antiderivative is not currently implemented for this CAS.

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

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

3.40 $\int \frac{a+b\log(c(d+ex)^n)}{f+gx}\,dx$

Optimal. Leaf size=63

$$\frac{(a+b\log(c(d+ex)^n))\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g}+\frac{bn\text{Li}_2\left(-\frac{g(d+ex)}{ef-dg}\right)}{g}$$

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

Rubi [A]
time = 0.04, antiderivative size = 63, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.136$, Rules used = {2441, 2440, 2438}

$$\frac{bn\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)}{g}+\frac{\log\left(\frac{e(f+gx)}{ef-dg}\right)(a+b\log(c(d+ex)^n))}{g}$$

Antiderivative was successfully verified.

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

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

Rule 2438

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

Rule 2440

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

Rule 2441

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

Rubi steps

$$\int \frac{a+b\log\left(c(d+ex)^n\right)}{f+gx}\,dx = \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g} - \frac{(ben)\int \frac{\log\left(\frac{e(f+gx)}{ef-dg}\right)}{d+ex}\,dx}{g}$$

$$= \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g} - \frac{(bn)\text{Subst}\left(\int \frac{\log\left(1+\frac{gx}{ef-dg}\right)}{x}\,dx, x, d+ex\right)}{g}$$

$$= \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g} + \frac{bn\text{Li}_2\left(-\frac{g(d+ex)}{ef-dg}\right)}{g}$$

Mathematica [A]
time = 0.01, size = 62, normalized size = 0.98

$$\frac{\left(a+b\log\left(c(d+ex)^n\right)\right)\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g} + \frac{bn\text{Li}_2\left(\frac{g(d+ex)}{-ef+dg}\right)}{g}$$

Antiderivative was successfully verified.

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

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

Maple [C] Result contains higher order function than in optimal. Order 9 vs. order 4.
time = 0.37, size = 261, normalized size = 4.14

method	result
risch	$\frac{b\ln(gx+f)\ln\left((ex+d)^n\right)}{g} - \frac{bn\,\text{dilog}\left(\frac{(gx+f)e+dg-ef}{dg-ef}\right)}{g} - \frac{bn\ln(gx+f)\ln\left(\frac{(gx+f)e+dg-ef}{dg-ef}\right)}{g} - \frac{i\ln(gx+f)b\pi\,\text{csgn}(ic)\text{csgn}(i(ex+d)^n}{2g}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))/(g*x+f),x,method=_RETURNVERBOSE)
```

```
[Out] b*ln(g*x+f)/g*ln((e*x+d)^n)-b/g*n*dilog(((g*x+f)*e+d*g-e*f)/(d*g-e*f))-b/g*
n*ln(g*x+f)*ln(((g*x+f)*e+d*g-e*f)/(d*g-e*f))-1/2*I*ln(g*x+f)/g*b*Pi*csgn(I
*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+1/2*I*ln(g*x+f)/g*b*Pi*csgn(I*c)*
csgn(I*c*(e*x+d)^n)^2+1/2*I*ln(g*x+f)/g*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*
x+d)^n)^2-1/2*I*ln(g*x+f)/g*b*Pi*csgn(I*c*(e*x+d)^n)^3+ln(g*x+f)/g*b*ln(c)+
a*ln(g*x+f)/g
```

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

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

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

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

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x+f),x, algorithm="fricas")
[Out] integral((b*log((x*e + d)^n*c) + a)/(g*x + f), x)
```

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

$$\int \frac{a + b\log\left(c(d + ex)^n\right)}{f + gx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))/(g*x+f),x)
[Out] Integral((a + b*log(c*(d + e*x)**n))/(f + g*x), x)
```

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

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

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

Mupad [F]
time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{a + b\,\ln\left(c\,{\left(d + e\,x\right)}^n\right)}{f + g\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))/(f + g*x),x)
[Out] int((a + b*log(c*(d + e*x)^n))/(f + g*x), x)
```

3.41 $\int \frac{a+b\log(c(d+ex)^n)}{(f+gx)^2}\,dx$

Optimal. Leaf size=74

$$\frac{ben\log(d+ex)}{g(ef-dg)}-\frac{a+b\log\left(c(d+ex)^n\right)}{g(f+gx)}-\frac{ben\log(f+gx)}{g(ef-dg)}$$

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

Rubi [A]
time = 0.02, antiderivative size = 74, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}=0.136$, Rules used = {2442, 36, 31}

$$-\frac{a+b\log\left(c(d+ex)^n\right)}{g(f+gx)}+\frac{ben\log(d+ex)}{g(ef-dg)}-\frac{ben\log(f+gx)}{g(ef-dg)}$$

Antiderivative was successfully verified.

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

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

Rule 31

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

Rule 36

```
Int[1/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))), x_Symbol] :> Dist[b/(b*c
 - a*d), Int[1/(a + b*x), x], x] - Dist[d/(b*c - a*d), Int[1/(c + d*x), x],
 x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0]
```

Rule 2442

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

Rubi steps

$$\int \frac{a+b\log\left(c(d+ex)^n\right)}{(f+gx)^2}\,dx = -\frac{a+b\log\left(c(d+ex)^n\right)}{g(f+gx)} + \frac{(ben)\int \frac{1}{(d+ex)(f+gx)}\,dx}{g}$$
$$= -\frac{a+b\log\left(c(d+ex)^n\right)}{g(f+gx)} - \frac{(ben)\int \frac{1}{f+gx}\,dx}{ef-dg} + \frac{(be^2n)\int \frac{1}{d+ex}\,dx}{g(ef-dg)}$$
$$= \frac{ben\log(d+ex)}{g(ef-dg)} - \frac{a+b\log\left(c(d+ex)^n\right)}{g(f+gx)} - \frac{ben\log(f+gx)}{g(ef-dg)}$$

Mathematica [**A**]
time = 0.05, size = 57, normalized size = 0.77

$$\frac{-\frac{a+b\log(c(d+ex)^n)}{f+gx} + \frac{ben(\log(d+ex)-\log(f+gx))}{ef-dg}}{g}$$

Antiderivative was successfully verified.

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

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

Maple [**C**] Result contains higher order function than in optimal. Order 9 vs. order 3.
time = 0.38, size = 354, normalized size = 4.78

method	result
risch	$-\frac{b\ln((ex+d)^n)}{g(gx+f)} - \frac{i\pi bef\operatorname{csgn}(ic(ex+d)^n)^3 - i\pi bef\operatorname{csgn}(ic)\operatorname{csgn}(ic(ex+d)^n)^2 - i\pi bdg\operatorname{csgn}(ic(ex+d)^n)^3 + i\pi bdg\operatorname{csgn}(ic)\operatorname{csgn}(ic(ex+$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))/(g*x+f)^2,x,method=_RETURNVERBOSE)
```

```
[Out] -b/g/(g*x+f)*ln((e*x+d)^n)-1/2*(I*Pi*b*e*f*csgn(I*c*(e*x+d)^n)^3-I*Pi*b*e*f
*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-I*Pi*b*d*g*csgn(I*c*(e*x+d)^n)^3+I*Pi*b*d*
g*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-I*Pi*b*d*g*csgn(I*c)*csgn(I*(e*x+d)^n)*cs
gn(I*c*(e*x+d)^n)-I*Pi*b*e*f*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+I*Pi*b
*d*g*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+I*Pi*b*e*f*csgn(I*c)*csgn(I*(e
*x+d)^n)*csgn(I*c*(e*x+d)^n)-2*ln(-g*x-f)*b*e*g*n*x+2*ln(e*x+d)*b*e*g*n*x-2
*ln(-g*x-f)*b*e*f*n+2*ln(e*x+d)*b*e*f*n+2*ln(c)*b*d*g-2*ln(c)*b*e*f+2*a*d*g
-2*a*e*f)/(g*x+f)/g/(d*g-e*f)
```

Maxima [**A**]
time = 0.31, size = 90, normalized size = 1.22

$$bn\left(\frac{\log(gx+f)}{dg^2-fge} - \frac{\log(xe+d)}{dg^2-fge}\right)e - \frac{b\log\left((xe+d)^n c\right)}{g^2x+fg} - \frac{a}{g^2x+fg}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

Fricas [A]
time = 0.37, size = 99, normalized size = 1.34

$$-\frac{adg - afe - (bgnx + bfn)e\log(gx + f) + (bgnxe + bdgn)\log(xe + d) + (bdg - bfe)\log(c)}{dg^3x + dfg^2 - (fg^2x + f^2g)e}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

Sympy [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: NotImplementedError

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Exception raised: NotImplementedError >> no valid subset found
```

Giac [A]
time = 5.81, size = 111, normalized size = 1.50

$$\frac{bgnxe\log(gx + f) - bgnxe\log(xe + d) + bfne\log(gx + f) - bdgn\log(xe + d) - bdg\log(c) + bfe\log(c) - adg + afe}{dg^3x - fg^2xe + dfg^2 - f^2ge}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

Mupad [B]
time = 1.14, size = 84, normalized size = 1.14

$$-\frac{a}{x\,g^2 + f\,g} - \frac{b\,\ln\left(c\,{\left(d + e\,x\right)}^n\right)}{g\,\left(f + g\,x\right)} + \frac{b\,e\,n\,\mathrm{atan}\left(\frac{e\,f\,2\mathrm{i} + e\,g\,x\,2\mathrm{i}}{d\,g - e\,f} + 1\mathrm{i}\right)\,2\mathrm{i}}{g\,\left(d\,g - e\,f\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] (b*e*n*atan((e*f*2i + e*g*x*2i)/(d*g - e*f) + 1i)*2i)/(g*(d*g - e*f)) - (b*
log(c*(d + e*x)^n))/(g*(f + g*x)) - a/(f*g + g^2*x)
```

3.42 $\int \frac{a+b\log(c(d+ex)^n)}{(f+gx)^3}\,dx$

Optimal. Leaf size=112

$$\frac{ben}{2g(ef-dg)(f+gx)}+\frac{be^2n\log(d+ex)}{2g(ef-dg)^2}-\frac{a+b\log\left(c(d+ex)^n\right)}{2g(f+gx)^2}-\frac{be^2n\log(f+gx)}{2g(ef-dg)^2}$$

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

Rubi [A]
time = 0.05, antiderivative size = 112, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$, Rules used = {2442, 46}

$$-\frac{a+b\log\left(c(d+ex)^n\right)}{2g(f+gx)^2}+\frac{be^2n\log(d+ex)}{2g(ef-dg)^2}-\frac{be^2n\log(f+gx)}{2g(ef-dg)^2}+\frac{ben}{2g(f+gx)(ef-dg)}$$

Antiderivative was successfully verified.

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

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

Rule 46

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

Rule 2442

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

Rubi steps

$$\int \frac{a+b\log\left(c(d+ex)^n\right)}{(f+gx)^3}\,dx = -\frac{a+b\log\left(c(d+ex)^n\right)}{2g(f+gx)^2} + \frac{(ben)\int \frac{1}{(d+ex)(f+gx)^2}\,dx}{2g}$$

$$= -\frac{a+b\log\left(c(d+ex)^n\right)}{2g(f+gx)^2} + \frac{(ben)\int \left(\frac{e^2}{(ef-dg)^2(d+ex)} - \frac{g}{(ef-dg)(f+gx)^2} - \frac{eg}{(ef-dg)^2(f}\right.}{2g}$$

$$= \frac{ben}{2g(ef-dg)(f+gx)} + \frac{be^2n\log(d+ex)}{2g(ef-dg)^2} - \frac{a+b\log\left(c(d+ex)^n\right)}{2g(f+gx)^2} - \frac{be^2n\log}{2g(ef}$$

Mathematica [A]
time = 0.08, size = 83, normalized size = 0.74

$$-\frac{a+b\log\left(c(d+ex)^n\right) - \frac{ben(f+gx)(ef-dg+e(f+gx)\log(d+ex)-e(f+gx)\log(f+gx))}{(ef-dg)^2}}{2g(f+gx)^2}$$

Antiderivative was successfully verified.

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

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

Maple [C] Result contains higher order function than in optimal. Order 9 vs. order 3.
time = 0.41, size = 633, normalized size = 5.65

method	result
risch	$-\frac{b\ln((ex+d)^n)}{2g(gx+f)^2} - \frac{2a\,e^2f^2 - i\pi b\,e^2f^2\mathrm{csgn}(ic)\mathrm{csgn}(i(ex+d)^n)\mathrm{csgn}(ic(ex+d)^n) + 2i\pi bdefg\,\mathrm{csgn}(ic(ex+d)^n)^3 - i\pi b\,d^2g^2\mathrm{csgn}(ic)\mathrm{csgn}}{}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))/(g*x+f)^3,x,method=_RETURNVERBOSE)
```

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

```
2-2*ln(-e*x-d)*b*e^2*g^2*n*x^2-4*ln(c)*b*d*e*f*g+I*Pi*b*e^2*f^2*csgn(I*(e*x
+d)^n)*csgn(I*c*(e*x+d)^n)^2+2*b*d*e*g^2*n*x-2*b*e^2*f*g*n*x)/(g*x+f)^2/(d*
g-e*f)^2/g
```

Maxima [A]
time = 0.28, size = 174, normalized size = 1.55

$$-\frac{1}{2}bn\left(\frac{e\log\left(gx+f\right)}{d^2g^3-2\,dfg^2e+f^2ge^2}-\frac{e\log\left(xe+d\right)}{d^2g^3-2\,dfg^2e+f^2ge^2}+\frac{1}{dfg^2-f^2ge+\left(dg^3-fg^2e\right)x}\right)e-\frac{b\log\left(\left(xe+d\right)^nc\right)}{2\left(g^3x^2+2\,fg^2x+f^2g\right)}-\frac{a}{2\left(g^3x^2+2\,fg^2x+f^2g\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

Fricas [B] Leaf count of result is larger than twice the leaf count of optimal. 258 vs. 2(108) = 216.
time = 0.39, size = 258, normalized size = 2.30

$$-\frac{ad^2g^2+\left(bg^2nx^2+2\,bfgnx+bf^2n\right)e^2\log\left(gx+f\right)-\left(bfgnx+bf^2n-af^2\right)e^2+\left(bdg^2nx+bdfgn-2\,adfg\right)e+\left(bd^2g^2n-2\,bdfgne-\left(bg^2nx^2+2\,bfgnx\right)e^2\right)\log\left(xe+d\right)+\left(bd^2g^2-2\,bdfge+bf^2e^2\right)\log\left(c\right)}{2\left(d^2g^5x^2+2\,d^2fg^4x+d^2f^2g^3+\left(f^2g^3x^2+2\,f^3g^2x+f^4g\right)e^2-2\left(dfg^4x^2+2\,df^2g^3x+df^3g^2\right)e\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

Sympy [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: NotImplementedError

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Exception raised: NotImplementedError >> no valid subset found
```

Giac [B] Leaf count of result is larger than twice the leaf count of optimal. 302 vs. 2(108) = 216.
time = 4.26, size = 302, normalized size = 2.70

$$-\frac{bg^2nx^2e^2\log\left(gx+f\right)-bg^2nx^2e^2\log\left(xe+d\right)+bdg^2nxe+2\,bfgnxe^2\log\left(gx+f\right)+bd^2g^2n\log\left(xe+d\right)-2\,bfgnxe^2\log\left(xe+d\right)-2\,bdfgne\log\left(xe+d\right)-bfgnxe^2+bdfgne+bf^2ne^2\log\left(gx+f\right)+bd^2g^2\log\left(c\right)-2\,bdfge\log\left(c\right)+ad^2g^2-bf^2ne^2-2\,adfge+bf^2e^2\log\left(c\right)+af^2e^2}{2\left(d^2g^5x^2-2\,dfg^4x^2e+2\,d^2fg^4x+f^2g^3x^2e^2-4\,df^2g^3xe+d^2f^2g^3+2\,f^3g^2xe^2-2\,df^3g^2e+f^4ge^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

Mupad [B]
time = 0.67, size = 173, normalized size = 1.54

$$\frac{b\,e^2\,n\,\mathrm{atanh}\left(\frac{2\,d^2\,g^3-2\,e^2\,f^2\,g}{2\,g\,{\left(d\,g-e\,f\right)}^2}+\frac{2\,e\,g\,x}{d\,g-e\,f}\right)}{g\,{\left(d\,g-e\,f\right)}^2}-\frac{b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)}{2\,g\,\left(f^2+2\,f\,g\,x+g^2\,x^2\right)}-\frac{\frac{a\,d\,g-a\,e\,f+b\,e\,f\,n}{d\,g-e\,f}+\frac{b\,e\,g\,n\,x}{d\,g-e\,f}}{2\,f^2\,g+4\,f\,g^2\,x+2\,g^3\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

3.43 $\int \frac{a+b\log(c(d+ex)^n)}{(f+gx)^4}\,dx$

Optimal. Leaf size=141

$$\frac{ben}{6g(ef-dg)(f+gx)^2}+\frac{be^2n}{3g(ef-dg)^2(f+gx)}+\frac{be^3n\log(d+ex)}{3g(ef-dg)^3}-\frac{a+b\log\left(c(d+ex)^n\right)}{3g(f+gx)^3}-\frac{be^3n\log(f+gx)}{3g(ef-dg)^3}$$

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

Rubi [A]
time = 0.06, antiderivative size = 141, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091, Rules used = {2442, 46}

$$-\frac{a+b\log\left(c(d+ex)^n\right)}{3g(f+gx)^3}+\frac{be^3n\log(d+ex)}{3g(ef-dg)^3}-\frac{be^3n\log(f+gx)}{3g(ef-dg)^3}+\frac{be^2n}{3g(f+gx)(ef-dg)^2}+\frac{ben}{6g(f+gx)^2(ef-dg)}$$

Antiderivative was successfully verified.

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

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

Rule 46

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

Rule 2442

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

Rubi steps

$$\int \frac{a+b\log\left(c(d+ex)^n\right)}{(f+gx)^4}\,dx = -\frac{a+b\log\left(c(d+ex)^n\right)}{3g(f+gx)^3} + \frac{(ben)\int \frac{1}{(d+ex)(f+gx)^3}\,dx}{3g}$$

$$= -\frac{a+b\log\left(c(d+ex)^n\right)}{3g(f+gx)^3} + \frac{(ben)\int \left(\frac{e^3}{(ef-dg)^3(d+ex)} - \frac{g}{(ef-dg)(f+gx)^3} - \frac{eg}{(ef-dg)^2(f}\right.}{3g}$$

$$= \frac{ben}{6g(ef-dg)(f+gx)^2} + \frac{be^2n}{3g(ef-dg)^2(f+gx)} + \frac{be^3n\log(d+ex)}{3g(ef-dg)^3} - \frac{a+b\,l}{3g}$$

Mathematica [A]
time = 0.11, size = 110, normalized size = 0.78

$$\frac{-2\left(a+b\log\left(c(d+ex)^n\right)\right) + \frac{ben(f+gx)\left((ef-dg)(3ef-dg+2egx)+2e^2(f+gx)^2\log(d+ex)-2e^2(f+gx)^2\log(f+gx)\right)}{(ef-dg)^3}}{6g(f+gx)^3}$$

Antiderivative was successfully verified.

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

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

Maple [C] Result contains higher order function than in optimal. Order 9 vs. order 3.
time = 0.50, size = 950, normalized size = 6.74

method	result
risch	$-\frac{b\ln\left((ex+d)^n\right)}{3g(gx+f)^3} + \frac{6bd\,e^2 f\,g^2 n x + 2\ln(-gx-f) b\,e^3 f^3 n - 3b\,e^3 f^3 n - 2\ln(ex+d) b\,e^3 g^3 n\,x^3 + 2\ln(-gx-f) b\,e^3 g^3 n\,x^3 - 2\ln(ex+d) b\,e^3}{}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))/(g*x+f)^4,x,method=_RETURNVERBOSE)
```

```
[Out] -1/3*b/g/(g*x+f)^3*ln((e*x+d)^n)+1/6*(6*b*d*e^2*f*g^2*n*x+I*Pi*b*d^3*g^3*cs
gn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-3*I*Pi*b*d^2*e*f*g^2*csgn(I*c
*(e*x+d)^n)^3+2*ln(-g*x-f)*b*e^3*f^3*n-3*b*e^3*f^3*n-2*ln(e*x+d)*b*e^3*g^3*
n*x^3+2*ln(-g*x-f)*b*e^3*g^3*n*x^3-I*Pi*b*e^3*f^3*csgn(I*c*(e*x+d)^n)^3-2*l
n(e*x+d)*b*e^3*f^3*n+2*a*e^3*f^3-I*Pi*b*d^3*g^3*csgn(I*(e*x+d)^n)*csgn(I*c*
(e*x+d)^n)^2+6*a*d^2*e*f*g^2-6*a*d*e^2*f^2*g-6*ln(e*x+d)*b*e^3*f*g^2*n*x^2+
6*ln(-g*x-f)*b*e^3*f*g^2*n*x^2-6*ln(e*x+d)*b*e^3*f^2*g*n*x+6*ln(-g*x-f)*b*e
^3*f^2*g*n*x-5*b*e^3*f^2*g*n*x-2*a*d^3*g^3-b*d^2*e*f*n*g^2+4*b*d*e^2*f^2*n*
g+I*Pi*b*e^3*f^3*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I*Pi*b*e^3*f^3*csgn(I*(e*x
+d)^n)*csgn(I*c*(e*x+d)^n)^2+3*I*Pi*b*d*e^2*f^2*g*csgn(I*c*(e*x+d)^n)^3-b*d
```

```
^2*e*g^3*n*x-2*ln(c)*b*d^3*g^3+2*ln(c)*b*e^3*f^3-I*Pi*b*e^3*f^3*csgn(I*c)*c
sgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+I*Pi*b*d^3*g^3*csgn(I*c*(e*x+d)^n)^3+2
*b*d*e^2*g^3*n*x^2+6*ln(c)*b*d^2*e*f*g^2-6*ln(c)*b*d*e^2*f^2*g-2*b*e^3*f*g^
2*n*x^2+3*I*Pi*b*d^2*e*f*g^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+3*I*Pi*b*d^2*e
*f*g^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-3*I*Pi*b*d*e^2*f^2*g*csgn(I*
c)*csgn(I*c*(e*x+d)^n)^2-3*I*Pi*b*d*e^2*f^2*g*csgn(I*(e*x+d)^n)*csgn(I*c*(e
*x+d)^n)^2-I*Pi*b*d^3*g^3*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-3*I*Pi*b*d^2*e*f*
g^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+3*I*Pi*b*d*e^2*f^2*g*cs
gn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n))/(g*x+f)^3/(d^2*g^2-2*d*e*f*g
+e^2*f^2)/(d*g-e*f)/g
```

Maxima [B] Leaf count of result is larger than twice the leaf count of optimal. 302 vs. $2(135) = 270$.
time = 0.30, size = 302, normalized size = 2.14

$$\frac{1}{6}\,bn\left(\frac{2\,e^2\log\left(gx+f\right)}{d^3g^4-3\,d^2fg^3e+3\,df^2g^2e^2-f^3ge^3}-\frac{2\,e^2\log\left(xe+d\right)}{d^3g^4-3\,d^2fg^3e+3\,df^2g^2e^2-f^3ge^3}+\frac{2\,gxe-dg+3\,fe}{d^2f^2g^3-2\,df^3g^2e+f^4ge^2+\left(d^2g^5-2\,dfg^4e+f^2g^3e^2\right)x^2+2\,\left(d^2fg^4-2\,df^2g^3e+f^3g^2e^2\right)x}\right)e-\frac{b\log\left(\left(xe+d\right)^nc\right)}{3\,\left(g^4x^3+3\,fg^3x^2+3\,f^2g^2x+f^3g\right)}-\frac{a}{3\,\left(g^4x^3+3\,fg^3x^2+3\,f^2g^2x+f^3g\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x+f)^4,x, algorithm="maxima")
```

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

Fricas [B] Leaf count of result is larger than twice the leaf count of optimal. 475 vs. $2(135) = 270$.
time = 0.38, size = 475, normalized size = 3.37

$$-\frac{2\,ad^3g^3-2\,\left(bg^3nx^3+3\,bfg^2nx^2+3\,bf^2gnx+bf^3n\right)e^3\log\left(gx+f\right)+\left(2\,bfg^2nx^2+5\,bf^2gnx+3\,bf^3n-2\,af^3\right)e^3-2\,\left(bdg^3nx^2+3\,bdfg^2nx+2\,bdf^2gn-3\,adf^2g\right)e^2+\left(bd^2g^3nx+bd^2fg^2n-6\,ad^2fg^2\right)e+2\,\left(bd^3g^3n-3\,bd^2fg^2ne+3\,bdf^2gne^2+\left(bg^3nx^3+3\,bfg^2nx^2+3\,bf^2gnx\right)e^3\right)\log\left(xe+d\right)+2\,\left(bd^3g^3-3\,bd^2fg^2e+3\,bdf^2ge^2-bf^3e^3\right)\log\left(c\right)}{6\,\left(d^3g^7x^3+3\,d^3fg^6x^2+3\,d^3f^2g^5x+d^3f^3g^4-\left(f^3g^4x^3+3\,f^4g^3x^2+3\,f^5g^2x+f^6g\right)e^3+3\,\left(df^2g^5x^3+3\,df^3g^4x^2+3\,df^4g^3x+df^5g^2\right)e^2-3\,\left(d^2fg^6x^3+3\,d^2f^2g^5x^2+3\,d^2f^3g^4x+d^2f^4g^3\right)e\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x+f)^4,x, algorithm="fricas")
```

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

Sympy [**F(-2)**]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: HeuristicGCDFailed

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Exception raised: HeuristicGCDFailed >> no luck
```

Giac [**B**] Leaf count of result is larger than twice the leaf count of optimal. 565 vs. 2(135) = 270.
time = 3.83, size = 565, normalized size = 4.01

$$\frac{2 bg^3nx^3e^3\log(gx+f) - 2bg^3nx^3e^3\log(xe+d) + 2bdg^3nx^2e^2 - bd^2g^3nxe + 6bfg^2nx^2e^3\log(gx+f) - 2bd^3g^3n\log(xe+d) - 6bfg^2nx^2e^3\log(xe+d) + 6bd^2fg^2ne\log(xe+d) - 2bfg^2nx^2e^3 + 6bdfg^2nxe^2 - bd^2fg^2ne + 6bf^2gnxe^3\log(gx+f) - 6bf^2gnxe^3\log(xe+d) - 6bdf^2gne^2\log(xe+d) - 2bd^3g^3\log(c) + 6bd^2fg^2e\log(c) - 2ad^3g^3 - 5bf^2gnxe^3 + 4bdf^2gne^2 + 6ad^2fg^2e + 2bf^3ne^3\log(gx+f) - 6bdf^2ge^2\log(c) - 3bf^3ne^3 - 6adf^2ge^2 + 2bf^3e^3\log(c) + 2af^3e^3}{6(d^3g^7x^3 - 3d^2fg^6x^3e + 3d^3fg^6x^2 + 3df^2g^5x^3e^2 - 9d^2f^2g^5x^2e + 3d^3f^2g^5x - f^3g^4x^3e^3 + 9df^3g^4x^2e^2 - 9d^2f^3g^4xe + d^3f^3g^4 - 3f^4g^3x^2e^3 + 9df^4g^3xe^2 - 3d^2f^4g^3e - 3f^5g^2xe^3 + 3df^5g^2e^2 - f^6ge^3)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x+f)^4,x, algorithm="giac")
```

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

Mupad [**B**]
time = 0.94, size = 283, normalized size = 2.01

$$\frac{2\,a\,d\,e\,f}{3\,{\left(f+g\,x\right)}^3\,{\left(d\,g-e\,f\right)}^2}-\frac{a\,d^2\,g}{3\,{\left(f+g\,x\right)}^3\,{\left(d\,g-e\,f\right)}^2}-\frac{b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)}{3\,g\,{\left(f+g\,x\right)}^3}-\frac{a\,e^2\,f^2}{3\,g\,{\left(f+g\,x\right)}^3\,{\left(d\,g-e\,f\right)}^2}+\frac{5\,b\,e^2\,f\,n\,x}{6\,{\left(f+g\,x\right)}^3\,{\left(d\,g-e\,f\right)}^2}+\frac{b\,e^2\,g\,n\,x^2}{3\,{\left(f+g\,x\right)}^3\,{\left(d\,g-e\,f\right)}^2}-\frac{b\,d\,e\,f\,n}{6\,{\left(f+g\,x\right)}^3\,{\left(d\,g-e\,f\right)}^2}+\frac{b\,e^2\,f^2\,n}{2\,g\,{\left(f+g\,x\right)}^3\,{\left(d\,g-e\,f\right)}^2}-\frac{b\,d\,e\,g\,n\,x}{6\,{\left(f+g\,x\right)}^3\,{\left(d\,g-e\,f\right)}^2}+\frac{b\,e^3\,n\,\mathrm{atan}\left(\frac{d\,g\,1{}\mathrm{i}+e\,f\,1{}\mathrm{i}+e\,g\,x\,2{}\mathrm{i}}{d\,g-e\,f}\right)\,2{}\mathrm{i}}{3\,g\,{\left(d\,g-e\,f\right)}^3}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

3.44 $\int (f+gx)^3 \left(a+b\log \left(c(d+ex)^n\right)\right)^2 \, dx$

Optimal. Leaf size=365

$$\frac{2b^2(ef-dg)^3n^2x}{e^3}+\frac{3b^2g(ef-dg)^2n^2(d+ex)^2}{4e^4}+\frac{2b^2g^2(ef-dg)n^2(d+ex)^3}{9e^4}+\frac{b^2g^3n^2(d+ex)^4}{32e^4}+\frac{b^2(ef-dg)^4}{4}$$

```
[Out] 2*b^2*(-d*g+e*f)^3*n^2*x/e^3+3/4*b^2*g*(-d*g+e*f)^2*n^2*(e*x+d)^2/e^4+2/9*b
^2*g^2*(-d*g+e*f)*n^2*(e*x+d)^3/e^4+1/32*b^2*g^3*n^2*(e*x+d)^4/e^4+1/4*b^2*
(-d*g+e*f)^4*n^2*ln(e*x+d)^2/e^4/g-2*b*(-d*g+e*f)^3*n*(e*x+d)*(a+b*ln(c*(e*
x+d)^n))/e^4-3/2*b*g*(-d*g+e*f)^2*n*(e*x+d)^2*(a+b*ln(c*(e*x+d)^n))/e^4-2/3
*b*g^2*(-d*g+e*f)*n*(e*x+d)^3*(a+b*ln(c*(e*x+d)^n))/e^4-1/8*b*g^3*n*(e*x+d)
^4*(a+b*ln(c*(e*x+d)^n))/e^4-1/2*b*(-d*g+e*f)^4*n*ln(e*x+d)*(a+b*ln(c*(e*x+
d)^n))/e^4/g+1/4*(g*x+f)^4*(a+b*ln(c*(e*x+d)^n))^2/g
```

Rubi [A]
time = 0.36, antiderivative size = 365, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.250$, Rules used = {2445, 2458, 45, 2372, 12, 2338}

$$-\frac{2bg^2n(d+ex)^3(ef-dg)\left(a+b\log\left(c(d+ex)^n\right)\right)}{3e^4}-\frac{bn(ef-dg)^4\log(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)}{2e^4g}-\frac{2bn(d+ex)(ef-dg)^3\left(a+b\log\left(c(d+ex)^n\right)\right)}{e^4}-\frac{3bgn(d+ex)^2(ef-dg)^2\left(a+b\log\left(c(d+ex)^n\right)\right)}{2e^4}-\frac{bg^3n(d+ex)^4\left(a+b\log\left(c(d+ex)^n\right)\right)}{8e^4}+\frac{(f+gx)^4\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{4g}+\frac{2b^2g^2n^2(d+ex)^3(ef-dg)}{9e^4}+\frac{3b^2gn^2(d+ex)^2(ef-dg)^2}{4e^4}+\frac{b^2n^2(ef-dg)^4\log^2(d+ex)}{4e^4g}+\frac{b^2g^3n^2(d+ex)^4}{32e^4}+\frac{2b^2n^2x(ef-dg)^3}{e^3}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)^3*(a + b*Log[c*(d + e*x)^n])^2,x]
```

```
[Out] (2*b^2*(e*f - d*g)^3*n^2*x)/e^3 + (3*b^2*g*(e*f - d*g)^2*n^2*(d + e*x)^2)/(
4*e^4) + (2*b^2*g^2*(e*f - d*g)*n^2*(d + e*x)^3)/(9*e^4) + (b^2*g^3*n^2*(d
+ e*x)^4)/(32*e^4) + (b^2*(e*f - d*g)^4*n^2*Log[d + e*x]^2)/(4*e^4*g) - (2*
b*(e*f - d*g)^3*n*(d + e*x)*(a + b*Log[c*(d + e*x)^n]))/e^4 - (3*b*g*(e*f -
 d*g)^2*n*(d + e*x)^2*(a + b*Log[c*(d + e*x)^n]))/(2*e^4) - (2*b*g^2*(e*f -
 d*g)*n*(d + e*x)^3*(a + b*Log[c*(d + e*x)^n]))/(3*e^4) - (b*g^3*n*(d + e*x
)^4*(a + b*Log[c*(d + e*x)^n]))/(8*e^4) - (b*(e*f - d*g)^4*n*Log[d + e*x]*(
a + b*Log[c*(d + e*x)^n]))/(2*e^4*g) + ((f + g*x)^4*(a + b*Log[c*(d + e*x)^
n])^2)/(4*g)
```

Rule 12

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

Rule 45

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

Rule 2338

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

Rule 2372

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*(x_)^(m_.)*((d_) + (e_.)*(x_)^(r_
.))^(q_.), x_Symbol] :> With[{u = IntHide[x^m*(d + e*x^r)^q, x]}, Dist[a +
b*Log[c*x^n], u, x] - Dist[b*n, Int[SimplifyIntegrand[u/x, x], x], x]] /; F
reeQ[{a, b, c, d, e, n, r}, x] && IGtQ[q, 0] && IntegerQ[m] &&  !(EqQ[q, 1]
 && EqQ[m, -1])
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[(f + g*x)^(q + 1)*((a + b*Log[c*(d + e*x)^
n])^p/(g*(q + 1))), x] - Dist[b*e*n*(p/(g*(q + 1))), Int[(f + g*x)^(q + 1)*
((a + b*Log[c*(d + e*x)^n])^(p - 1)/(d + e*x)), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && GtQ[p, 0] && NeQ[q, -1] && Int
egersQ[2*p, 2*q] && ( !IGtQ[q, 0] || (EqQ[p, 2] && NeQ[q, 1]))
```

Rule 2458

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[(g*(x/e))^q*((e*h - d*i)/e + i*(x/e))^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rubi steps

$$\int (f+gx)^3 \left(a+b\log\left(c(d+ex)^n\right)\right)^2 \, dx = \frac{(f+gx)^4 \left(a+b\log\left(c(d+ex)^n\right)\right)^2}{4g} - \frac{(ben)\int \frac{(f+gx)^4(a+b\log(c(d+ex)^n}{d+ex}}{2g}$$

$$= \frac{(f+gx)^4 \left(a+b\log\left(c(d+ex)^n\right)\right)^2}{4g} - \frac{(bn)\text{Subst}\left(\int \frac{\left(\frac{ef-dg}{e}+\frac{gx}{e}\right)^4(a+}{x}\right.}{2g}$$

$$= -\frac{bn\left(\frac{48g(ef-dg)^3(d+ex)}{e^4}+\frac{36g^2(ef-dg)^2(d+ex)^2}{e^4}+\frac{16g^3(ef-dg)(d+ex)^3}{e^4}+3g\right.}{24g}$$

$$= -\frac{bn\left(\frac{48g(ef-dg)^3(d+ex)}{e^4}+\frac{36g^2(ef-dg)^2(d+ex)^2}{e^4}+\frac{16g^3(ef-dg)(d+ex)^3}{e^4}+3g\right.}{24g}$$

$$= \frac{2b^2(ef-dg)^3n^2x}{e^3} + \frac{3b^2g(ef-dg)^2n^2(d+ex)^2}{4e^4} + \frac{2b^2g^2(ef-dg}{9e}$$

$$= \frac{2b^2(ef-dg)^3n^2x}{e^3} + \frac{3b^2g(ef-dg)^2n^2(d+ex)^2}{4e^4} + \frac{2b^2g^2(ef-dg}{9e}$$

Mathematica [A]
time = 0.38, size = 612, normalized size = 1.68

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)^3*(a + b*Log[c*(d + e*x)^n])^2,x]
```

```
[Out] (72*b^2*d*(-4*e^3*f^3 + 6*d*e^2*f^2*g - 4*d^2*e*f*g^2 + d^3*g^3)*n^2*Log[d
+ e*x]^2 - 12*b*d*n*Log[d + e*x]*(-12*a*(4*e^3*f^3 - 6*d*e^2*f^2*g + 4*d^2*
e*f*g^2 - d^3*g^3) + b*(48*e^3*f^3 - 108*d*e^2*f^2*g + 88*d^2*e*f*g^2 - 25*
d^3*g^3)*n - 12*b*(4*e^3*f^3 - 6*d*e^2*f^2*g + 4*d^2*e*f*g^2 - d^3*g^3)*Log
[c*(d + e*x)^n]) + e*x*(72*a^2*e^3*(4*f^3 + 6*f^2*g*x + 4*f*g^2*x^2 + g^3*x
^3) - 12*a*b*n*(-12*d^3*g^3 + 6*d^2*e*g^2*(8*f + g*x) - 4*d*e^2*g*(18*f^2 +
 6*f*g*x + g^2*x^2) + e^3*(48*f^3 + 36*f^2*g*x + 16*f*g^2*x^2 + 3*g^3*x^3))
 + b^2*n^2*(-300*d^3*g^3 + 6*d^2*e*g^2*(176*f + 13*g*x) - 4*d*e^2*g*(324*f^
2 + 60*f*g*x + 7*g^2*x^2) + e^3*(576*f^3 + 216*f^2*g*x + 64*f*g^2*x^2 + 9*g
^3*x^3)) + 12*b*(12*a*e^3*(4*f^3 + 6*f^2*g*x + 4*f*g^2*x^2 + g^3*x^3) - b*n
*(-12*d^3*g^3 + 6*d^2*e*g^2*(8*f + g*x) - 4*d*e^2*g*(18*f^2 + 6*f*g*x + g^2
*x^2) + e^3*(48*f^3 + 36*f^2*g*x + 16*f*g^2*x^2 + 3*g^3*x^3)))*Log[c*(d + e
*x)^n] + 72*b^2*e^3*(4*f^3 + 6*f^2*g*x + 4*f*g^2*x^2 + g^3*x^3)*Log[c*(d +
e*x)^n]^2))/(288*e^4)
```

Maple [C] Result contains higher order function than in optimal. Order 9 vs. order 3.
time = 1.02, size = 6770, normalized size = 18.55

method	result	size
risch	Expression too large to display	6770

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^3*(a+b*ln(c*(e*x+d)^n))^2,x,method=_RETURNVERBOSE)
```

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

Maxima [B] Leaf count of result is larger than twice the leaf count of optimal. 839 vs. 2(360) = 720.
time = 0.30, size = 839, normalized size = 2.30

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^3*(a+b*log(c*(e*x+d)^n))^2,x, algorithm="maxima")
```

```
[Out] 1/4*b^2*g^3*x^4*log((x*e + d)^n*c)^2 + 1/2*a*b*g^3*x^4*log((x*e + d)^n*c) +
 b^2*f*g^2*x^3*log((x*e + d)^n*c)^2 + 1/4*a^2*g^3*x^4 + 2*a*b*f*g^2*x^3*log
((x*e + d)^n*c) + 3/2*b^2*f^2*g*x^2*log((x*e + d)^n*c)^2 + a^2*f*g^2*x^3 +
2*(d*e^(-2)*log(x*e + d) - x*e^(-1))*a*b*f^3*n*e - 3/2*(2*d^2*e^(-3)*log(x*
e + d) + (x^2*e - 2*d*x)*e^(-2))*a*b*f^2*g*n*e + 1/3*(6*d^3*e^(-4)*log(x*e
+ d) - (2*x^3*e^2 - 3*d*x^2*e + 6*d^2*x)*e^(-3))*a*b*f*g^2*n*e - 1/24*(12*d
^4*e^(-5)*log(x*e + d) + (3*x^4*e^3 - 4*d*x^3*e^2 + 6*d^2*x^2*e - 12*d^3*x)
*e^(-4))*a*b*g^3*n*e + 3*a*b*f^2*g*x^2*log((x*e + d)^n*c) + b^2*f^3*x*log((
x*e + d)^n*c)^2 + 3/2*a^2*f^2*g*x^2 + 2*a*b*f^3*x*log((x*e + d)^n*c) - ((d*
log(x*e + d)^2 - 2*x*e + 2*d*log(x*e + d))*n^2*e^(-1) - 2*(d*e^(-2)*log(x*e
 + d) - x*e^(-1))*n*e*log((x*e + d)^n*c))*b^2*f^3 + 3/4*((2*d^2*log(x*e + d
)^2 + x^2*e^2 - 6*d*x*e + 6*d^2*log(x*e + d))*n^2*e^(-2) - 2*(2*d^2*e^(-3)*
log(x*e + d) + (x^2*e - 2*d*x)*e^(-2))*n*e*log((x*e + d)^n*c))*b^2*f^2*g -
1/18*((18*d^3*log(x*e + d)^2 - 4*x^3*e^3 + 15*d*x^2*e^2 - 66*d^2*x*e + 66*d
^3*log(x*e + d))*n^2*e^(-3) - 6*(6*d^3*e^(-4)*log(x*e + d) - (2*x^3*e^2 - 3
*d*x^2*e + 6*d^2*x)*e^(-3))*n*e*log((x*e + d)^n*c))*b^2*f*g^2 + 1/288*((72*
d^4*log(x*e + d)^2 + 9*x^4*e^4 - 28*d*x^3*e^3 + 78*d^2*x^2*e^2 - 300*d^3*x*
e + 300*d^4*log(x*e + d))*n^2*e^(-4) - 12*(12*d^4*e^(-5)*log(x*e + d) + (3*
x^4*e^3 - 4*d*x^3*e^2 + 6*d^2*x^2*e - 12*d^3*x)*e^(-4))*n*e*log((x*e + d)^n
*c))*b^2*g^3 + a^2*f^3*x
```

Fricas [B] Leaf count of result is larger than twice the leaf count of optimal. 1127 vs. 2(360) = 720.
time = 0.39, size = 1127, normalized size = 3.09

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^3*(a+b*log(c*(e*x+d)^n))^2,x, algorithm="fricas")
```

```
[Out] 1/288*(72*(b^2*g^3*x^4 + 4*b^2*f*g^2*x^3 + 6*b^2*f^2*g*x^2 + 4*b^2*f^3*x)*e
^4*log(c)^2 - 12*(25*b^2*d^3*g^3*n^2 - 12*a*b*d^3*g^3*n)*x*e - 72*(b^2*d^4*
g^3*n^2 - 4*b^2*d^3*f*g^2*n^2*e + 6*b^2*d^2*f^2*g*n^2*e^2 - 4*b^2*d*f^3*n^2
*e^3 - (b^2*g^3*n^2*x^4 + 4*b^2*f*g^2*n^2*x^3 + 6*b^2*f^2*g*n^2*x^2 + 4*b^2
*f^3*n^2*x)*e^4)*log(x*e + d)^2 + (9*(b^2*g^3*n^2 - 4*a*b*g^3*n + 8*a^2*g^3
)*x^4 + 32*(2*b^2*f*g^2*n^2 - 6*a*b*f*g^2*n + 9*a^2*f*g^2)*x^3 + 216*(b^2*f
^2*g*n^2 - 2*a*b*f^2*g*n + 2*a^2*f^2*g)*x^2 + 288*(2*b^2*f^3*n^2 - 2*a*b*f^
3*n + a^2*f^3)*x)*e^4 - 4*((7*b^2*d*g^3*n^2 - 12*a*b*d*g^3*n)*x^3 + 12*(5*b
^2*d*f*g^2*n^2 - 6*a*b*d*f*g^2*n)*x^2 + 108*(3*b^2*d*f^2*g*n^2 - 2*a*b*d*f^
2*g*n)*x)*e^3 + 6*((13*b^2*d^2*g^3*n^2 - 12*a*b*d^2*g^3*n)*x^2 + 16*(11*b^2
*d^2*f*g^2*n^2 - 6*a*b*d^2*f*g^2*n)*x)*e^2 + 12*(25*b^2*d^4*g^3*n^2 - 12*a*
b*d^4*g^3*n - (3*(b^2*g^3*n^2 - 4*a*b*g^3*n)*x^4 + 16*(b^2*f*g^2*n^2 - 3*a*
b*f*g^2*n)*x^3 + 36*(b^2*f^2*g*n^2 - 2*a*b*f^2*g*n)*x^2 + 48*(b^2*f^3*n^2 -
 a*b*f^3*n)*x)*e^4 + 4*(b^2*d*g^3*n^2*x^3 + 6*b^2*d*f*g^2*n^2*x^2 + 18*b^2*
d*f^2*g*n^2*x - 12*b^2*d*f^3*n^2 + 12*a*b*d*f^3*n)*e^3 - 6*(b^2*d^2*g^3*n^2
*x^2 + 8*b^2*d^2*f*g^2*n^2*x - 18*b^2*d^2*f^2*g*n^2 + 12*a*b*d^2*f^2*g*n)*e
^2 + 4*(3*b^2*d^3*g^3*n^2*x - 22*b^2*d^3*f*g^2*n^2 + 12*a*b*d^3*f*g^2*n)*e
- 12*(b^2*d^4*g^3*n - 4*b^2*d^3*f*g^2*n*e + 6*b^2*d^2*f^2*g*n*e^2 - 4*b^2*d
*f^3*n*e^3 - (b^2*g^3*n*x^4 + 4*b^2*f*g^2*n*x^3 + 6*b^2*f^2*g*n*x^2 + 4*b^2
*f^3*n*x)*e^4)*log(c))*log(x*e + d) + 12*(12*b^2*d^3*g^3*n*x*e - (3*(b^2*g^
3*n - 4*a*b*g^3)*x^4 + 16*(b^2*f*g^2*n - 3*a*b*f*g^2)*x^3 + 36*(b^2*f^2*g*n
 - 2*a*b*f^2*g)*x^2 + 48*(b^2*f^3*n - a*b*f^3)*x)*e^4 + 4*(b^2*d*g^3*n*x^3
+ 6*b^2*d*f*g^2*n*x^2 + 18*b^2*d*f^2*g*n*x)*e^3 - 6*(b^2*d^2*g^3*n*x^2 + 8*
b^2*d^2*f*g^2*n*x)*e^2)*log(c))*e^(-4)
```

Sympy [**B**] Leaf count of result is larger than twice the leaf count of optimal. 1241 vs. $2(348) = 696$.
time = 2.55, size = 1241, normalized size = 3.40

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**3*(a+b*ln(c*(e*x+d)**n))**2,x)
```

```
[Out] Piecewise((a**2*f**3*x + 3*a**2*f**2*g*x**2/2 + a**2*f*g**2*x**3 + a**2*g**
3*x**4/4 - a*b*d**4*g**3*log(c*(d + e*x)**n)/(2*e**4) + 2*a*b*d**3*f*g**2*l
og(c*(d + e*x)**n)/e**3 + a*b*d**3*g**3*n*x/(2*e**3) - 3*a*b*d**2*f**2*g*lo
g(c*(d + e*x)**n)/e**2 - 2*a*b*d**2*f*g**2*n*x/e**2 - a*b*d**2*g**3*n*x**2/
(4*e**2) + 2*a*b*d*f**3*log(c*(d + e*x)**n)/e + 3*a*b*d*f**2*g*n*x/e + a*b*
d*f*g**2*n*x**2/e + a*b*d*g**3*n*x**3/(6*e) - 2*a*b*f**3*n*x + 2*a*b*f**3*x
*log(c*(d + e*x)**n) - 3*a*b*f**2*g*n*x**2/2 + 3*a*b*f**2*g*x**2*log(c*(d +
 e*x)**n) - 2*a*b*f*g**2*n*x**3/3 + 2*a*b*f*g**2*x**3*log(c*(d + e*x)**n) -
```

```
 a*b*g**3*n*x**4/8 + a*b*g**3*x**4*log(c*(d + e*x)**n)/2 + 25*b**2*d**4*g**
3*n*log(c*(d + e*x)**n)/(24*e**4) - b**2*d**4*g**3*log(c*(d + e*x)**n)**2/(
4*e**4) - 11*b**2*d**3*f*g**2*n*log(c*(d + e*x)**n)/(3*e**3) + b**2*d**3*f*
g**2*log(c*(d + e*x)**n)**2/e**3 - 25*b**2*d**3*g**3*n**2*x/(24*e**3) + b**
2*d**3*g**3*n*x*log(c*(d + e*x)**n)/(2*e**3) + 9*b**2*d**2*f**2*g*n*log(c*(
d + e*x)**n)/(2*e**2) - 3*b**2*d**2*f**2*g*log(c*(d + e*x)**n)**2/(2*e**2)
+ 11*b**2*d**2*f*g**2*n**2*x/(3*e**2) - 2*b**2*d**2*f*g**2*n*x*log(c*(d + e
*x)**n)/e**2 + 13*b**2*d**2*g**3*n**2*x**2/(48*e**2) - b**2*d**2*g**3*n*x**
2*log(c*(d + e*x)**n)/(4*e**2) - 2*b**2*d*f**3*n*log(c*(d + e*x)**n)/e + b*
*2*d*f**3*log(c*(d + e*x)**n)**2/e - 9*b**2*d*f**2*g*n**2*x/(2*e) + 3*b**2*
d*f**2*g*n*x*log(c*(d + e*x)**n)/e - 5*b**2*d*f*g**2*n**2*x**2/(6*e) + b**2
*d*f*g**2*n*x**2*log(c*(d + e*x)**n)/e - 7*b**2*d*g**3*n**2*x**3/(72*e) + b
**2*d*g**3*n*x**3*log(c*(d + e*x)**n)/(6*e) + 2*b**2*f**3*n**2*x - 2*b**2*f
**3*n*x*log(c*(d + e*x)**n) + b**2*f**3*x*log(c*(d + e*x)**n)**2 + 3*b**2*f
**2*g*n**2*x**2/4 - 3*b**2*f**2*g*n*x**2*log(c*(d + e*x)**n)/2 + 3*b**2*f**
2*g*x**2*log(c*(d + e*x)**n)**2/2 + 2*b**2*f*g**2*n**2*x**3/9 - 2*b**2*f*g*
*2*n*x**3*log(c*(d + e*x)**n)/3 + b**2*f*g**2*x**3*log(c*(d + e*x)**n)**2 +
 b**2*g**3*n**2*x**4/32 - b**2*g**3*n*x**4*log(c*(d + e*x)**n)/8 + b**2*g**
3*x**4*log(c*(d + e*x)**n)**2/4, Ne(e, 0)), ((a + b*log(c*d**n))**2*(f**3*x
 + 3*f**2*g*x**2/2 + f*g**2*x**3 + g**3*x**4/4), True))
```

Giac [B] Leaf count of result is larger than twice the leaf count of optimal. 2385 vs. $2(360) = 720$.
time = 3.38, size = 2385, normalized size = 6.53

Too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^3*(a+b*log(c*(e*x+d)^n))^2,x, algorithm="giac")
```

```
[Out] 1/4*(x*e + d)^4*b^2*g^3*n^2*e^(-4)*log(x*e + d)^2 - (x*e + d)^3*b^2*d*g^3*n
^2*e^(-4)*log(x*e + d)^2 + 3/2*(x*e + d)^2*b^2*d^2*g^3*n^2*e^(-4)*log(x*e +
 d)^2 - (x*e + d)*b^2*d^3*g^3*n^2*e^(-4)*log(x*e + d)^2 - 1/8*(x*e + d)^4*b
^2*g^3*n^2*e^(-4)*log(x*e + d) + 2/3*(x*e + d)^3*b^2*d*g^3*n^2*e^(-4)*log(x
*e + d) - 3/2*(x*e + d)^2*b^2*d^2*g^3*n^2*e^(-4)*log(x*e + d) + 2*(x*e + d)
*b^2*d^3*g^3*n^2*e^(-4)*log(x*e + d) + (x*e + d)^3*b^2*f*g^2*n^2*e^(-3)*log
(x*e + d)^2 - 3*(x*e + d)^2*b^2*d*f*g^2*n^2*e^(-3)*log(x*e + d)^2 + 3*(x*e
+ d)*b^2*d^2*f*g^2*n^2*e^(-3)*log(x*e + d)^2 + 1/2*(x*e + d)^4*b^2*g^3*n*e^
(-4)*log(x*e + d)*log(c) - 2*(x*e + d)^3*b^2*d*g^3*n*e^(-4)*log(x*e + d)*lo
g(c) + 3*(x*e + d)^2*b^2*d^2*g^3*n*e^(-4)*log(x*e + d)*log(c) - 2*(x*e + d)
*b^2*d^3*g^3*n*e^(-4)*log(x*e + d)*log(c) + 1/32*(x*e + d)^4*b^2*g^3*n^2*e^
(-4) - 2/9*(x*e + d)^3*b^2*d*g^3*n^2*e^(-4) + 3/4*(x*e + d)^2*b^2*d^2*g^3*n
^2*e^(-4) - 2*(x*e + d)*b^2*d^3*g^3*n^2*e^(-4) - 2/3*(x*e + d)^3*b^2*f*g^2*
n^2*e^(-3)*log(x*e + d) + 3*(x*e + d)^2*b^2*d*f*g^2*n^2*e^(-3)*log(x*e + d)
 - 6*(x*e + d)*b^2*d^2*f*g^2*n^2*e^(-3)*log(x*e + d) + 1/2*(x*e + d)^4*a*b*
```

g^3*n*e^(-4)*log(x*e + d) - 2*(x*e + d)^3*a*b*d*g^3*n*e^(-4)*log(x*e + d) +
3*(x*e + d)^2*a*b*d^2*g^3*n*e^(-4)*log(x*e + d) - 2*(x*e + d)*a*b*d^3*g^3*
n*e^(-4)*log(x*e + d) + 3/2*(x*e + d)^2*b^2*f^2*g*n^2*e^(-2)*log(x*e + d)^2
- 3*(x*e + d)*b^2*d*f^2*g*n^2*e^(-2)*log(x*e + d)^2 - 1/8*(x*e + d)^4*b^2*
g^3*n*e^(-4)*log(c) + 2/3*(x*e + d)^3*b^2*d*g^3*n*e^(-4)*log(c) - 3/2*(x*e
+ d)^2*b^2*d^2*g^3*n*e^(-4)*log(c) + 2*(x*e + d)*b^2*d^3*g^3*n*e^(-4)*log(c
) + 2*(x*e + d)^3*b^2*f*g^2*n*e^(-3)*log(x*e + d)*log(c) - 6*(x*e + d)^2*b^
2*d*f*g^2*n*e^(-3)*log(x*e + d)*log(c) + 6*(x*e + d)*b^2*d^2*f*g^2*n*e^(-3)
*log(x*e + d)*log(c) + 1/4*(x*e + d)^4*b^2*g^3*e^(-4)*log(c)^2 - (x*e + d)^
3*b^2*d*g^3*e^(-4)*log(c)^2 + 3/2*(x*e + d)^2*b^2*d^2*g^3*e^(-4)*log(c)^2 -
(x*e + d)*b^2*d^3*g^3*e^(-4)*log(c)^2 + 2/9*(x*e + d)^3*b^2*f*g^2*n^2*e^(-
3) - 3/2*(x*e + d)^2*b^2*d*f*g^2*n^2*e^(-3) + 6*(x*e + d)*b^2*d^2*f*g^2*n^2
e^(-3) - 1/8(x*e + d)^4*a*b*g^3*n*e^(-4) + 2/3*(x*e + d)^3*a*b*d*g^3*n*e^
(-4) - 3/2*(x*e + d)^2*a*b*d^2*g^3*n*e^(-4) + 2*(x*e + d)*a*b*d^3*g^3*n*e^(
-4) - 3/2*(x*e + d)^2*b^2*f^2*g*n^2*e^(-2)*log(x*e + d) + 6*(x*e + d)*b^2*d
*f^2*g*n^2*e^(-2)*log(x*e + d) + 2*(x*e + d)^3*a*b*f*g^2*n*e^(-3)*log(x*e +
d) - 6*(x*e + d)^2*a*b*d*f*g^2*n*e^(-3)*log(x*e + d) + 6*(x*e + d)*a*b*d^2
*f*g^2*n*e^(-3)*log(x*e + d) + (x*e + d)*b^2*f^3*n^2*e^(-1)*log(x*e + d)^2
- 2/3*(x*e + d)^3*b^2*f*g^2*n*e^(-3)*log(c) + 3*(x*e + d)^2*b^2*d*f*g^2*n*e
^(-3)*log(c) - 6*(x*e + d)*b^2*d^2*f*g^2*n*e^(-3)*log(c) + 1/2*(x*e + d)^4*
a*b*g^3*e^(-4)*log(c) - 2*(x*e + d)^3*a*b*d*g^3*e^(-4)*log(c) + 3*(x*e + d)
^2*a*b*d^2*g^3*e^(-4)*log(c) - 2*(x*e + d)*a*b*d^3*g^3*e^(-4)*log(c) + 3*(x
*e + d)^2*b^2*f^2*g*n*e^(-2)*log(x*e + d)*log(c) - 6*(x*e + d)*b^2*d*f^2*g*
n*e^(-2)*log(x*e + d)*log(c) + (x*e + d)^3*b^2*f*g^2*e^(-3)*log(c)^2 - 3*(x
*e + d)^2*b^2*d*f*g^2*e^(-3)*log(c)^2 + 3*(x*e + d)*b^2*d^2*f*g^2*e^(-3)*lo
g(c)^2 + 3/4*(x*e + d)^2*b^2*f^2*g*n^2*e^(-2) - 6*(x*e + d)*b^2*d*f^2*g*n^2
e^(-2) - 2/3(x*e + d)^3*a*b*f*g^2*n*e^(-3) + 3*(x*e + d)^2*a*b*d*f*g^2*n*
e^(-3) - 6*(x*e + d)*a*b*d^2*f*g^2*n*e^(-3) + 1/4*(x*e + d)^4*a^2*g^3*e^(-4
) - (x*e + d)^3*a^2*d*g^3*e^(-4) + 3/2*(x*e + d)^2*a^2*d^2*g^3*e^(-4) - (x*
e + d)*a^2*d^3*g^3*e^(-4) - 2*(x*e + d)*b^2*f^3*n^2*e^(-1)*log(x*e + d) + 3
*(x*e + d)^2*a*b*f^2*g*n*e^(-2)*log(x*e + d) - 6*(x*e + d)*a*b*d*f^2*g*n*e^
(-2)*log(x*e + d) - 3/2*(x*e + d)^2*b^2*f^2*g*n*e^(-2)*log(c) + 6*(x*e + d)
*b^2*d*f^2*g*n*e^(-2)*log(c) + 2*(x*e + d)^3*a*b*f*g^2*e^(-3)*log(c) - 6*(x
*e + d)^2*a*b*d*f*g^2*e^(-3)*log(c) + 6*(x*e + d)*a*b*d^2*f*g^2*e^(-3)*log(
c) + 2*(x*e + d)*b^2*f^3*n*e^(-1)*log(x*e + d)*log(c) + 3/2*(x*e + d)^2*b^2
*f^2*g*e^(-2)*log(c)^2 - 3*(x*e + d)*b^2*d*f^2*g*e^(-2)*log(c)^2 + 2*(x*e +
d)*b^2*f^3*n^2*e^(-1) - 3/2*(x*e + d)^2*a*b*f^2*g*n*e^(-2) + 6*(x*e + d)*a
*b*d*f^2*g*n*e^(-2) + (x*e + d)^3*a^2*f*g^2*e^(-3) - 3*(x*e + d)^2*a^2*d*f*
g^2*e^(-3) + 3*(x*e + d)*a^2*d^2*f*g^2*e^(-3) + 2*(x*e + d)*a*b*f^3*n*e^(-1
)*log(x*e + d) - 2*(x*e + d)*b^2*f^3*n*e^(-1)*log(c) + 3*(x*e + d)^2*a*b*f^
2*g*e^(-2)*log(c) - 6*(x*e + d)*a*b*d*f^2*g*e^(-2)*log(c) + (x*e + d)*b^2*f
^3*e^(-1)*log(c)^2 - 2*(x*e + d)*a*b*f^3*n*e^(-1) + 3/2*(x*e + d)^2*a^2*f^2
*g*e^(-2) - 3*(x*e + d)*a^2*d*f^2*g*e^(-2) + 2*(x*e + d)*a*b*f^3*e^(-1)*log
(c) + (x*e + d)*a^2*f^3*e^(-1)

Mupad [B]
time = 0.74, size = 1051, normalized size = 2.88

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] x*((24*a^2*e^3*f^3 - 12*b^2*d^3*g^3*n^2 + 48*b^2*e^3*f^3*n^2 - 48*a*b*e^3*f
^3*n + 72*a^2*d*e^2*f^2*g - 72*b^2*d*e^2*f^2*g*n^2 + 48*b^2*d^2*e*f*g^2*n^2
)/(24*e^3) + (d*((d*((g^2*(6*a^2*d*g + 18*a^2*e*f - b^2*d*g*n^2 + 4*b^2*e*f
*n^2 - 12*a*b*e*f*n))/(6*e) - (d*g^3*(8*a^2 + b^2*n^2 - 4*a*b*n))/(8*e)))/e
 - (g*(12*a^2*e^2*f^2 + b^2*d^2*g^2*n^2 + 6*b^2*e^2*f^2*n^2 - 12*a*b*e^2*f^
2*n + 12*a^2*d*e*f*g - 4*b^2*d*e*f*g*n^2))/(4*e^2)))/e) - x^2*((d*((g^2*(6*
a^2*d*g + 18*a^2*e*f - b^2*d*g*n^2 + 4*b^2*e*f*n^2 - 12*a*b*e*f*n))/(6*e) -
 (d*g^3*(8*a^2 + b^2*n^2 - 4*a*b*n))/(8*e)))/(2*e) - (g*(12*a^2*e^2*f^2 + b
^2*d^2*g^2*n^2 + 6*b^2*e^2*f^2*n^2 - 12*a*b*e^2*f^2*n + 12*a^2*d*e*f*g - 4*
b^2*d*e*f*g*n^2))/(8*e^2)) + log(c*(d + e*x)^n)^2*(b^2*f^3*x - (d*(b^2*d^3*
g^3 - 4*b^2*e^3*f^3 + 6*b^2*d*e^2*f^2*g - 4*b^2*d^2*e*f*g^2))/(4*e^4) + (b^
2*g^3*x^4)/4 + (3*b^2*f^2*g*x^2)/2 + b^2*f*g^2*x^3) + x^3*((g^2*(6*a^2*d*g
+ 18*a^2*e*f - b^2*d*g*n^2 + 4*b^2*e*f*n^2 - 12*a*b*e*f*n))/(18*e) - (d*g^3
*(8*a^2 + b^2*n^2 - 4*a*b*n))/(24*e)) + log(c*(d + e*x)^n)*((x*((d*((d*((8*
b*g^2*(a*d*g + 3*a*e*f - b*e*f*n))/e - (2*b*d*g^3*(4*a - b*n))/e))/e - (12*
b*f*g*(2*a*d*g + 2*a*e*f - b*e*f*n))/e))/(2*e) + (4*b*f^2*(3*a*d*g + a*e*f
- b*e*f*n))/e))/2 + (x^3*((4*b*g^2*(a*d*g + 3*a*e*f - b*e*f*n))/(3*e) - (b*
d*g^3*(4*a - b*n))/(3*e)))/2 - (x^2*((d*((8*b*g^2*(a*d*g + 3*a*e*f - b*e*f*
n))/e - (2*b*d*g^3*(4*a - b*n))/e))/(4*e) - (3*b*f*g*(2*a*d*g + 2*a*e*f - b
*e*f*n))/e))/2 + (b*g^3*x^4*(4*a - b*n))/8) + (log(d + e*x)*(25*b^2*d^4*g^3
*n^2 - 12*a*b*d^4*g^3*n - 48*b^2*d*e^3*f^3*n^2 - 88*b^2*d^3*e*f*g^2*n^2 + 4
8*a*b*d*e^3*f^3*n + 108*b^2*d^2*e^2*f^2*g*n^2 - 72*a*b*d^2*e^2*f^2*g*n + 48
*a*b*d^3*e*f*g^2*n))/(24*e^4) + (g^3*x^4*(8*a^2 + b^2*n^2 - 4*a*b*n))/32
```

3.45 $\int (f+gx)^2 \left(a+b\log \left(c(d+ex)^n\right)\right)^2 \, dx$

Optimal. Leaf size=287

$$\frac{2b^2(ef-dg)^2n^2x}{e^2}+\frac{b^2g(ef-dg)n^2(d+ex)^2}{2e^3}+\frac{2b^2g^2n^2(d+ex)^3}{27e^3}+\frac{b^2(ef-dg)^3n^2\log^2(d+ex)}{3e^3g}-\frac{2b(ef-dg)^2}{}$$

```
[Out] 2*b^2*(-d*g+e*f)^2*n^2*x/e^2+1/2*b^2*g*(-d*g+e*f)*n^2*(e*x+d)^2/e^3+2/27*b^
2*g^2*n^2*(e*x+d)^3/e^3+1/3*b^2*(-d*g+e*f)^3*n^2*ln(e*x+d)^2/e^3/g-2*b*(-d*
g+e*f)^2*n*(e*x+d)*(a+b*ln(c*(e*x+d)^n))/e^3-b*g*(-d*g+e*f)*n*(e*x+d)^2*(a+
b*ln(c*(e*x+d)^n))/e^3-2/9*b*g^2*n*(e*x+d)^3*(a+b*ln(c*(e*x+d)^n))/e^3-2/3*
b*(-d*g+e*f)^3*n*ln(e*x+d)*(a+b*ln(c*(e*x+d)^n))/e^3/g+1/3*(g*x+f)^3*(a+b*l
n(c*(e*x+d)^n))^2/g
```

Rubi [A]
time = 0.28, antiderivative size = 287, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 7, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.292$, Rules used = {2445, 2458, 45, 2372, 12, 14, 2338}

$$-\frac{2bn(ef-dg)^3\log(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)}{3e^3g}-\frac{2bn(d+ex)(ef-dg)^2\left(a+b\log\left(c(d+ex)^n\right)\right)}{e^3}-\frac{bgn(d+ex)^2(ef-dg)\left(a+b\log\left(c(d+ex)^n\right)\right)}{e^3}-\frac{2bg^2n(d+ex)^3\left(a+b\log\left(c(d+ex)^n\right)\right)}{9e^3}+\frac{(f+gx)^3\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{3g}+\frac{b^2gn^2(d+ex)^2(ef-dg)}{2e^3}+\frac{b^2n^2(ef-dg)^3\log^2(d+ex)}{3e^3g}+\frac{2b^2g^2n^2(d+ex)^3}{27e^3}+\frac{2b^2n^2x(ef-dg)^2}{e^2}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)^2*(a + b*Log[c*(d + e*x)^n])^2,x]
```

```
[Out] (2*b^2*(e*f - d*g)^2*n^2*x)/e^2 + (b^2*g*(e*f - d*g)*n^2*(d + e*x)^2)/(2*e^
3) + (2*b^2*g^2*n^2*(d + e*x)^3)/(27*e^3) + (b^2*(e*f - d*g)^3*n^2*Log[d +
e*x]^2)/(3*e^3*g) - (2*b*(e*f - d*g)^2*n*(d + e*x)*(a + b*Log[c*(d + e*x)^n
]))/e^3 - (b*g*(e*f - d*g)*n*(d + e*x)^2*(a + b*Log[c*(d + e*x)^n]))/e^3 -
(2*b*g^2*n*(d + e*x)^3*(a + b*Log[c*(d + e*x)^n]))/(9*e^3) - (2*b*(e*f - d*
g)^3*n*Log[d + e*x]*(a + b*Log[c*(d + e*x)^n]))/(3*e^3*g) + ((f + g*x)^3*(a
 + b*Log[c*(d + e*x)^n])^2)/(3*g)
```

Rule 12

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

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] &&  !LinearQ[u, x] &&  !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
```

```
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2338

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

Rule 2372

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*(x_)^(m_.)*((d_) + (e_.)*(x_)^(r_
.))^(q_.), x_Symbol] :> With[{u = IntHide[x^m*(d + e*x^r)^q, x]}, Dist[a +
b*Log[c*x^n], u, x] - Dist[b*n, Int[SimplifyIntegrand[u/x, x], x], x]] /; F
reeQ[{a, b, c, d, e, n, r}, x] && IGtQ[q, 0] && IntegerQ[m] &&  !(EqQ[q, 1]
 && EqQ[m, -1])
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[(f + g*x)^(q + 1)*((a + b*Log[c*(d + e*x)^
n])^p/(g*(q + 1))), x] - Dist[b*e*n*(p/(g*(q + 1))), Int[(f + g*x)^(q + 1)*
((a + b*Log[c*(d + e*x)^n])^(p - 1)/(d + e*x)), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && GtQ[p, 0] && NeQ[q, -1] && Int
egersQ[2*p, 2*q] && ( !IGtQ[q, 0] || (EqQ[p, 2] && NeQ[q, 1]))
```

Rule 2458

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[(g*(x/e))^q*((e*h - d*i)/e + i*(x/e))^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rubi steps

$$\int (f+gx)^2 (a+b\log(c(d+ex)^n))^2 \, dx = \frac{(f+gx)^3 (a+b\log(c(d+ex)^n))^2}{3g} - \frac{(2ben)\int \frac{(f+gx)^3(a+b\log(c(d+ex}{d+ex}}{3g}$$

$$= \frac{(f+gx)^3 (a+b\log(c(d+ex)^n))^2}{3g} - \frac{(2bn)\text{Subst}\left(\int \frac{\left(\frac{ef-dg}{e}+\frac{gx}{e}\right)^3(a}{x}\right.}{3g}$$

$$= -\frac{bn\left(\frac{18g(ef-dg)^2(d+ex)}{e^3} + \frac{9g^2(ef-dg)(d+ex)^2}{e^3} + \frac{2g^3(d+ex)^3}{e^3} + \frac{6(ef-dg)^3\log(}{e^3}\right.}{9g}$$

$$= -\frac{bn\left(\frac{18g(ef-dg)^2(d+ex)}{e^3} + \frac{9g^2(ef-dg)(d+ex)^2}{e^3} + \frac{2g^3(d+ex)^3}{e^3} + \frac{6(ef-dg)^3\log(}{e^3}\right.}{9g}$$

$$= -\frac{bn\left(\frac{18g(ef-dg)^2(d+ex)}{e^3} + \frac{9g^2(ef-dg)(d+ex)^2}{e^3} + \frac{2g^3(d+ex)^3}{e^3} + \frac{6(ef-dg)^3\log(}{e^3}\right.}{9g}$$

$$= -\frac{bn\left(\frac{18g(ef-dg)^2(d+ex)}{e^3} + \frac{9g^2(ef-dg)(d+ex)^2}{e^3} + \frac{2g^3(d+ex)^3}{e^3} + \frac{6(ef-dg)^3\log(}{e^3}\right.}{9g}$$

$$= \frac{2b^2(ef-dg)^2n^2x}{e^2} + \frac{b^2g(ef-dg)n^2(d+ex)^2}{2e^3} + \frac{2b^2g^2n^2(d+ex)^3}{27e^3}$$

Mathematica [A]
time = 0.25, size = 400, normalized size = 1.39

$$\frac{-18b^2d(3e^2f^2-3defg+d^2g^2)n^2\log^2(d+ex)+6bdn\log(d+ex)\left(6a(3e^2f^2-3defg+d^2g^2)+b(-18e^2f^2+27defg-11d^2g^2)n+6b(3e^2f^2-3defg+d^2g^2)\log(c(d+ex)^n)\right)+ex\left(18a^2e^2(3f^2+3fgx+g^2x^2)-6abn(6d^2g^2-3deg(6f+gx)+e^2(18f^2+9fgx+2g^2x^2))+b^2n^2(66d^2g^2-3deg(54f+5gx)+e^2(108f^2+27fgx+4g^2x^2))+6b(6ae^2(3f^2+3fgx+g^2x^2)-bn(6d^2g^2-3deg(6f+gx)+e^2(18f^2+9fgx+2g^2x^2)))\log(c(d+ex)^n)+18b^2e^2(3f^2+3fgx+g^2x^2)\log^2(c(d+ex)^n)\right)}{54e^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)^2*(a + b*Log[c*(d + e*x)^n])^2,x]
```

```
[Out] (-18*b^2*d*(3*e^2*f^2 - 3*d*e*f*g + d^2*g^2)*n^2*Log[d + e*x]^2 + 6*b*d*n*L
og[d + e*x]*(6*a*(3*e^2*f^2 - 3*d*e*f*g + d^2*g^2) + b*(-18*e^2*f^2 + 27*d*
e*f*g - 11*d^2*g^2)*n + 6*b*(3*e^2*f^2 - 3*d*e*f*g + d^2*g^2)*Log[c*(d + e*
x)^n]) + e*x*(18*a^2*e^2*(3*f^2 + 3*f*g*x + g^2*x^2) - 6*a*b*n*(6*d^2*g^2 -
 3*d*e*g*(6*f + g*x) + e^2*(18*f^2 + 9*f*g*x + 2*g^2*x^2)) + b^2*n^2*(66*d^
2*g^2 - 3*d*e*g*(54*f + 5*g*x) + e^2*(108*f^2 + 27*f*g*x + 4*g^2*x^2)) + 6*
b*(6*a*e^2*(3*f^2 + 3*f*g*x + g^2*x^2) - b*n*(6*d^2*g^2 - 3*d*e*g*(6*f + g*
x) + e^2*(18*f^2 + 9*f*g*x + 2*g^2*x^2)))*Log[c*(d + e*x)^n] + 18*b^2*e^2*(
3*f^2 + 3*f*g*x + g^2*x^2)*Log[c*(d + e*x)^n]^2))/(54*e^3)
```

Maple [C] Result contains higher order function than in optimal. Order 9 vs. order 3.
time = 1.00, size = 4597, normalized size = 16.02

method	result	size
risch	Expression too large to display	4597

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^2*(a+b*ln(c*(e*x+d)^n))^2,x,method=_RETURNVERBOSE)
```

```
[Out] 1/2*g*Pi^2*b^2*f*x^2*csgn(I*c)*csgn(I*(e*x+d)^n)^2*csgn(I*c*(e*x+d)^n)^3-g*
Pi^2*b^2*f*x^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^4-2/e^2*g*ln
(c)*ln(e*x+d)*b^2*d^2*f*n-2/e^2*g*ln(e*x+d)*a*b*d^2*f*n+I*ln(c)*Pi*b^2*f^2*
x*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+I*ln(c)*Pi*b^2*f^2*x*csgn(I*c)*cs
gn(I*c*(e*x+d)^n)^2+I*Pi*a*b*f^2*x*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I*Pi*a*b
*f^2*x*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-I*g*Pi*a*b*f*x^2*csgn(I*c*(e
*x+d)^n)^3+1/3*I*g^2*ln(c)*Pi*b^2*x^3*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)
^2+1/3*I*g^2*ln(c)*Pi*b^2*x^3*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-1/9*I*g^2*Pi*
b^2*n*x^3*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+1/2*I*g*Pi*b^2*f*n*x^2*cs
gn(I*c*(e*x+d)^n)^3+1/3*I*g^2*Pi*a*b*x^3*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+1/
3*I*g^2*Pi*a*b*x^3*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-I*g*ln(c)*Pi*b^2
*f*x^2*csgn(I*c*(e*x+d)^n)^3-1/9*I*g^2*Pi*b^2*n*x^3*csgn(I*c)*csgn(I*c*(e*x
+d)^n)^2-I*Pi*b^2*f^2*n*x*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-I*Pi*b^2*f^2*n*x*
csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+1/3*a^2*g^2*x^3+x*a^2*f^2+1/3*I/e^2
*g^2*Pi*b^2*d^2*n*x*csgn(I*c*(e*x+d)^n)^3-1/3*I*g^2*ln(c)*Pi*b^2*x^3*csgn(I
*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+1/9*I*g^2*Pi*b^2*n*x^3*csgn(I*c)*
csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-I/e*ln(e*x+d)*Pi*b^2*d*f^2*n*csgn(I*c
*(e*x+d)^n)^3-1/3*I*g^2*Pi*a*b*x^3*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*
x+d)^n)-1/2*I*g*Pi*b^2*f*n*x^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-1/2*
I*g*Pi*b^2*f*n*x^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+2*b^2*f^2*n^2*x+I*Pi*b^2
*f^2*n*x*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+I*g*ln(c)*Pi*b^2*f
*x^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I*g*ln(c)*Pi*b^2*f*x^2*csgn(I*(e*x+d)^
n)*csgn(I*c*(e*x+d)^n)^2+I*g*Pi*a*b*f*x^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I
*g*Pi*a*b*f*x^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-1/3*I/e^3*g^2*ln(e*
x+d)*Pi*b^2*d^3*n*csgn(I*c*(e*x+d)^n)^3-I*ln(c)*Pi*b^2*f^2*x*csgn(I*c)*csgn
(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-I*Pi*a*b*f^2*x*csgn(I*c)*csgn(I*(e*x+d)^n
)*csgn(I*c*(e*x+d)^n)-1/6*I/e*g^2*Pi*b^2*d*n*x^2*csgn(I*c*(e*x+d)^n)^3-2*n^
2*b^2*d*f^2/e*ln(e*x+d)+2/27*b^2*g^2*n^2*x^3+a^2*f*g*x^2+1/6*g^2*Pi^2*b^2*x
^3*csgn(I*c)^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^3+1/6*g^2*Pi^2*b^2*x^3
*csgn(I*c)*csgn(I*(e*x+d)^n)^2*csgn(I*c*(e*x+d)^n)^3-1/3*g^2*Pi^2*b^2*x^3*c
sgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^4-1/4*g*Pi^2*b^2*f*x^2*csgn(
I*c)^2*csgn(I*c*(e*x+d)^n)^4+I*Pi*b^2*f^2*n*x*csgn(I*c*(e*x+d)^n)^3-1/4*Pi^
2*b^2*f^2*x*csgn(I*c)^2*csgn(I*(e*x+d)^n)^2*csgn(I*c*(e*x+d)^n)^2+1/2*Pi^2*
b^2*f^2*x*csgn(I*c)^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^3+1/2*Pi^2*b^2*
f^2*x*csgn(I*c)*csgn(I*(e*x+d)^n)^2*csgn(I*c*(e*x+d)^n)^3-Pi^2*b^2*f^2*x*cs
gn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^4+1/2*g*Pi^2*b^2*f*x^2*csgn(I
*c)*csgn(I*c*(e*x+d)^n)^5-1/4*g*Pi^2*b^2*f*x^2*csgn(I*(e*x+d)^n)^2*csgn(I*c
```

```
*(e*x+d)^n)^4+1/2*g*Pi^2*b^2*f*x^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^5-
1/12*g^2*Pi^2*b^2*x^3*csgn(I*c)^2*csgn(I*(e*x+d)^n)^2*csgn(I*c*(e*x+d)^n)^2
+2/e*ln(c)*ln(e*x+d)*b^2*d*f^2*n+2/e*ln(e*x+d)*a*b*d*f^2*n-2/3/e^2*g^2*ln(c
)*b^2*d^2*n*x+2/3/e^3*g^2*ln(c)*ln(e*x+d)*b^2*d^3*n+2/3/e^3*g^2*ln(e*x+d)*a
*b*d^3*n+1/e^2*g*b^2*d^2*f*n^2*ln(e*x+d)^2+3/e^2*g*ln(e*x+d)*b^2*d^2*f*n^2-
1/12*g^2*Pi^2*b^2*x^3*csgn(I*c)^2*csgn(I*c*(e*x+d)^n)^4-1/12*g^2*Pi^2*b^2*x
^3*csgn(I*(e*x+d)^n)^2*csgn(I*c*(e*x+d)^n)^4-2/9*a*b*g^2*n*x^3+1/2*b^2*f*g*
n^2*x^2+1/3*(g*x+f)^3*b^2/g*ln((e*x+d)^n)^2-5/18/e*g^2*b^2*d*n^2*x^2+11/9/e
^2*g^2*b^2*d^2*n^2*x-11/9/e^3*g^2*ln(e*x+d)*b^2*d^3*n^2-1/3/e^3*g^2*b^2*d^3
*n^2*ln(e*x+d)^2-ln(c)*b^2*f*g*n*x^2+2*ln(c)*a*b*f*g*x^2+1/2*Pi^2*b^2*f^2*x
*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^5+1/2*Pi^2*b^2*f^2*x*csgn(I*c)*csgn(
I*c*(e*x+d)^n)^5-1/4*Pi^2*b^2*f^2*x*csgn(I*(e*x+d)^n)^2*csgn(I*c*(e*x+d)^n)
^4-2/9*ln(c)*b^2*g^2*n*x^3+ln(c)^2*b^2*f*g*x^2-1/4*Pi^2*b^2*f^2*x*csgn(I*c)
^2*csgn(I*c*(e*x+d)^n)^4-1/e*b^2*d*f^2*n^2*ln(e*x+d)^2+1/6*g^2*Pi^2*b^2*x^3
*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^5-1/4*g*Pi^2*b^2*f*x^2*csgn(I*c*(e*x
+d)^n)^6+1/6*g^2*Pi^2*b^2*x^3*csgn(I*c)*csgn(I*c*(e*x+d)^n)^5+I/e*g*Pi*b^2*
d*f*n*x*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I/e*g*Pi*b^2*d*f*n*x*csgn(I*(e*x+d)
^n)*csgn(I*c*(e*x+d)^n)^2-1/6*I/e*g^2*Pi*b^2*d*n*x^2*csgn(I*c)*csgn(I*(e*x+
d)^n)*csgn(I*c*(e*x+d)^n)+1/3*I/e^2*g^2*Pi*b^2*d^2*n*x*csgn(I*c)*csgn(I*(e*
x+d)^n)*csgn(I*c*(e*x+d)^n)-I/e^2*g*ln(e*x+d)*Pi*b^2*d^2*f*n*csgn(I*c)*csgn
(I*c*(e*x+d)^n)^2-I/e^2*g*ln(e*x+d)*Pi*b^2*d^2*f*n*csgn(I*(e*x+d)^n)*csgn(I
*c*(e*x+d)^n)^2-1/3*I/e^3*g^2*ln(e*x+d)*Pi*b^2*d^3*n*csgn(I*c)*csgn(I*(e*x+
d)^n)*csgn(I*c*(e*x+d)^n)-I/e*ln(e*x+d)*Pi*b^2*d*f^2*n*csgn(I*c)*csgn(I*(e*
x+d)^n)*csgn(I*c*(e*x+d)^n)+1/3*ln(c)^2*b^2*g^2*x^3+ln(c)^2*b^2*f^2*x-a*b*f
*g*n*x^2+2/e*g*a*b*d*f*n*x-1/4*g*Pi^2*b^2*f*x^2*csgn(I*c)^2*csgn(I*(e*x+d)^
n)^2*csgn(I*c*(e*x+d)^n)^2+2/e*g*ln(c)*b^2*d*f*n*x+1/2*g*Pi^2*b^2*f*x^2*csg
n(I*c)^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^3+2/3*ln(c)*a*b*g^2*x^3-1/12
*g^2*Pi^2*b^2*x^3*csgn(I*c*(e*x+d)^n)^6+1/3/g*b^2*f^3*n^2*ln(e*x+d)^2-2*ln(
c)*b^2*f^2*n*x+2*ln(c)*a*b*f^2*x-1/4*Pi^2*b^2*f^2*x*csgn(I*c*(e*x+d)^n)^6+1
/9*b*(18*b*d*e^2*f*g^2*n*x-2*b*e^3*g^3*n*x^3+18...
```

Maxima [A]
time = 0.32, size = 567, normalized size = 1.98

Verification of antiderivative is not currently implemented for this CAS.

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

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

```
 ((d*log(x*e + d)^2 - 2*x*e + 2*d*log(x*e + d))*n^2*e^(-1) - 2*(d*e^(-2)*lo
g(x*e + d) - x*e^(-1))*n*e*log((x*e + d)^n*c))*b^2*f^2 + 1/2*((2*d^2*log(x*
e + d)^2 + x^2*e^2 - 6*d*x*e + 6*d^2*log(x*e + d))*n^2*e^(-2) - 2*(2*d^2*e^
(-3)*log(x*e + d) + (x^2*e - 2*d*x)*e^(-2))*n*e*log((x*e + d)^n*c))*b^2*f*g
 - 1/54*((18*d^3*log(x*e + d)^2 - 4*x^3*e^3 + 15*d*x^2*e^2 - 66*d^2*x*e + 6
6*d^3*log(x*e + d))*n^2*e^(-3) - 6*(6*d^3*e^(-4)*log(x*e + d) - (2*x^3*e^2
- 3*d*x^2*e + 6*d^2*x)*e^(-3))*n*e*log((x*e + d)^n*c))*b^2*g^2 + a^2*f^2*x
```

Fricas [**B**] Leaf count of result is larger than twice the leaf count of optimal. 709 vs. $2(284) = 568$.
time = 0.38, size = 709, normalized size = 2.47

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/54*(18*(b^2*g^2*x^3 + 3*b^2*f*g*x^2 + 3*b^2*f^2*x)*e^3*log(c)^2 + 6*(11*b
^2*d^2*g^2*n^2 - 6*a*b*d^2*g^2*n)*x*e + 18*(b^2*d^3*g^2*n^2 - 3*b^2*d^2*f*g
*n^2*e + 3*b^2*d*f^2*n^2*e^2 + (b^2*g^2*n^2*x^3 + 3*b^2*f*g*n^2*x^2 + 3*b^2
*f^2*n^2*x)*e^3)*log(x*e + d)^2 + (2*(2*b^2*g^2*n^2 - 6*a*b*g^2*n + 9*a^2*g
^2)*x^3 + 27*(b^2*f*g*n^2 - 2*a*b*f*g*n + 2*a^2*f*g)*x^2 + 54*(2*b^2*f^2*n^
2 - 2*a*b*f^2*n + a^2*f^2)*x)*e^3 - 3*((5*b^2*d*g^2*n^2 - 6*a*b*d*g^2*n)*x^
2 + 18*(3*b^2*d*f*g*n^2 - 2*a*b*d*f*g*n)*x)*e^2 - 6*(11*b^2*d^3*g^2*n^2 - 6
*a*b*d^3*g^2*n + (2*(b^2*g^2*n^2 - 3*a*b*g^2*n)*x^3 + 9*(b^2*f*g*n^2 - 2*a*
b*f*g*n)*x^2 + 18*(b^2*f^2*n^2 - a*b*f^2*n)*x)*e^3 - 3*(b^2*d*g^2*n^2*x^2 +
 6*b^2*d*f*g*n^2*x - 6*b^2*d*f^2*n^2 + 6*a*b*d*f^2*n)*e^2 + 3*(2*b^2*d^2*g^
2*n^2*x - 9*b^2*d^2*f*g*n^2 + 6*a*b*d^2*f*g*n)*e - 6*(b^2*d^3*g^2*n - 3*b^2
*d^2*f*g*n*e + 3*b^2*d*f^2*n*e^2 + (b^2*g^2*n*x^3 + 3*b^2*f*g*n*x^2 + 3*b^2
*f^2*n*x)*e^3)*log(c))*log(x*e + d) - 6*(6*b^2*d^2*g^2*n*x*e + (2*(b^2*g^2*
n - 3*a*b*g^2)*x^3 + 9*(b^2*f*g*n - 2*a*b*f*g)*x^2 + 18*(b^2*f^2*n - a*b*f^
2)*x)*e^3 - 3*(b^2*d*g^2*n*x^2 + 6*b^2*d*f*g*n*x)*e^2)*log(c))*e^(-3)
```

Sympy [**B**] Leaf count of result is larger than twice the leaf count of optimal. 774 vs. $2(274) = 548$.
time = 1.31, size = 774, normalized size = 2.70

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**2*(a+b*ln(c*(e*x+d)**n))**2,x)
```

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

```
d + e*x)**n) - a*b*f*g*n*x**2 + 2*a*b*f*g*x**2*log(c*(d + e*x)**n) - 2*a*b*
g**2*n*x**3/9 + 2*a*b*g**2*x**3*log(c*(d + e*x)**n)/3 - 11*b**2*d**3*g**2*n
*log(c*(d + e*x)**n)/(9*e**3) + b**2*d**3*g**2*log(c*(d + e*x)**n)**2/(3*e*
*3) + 3*b**2*d**2*f*g*n*log(c*(d + e*x)**n)/e**2 - b**2*d**2*f*g*log(c*(d +
 e*x)**n)**2/e**2 + 11*b**2*d**2*g**2*n**2*x/(9*e**2) - 2*b**2*d**2*g**2*n*
x*log(c*(d + e*x)**n)/(3*e**2) - 2*b**2*d*f**2*n*log(c*(d + e*x)**n)/e + b*
*2*d*f**2*log(c*(d + e*x)**n)**2/e - 3*b**2*d*f*g*n**2*x/e + 2*b**2*d*f*g*n
*x*log(c*(d + e*x)**n)/e - 5*b**2*d*g**2*n**2*x**2/(18*e) + b**2*d*g**2*n*x
**2*log(c*(d + e*x)**n)/(3*e) + 2*b**2*f**2*n**2*x - 2*b**2*f**2*n*x*log(c*
(d + e*x)**n) + b**2*f**2*x*log(c*(d + e*x)**n)**2 + b**2*f*g*n**2*x**2/2 -
 b**2*f*g*n*x**2*log(c*(d + e*x)**n) + b**2*f*g*x**2*log(c*(d + e*x)**n)**2
 + 2*b**2*g**2*n**2*x**3/27 - 2*b**2*g**2*n*x**3*log(c*(d + e*x)**n)/9 + b*
*2*g**2*x**3*log(c*(d + e*x)**n)**2/3, Ne(e, 0)), ((a + b*log(c*d**n))**2*(
f**2*x + f*g*x**2 + g**2*x**3/3), True))
```

Giac [B] Leaf count of result is larger than twice the leaf count of optimal. 1339 vs. $2(284) = 568$.
time = 6.16, size = 1339, normalized size = 4.67

Too large to display

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/3*(x*e + d)^3*b^2*g^2*n^2*e^(-3)*log(x*e + d)^2 - (x*e + d)^2*b^2*d*g^2*n
^2*e^(-3)*log(x*e + d)^2 + (x*e + d)*b^2*d^2*g^2*n^2*e^(-3)*log(x*e + d)^2
- 2/9*(x*e + d)^3*b^2*g^2*n^2*e^(-3)*log(x*e + d) + (x*e + d)^2*b^2*d*g^2*n
^2*e^(-3)*log(x*e + d) - 2*(x*e + d)*b^2*d^2*g^2*n^2*e^(-3)*log(x*e + d) +
(x*e + d)^2*b^2*f*g*n^2*e^(-2)*log(x*e + d)^2 - 2*(x*e + d)*b^2*d*f*g*n^2*e
^(-2)*log(x*e + d)^2 + 2/3*(x*e + d)^3*b^2*g^2*n*e^(-3)*log(x*e + d)*log(c)
 - 2*(x*e + d)^2*b^2*d*g^2*n*e^(-3)*log(x*e + d)*log(c) + 2*(x*e + d)*b^2*d
^2*g^2*n*e^(-3)*log(x*e + d)*log(c) + 2/27*(x*e + d)^3*b^2*g^2*n^2*e^(-3) -
 1/2*(x*e + d)^2*b^2*d*g^2*n^2*e^(-3) + 2*(x*e + d)*b^2*d^2*g^2*n^2*e^(-3)
- (x*e + d)^2*b^2*f*g*n^2*e^(-2)*log(x*e + d) + 4*(x*e + d)*b^2*d*f*g*n^2*e
^(-2)*log(x*e + d) + 2/3*(x*e + d)^3*a*b*g^2*n*e^(-3)*log(x*e + d) - 2*(x*e
 + d)^2*a*b*d*g^2*n*e^(-3)*log(x*e + d) + 2*(x*e + d)*a*b*d^2*g^2*n*e^(-3)*
log(x*e + d) + (x*e + d)*b^2*f^2*n^2*e^(-1)*log(x*e + d)^2 - 2/9*(x*e + d)^
3*b^2*g^2*n*e^(-3)*log(c) + (x*e + d)^2*b^2*d*g^2*n*e^(-3)*log(c) - 2*(x*e
+ d)*b^2*d^2*g^2*n*e^(-3)*log(c) + 2*(x*e + d)^2*b^2*f*g*n*e^(-2)*log(x*e +
 d)*log(c) - 4*(x*e + d)*b^2*d*f*g*n*e^(-2)*log(x*e + d)*log(c) + 1/3*(x*e
+ d)^3*b^2*g^2*e^(-3)*log(c)^2 - (x*e + d)^2*b^2*d*g^2*e^(-3)*log(c)^2 + (x
*e + d)*b^2*d^2*g^2*e^(-3)*log(c)^2 + 1/2*(x*e + d)^2*b^2*f*g*n^2*e^(-2) -
4*(x*e + d)*b^2*d*f*g*n^2*e^(-2) - 2/9*(x*e + d)^3*a*b*g^2*n*e^(-3) + (x*e
+ d)^2*a*b*d*g^2*n*e^(-3) - 2*(x*e + d)*a*b*d^2*g^2*n*e^(-3) - 2*(x*e + d)*
b^2*f^2*n^2*e^(-1)*log(x*e + d) + 2*(x*e + d)^2*a*b*f*g*n*e^(-2)*log(x*e +
```

```
d) - 4*(x*e + d)*a*b*d*f*g*n*e^(-2)*log(x*e + d) - (x*e + d)^2*b^2*f*g*n*e^
(-2)*log(c) + 4*(x*e + d)*b^2*d*f*g*n*e^(-2)*log(c) + 2/3*(x*e + d)^3*a*b*g
^2*e^(-3)*log(c) - 2*(x*e + d)^2*a*b*d*g^2*e^(-3)*log(c) + 2*(x*e + d)*a*b*
d^2*g^2*e^(-3)*log(c) + 2*(x*e + d)*b^2*f^2*n*e^(-1)*log(x*e + d)*log(c) +
(x*e + d)^2*b^2*f*g*e^(-2)*log(c)^2 - 2*(x*e + d)*b^2*d*f*g*e^(-2)*log(c)^2
 + 2*(x*e + d)*b^2*f^2*n^2*e^(-1) - (x*e + d)^2*a*b*f*g*n*e^(-2) + 4*(x*e +
 d)*a*b*d*f*g*n*e^(-2) + 1/3*(x*e + d)^3*a^2*g^2*e^(-3) - (x*e + d)^2*a^2*d
*g^2*e^(-3) + (x*e + d)*a^2*d^2*g^2*e^(-3) + 2*(x*e + d)*a*b*f^2*n*e^(-1)*l
og(x*e + d) - 2*(x*e + d)*b^2*f^2*n*e^(-1)*log(c) + 2*(x*e + d)^2*a*b*f*g*e
^(-2)*log(c) - 4*(x*e + d)*a*b*d*f*g*e^(-2)*log(c) + (x*e + d)*b^2*f^2*e^(-
1)*log(c)^2 - 2*(x*e + d)*a*b*f^2*n*e^(-1) + (x*e + d)^2*a^2*f*g*e^(-2) - 2
*(x*e + d)*a^2*d*f*g*e^(-2) + 2*(x*e + d)*a*b*f^2*e^(-1)*log(c) + (x*e + d)
*a^2*f^2*e^(-1)
```

Mupad [B]
time = 0.55, size = 591, normalized size = 2.06

$$\ln\left(c\,(d+e\,x)^n\right)\left(\frac{x^2\left(\frac{3\,b\,g\,(a\,d\,g+2\,a\,e\,f-b\,e\,f\,n)}{e}-\frac{b\,d\,g^2\,(3\,a-b\,n)}{e}\right)}{3}-\frac{x\left(\frac{d\left(\frac{18\,b\,g\,(a\,d\,g+2\,a\,e\,f-b\,e\,f\,n)}{e}-\frac{6\,b\,d\,g^2\,(3\,a-b\,n)}{e}\right)}{3\,e}-\frac{6\,b\,f\,(2\,a\,d\,g+a\,e\,f-b\,e\,f\,n)}{e}\right)}{3}+\frac{2\,b\,g^2\,x^3\,(3\,a-b\,n)}{9}\right)+x\left(\frac{18\,a^2\,d\,e\,f\,g+9\,a^2\,e^2\,f^2-18\,a\,b\,e^2\,f^2\,n+6\,b^2\,d^2\,g^2\,n^2-18\,b^2\,d\,e\,f\,g\,n^2+18\,b^2\,e^2\,f^2\,n^2}{9\,e^2}-\frac{d\left(\frac{g\,(3\,a^2\,d\,g+6\,a^2\,e\,f-b^2\,d\,g\,n^2+3\,b^2\,e\,f\,n^2-6\,a\,b\,e\,f\,n)}{3\,e}-\frac{d\,g^2\,(9\,a^2-6\,a\,b\,n+2\,b^2\,n^2)}{9\,e}\right)}{e}\right)+x^2\left(\frac{g\,(3\,a^2\,d\,g+6\,a^2\,e\,f-b^2\,d\,g\,n^2+3\,b^2\,e\,f\,n^2-6\,a\,b\,e\,f\,n)}{6\,e}-\frac{d\,g^2\,(9\,a^2-6\,a\,b\,n+2\,b^2\,n^2)}{18\,e}\right)+\ln\left(c\,(d+e\,x)^n\right)^2\left(b^2\,f^2\,x+\frac{b^2\,g^2\,x^3}{3}+\frac{d\,(b^2\,d^2\,g^2-3\,b^2\,d\,e\,f\,g+3\,b^2\,e^2\,f^2)}{3\,e^3}+b^2\,f\,g\,x^2\right)-\frac{\ln\left(d+e\,x\right)\,(11\,b^2\,d^3\,g^2\,n^2-27\,b^2\,d^2\,e\,f\,g\,n^2+18\,b^2\,d\,e^2\,f^2\,n^2-6\,a\,b\,d^3\,g^2\,n+18\,a\,b\,d^2\,e\,f\,g\,n-18\,a\,b\,d\,e^2\,f^2\,n)}{9\,e^3}+\frac{g^2\,x^3\,(9\,a^2-6\,a\,b\,n+2\,b^2\,n^2)}{27}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)^2*(a + b*log(c*(d + e*x)^n))^2,x)
```

```
[Out] log(c*(d + e*x)^n)*((x^2*((3*b*g*(a*d*g + 2*a*e*f - b*e*f*n))/e - (b*d*g^2*
(3*a - b*n))/e))/3 - (x*((d*((18*b*g*(a*d*g + 2*a*e*f - b*e*f*n))/e - (6*b*
d*g^2*(3*a - b*n))/e))/(3*e) - (6*b*f*(2*a*d*g + a*e*f - b*e*f*n))/e))/3 +
(2*b*g^2*x^3*(3*a - b*n))/9) + x*((9*a^2*e^2*f^2 + 6*b^2*d^2*g^2*n^2 + 18*b
^2*e^2*f^2*n^2 - 18*a*b*e^2*f^2*n + 18*a^2*d*e*f*g - 18*b^2*d*e*f*g*n^2)/(9
*e^2) - (d*((g*(3*a^2*d*g + 6*a^2*e*f - b^2*d*g*n^2 + 3*b^2*e*f*n^2 - 6*a*b
*e*f*n))/(3*e) - (d*g^2*(9*a^2 + 2*b^2*n^2 - 6*a*b*n))/(9*e)))/e) + x^2*((g
*(3*a^2*d*g + 6*a^2*e*f - b^2*d*g*n^2 + 3*b^2*e*f*n^2 - 6*a*b*e*f*n))/(6*e)
 - (d*g^2*(9*a^2 + 2*b^2*n^2 - 6*a*b*n))/(18*e)) + log(c*(d + e*x)^n)^2*(b^
2*f^2*x + (b^2*g^2*x^3)/3 + (d*(b^2*d^2*g^2 + 3*b^2*e^2*f^2 - 3*b^2*d*e*f*g
))/(3*e^3) + b^2*f*g*x^2) - (log(d + e*x)*(11*b^2*d^3*g^2*n^2 - 6*a*b*d^3*g
^2*n + 18*b^2*d*e^2*f^2*n^2 - 18*a*b*d*e^2*f^2*n - 27*b^2*d^2*e*f*g*n^2 + 1
8*a*b*d^2*e*f*g*n))/(9*e^3) + (g^2*x^3*(9*a^2 + 2*b^2*n^2 - 6*a*b*n))/27
```

3.46 $\int (f+gx) (a+b\log (c(d+ex)^n))^2 \, dx$

Optimal. Leaf size=186

$$-\frac{2ab(ef-dg)nx}{e}+\frac{2b^2(ef-dg)n^2x}{e}+\frac{b^2gn^2(d+ex)^2}{4e^2}-\frac{2b^2(ef-dg)n(d+ex)\log (c(d+ex)^n)}{e^2}-\frac{bgn(d+ex}{}$$

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

Rubi [A]
time = 0.12, antiderivative size = 186, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 7, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.318$, Rules used = {2448, 2436, 2333, 2332, 2437, 2342, 2341}

$$\frac{(d+ex)(ef-dg)\left(a+b\log (c(d+ex)^n)\right)^2}{e^2}-\frac{bgn(d+ex)^2\left(a+b\log (c(d+ex)^n)\right)}{2e^2}+\frac{g(d+ex)^2\left(a+b\log (c(d+ex)^n)\right)^2}{2e^2}-\frac{2abnx(ef-dg)}{e}-\frac{2b^2n(d+ex)(ef-dg)\log (c(d+ex)^n)}{e^2}+\frac{b^2gn^2(d+ex)^2}{4e^2}+\frac{2b^2n^2x(ef-dg)}{e}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)*(a + b*Log[c*(d + e*x)^n])^2,x]
```

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

Rule 2332

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

Rule 2333

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

Rule 2341

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_.)*(x_))^(m_.), x_Symbol] :>
Simp[(d*x)^(m + 1)*((a + b*Log[c*x^n])/(d*(m + 1))), x] - Simp[b*n*((d*x)^(
m + 1)/(d*(m + 1)^2)), x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[m, -1]
```

Rule 2342

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_.)*(x_))^(m_.), x_Symbo
l] :> Simp[(d*x)^(m + 1)*((a + b*Log[c*x^n])^p/(d*(m + 1))), x] - Dist[b*n*
(p/(m + 1)), Int[(d*x)^m*(a + b*Log[c*x^n])^(p - 1), x], x] /; FreeQ[{a, b,
 c, d, m, n}, x] && NeQ[m, -1] && GtQ[p, 0]
```

Rule 2436

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

Rule 2437

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

Rule 2448

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

Rubi steps

$$\int (f+gx)\left(a+b\log\left(c(d+ex)^n\right)\right)^2\,dx = \int \left(\frac{(ef-dg)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{e}+\frac{g(d+ex)\left(a+b\log\left(c(\right.\right.}{e}\right.$$

$$= \frac{g\int (d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^2\,dx}{e}+\frac{(ef-dg)\int\left(a+b\log\right.}{e}$$

$$= \frac{g\text{Subst}\left(\int x(a+b\log\left(cx^n\right))^2\,dx,x,d+ex\right)}{e^2}+\frac{(ef-dg)\text{Subst}\left(\int\right.}{}$$

$$= \frac{(ef-dg)(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{e^2}+\frac{g(d+ex)^2\left(a+b\log\right.}{2e^2}$$

$$= -\frac{2ab(ef-dg)nx}{e}+\frac{b^2gn^2(d+ex)^2}{4e^2}-\frac{bgn(d+ex)^2\left(a+b\log\left(c\right.\right.}{2e^2}$$

$$= -\frac{2ab(ef-dg)nx}{e}+\frac{2b^2(ef-dg)n^2x}{e}+\frac{b^2gn^2(d+ex)^2}{4e^2}-\frac{2b^2(e}{}$$

Mathematica [A]

time = 0.06, size = 144, normalized size = 0.77

$$\frac{4(ef-dg)(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^2+2g(d+ex)^2\left(a+b\log\left(c(d+ex)^n\right)\right)^2-8b(ef-dg)n(e(a-bn)x+b(d+ex)\log\left(c(d+ex)^n\right))+bgn(benx(2d+ex)-2(d+ex)^2\left(a+b\log\left(c(d+ex)^n\right)\right))}{4e^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)*(a + b*Log[c*(d + e*x)^n])^2,x]
```

```
[Out] (4*(e*f - d*g)*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^2 + 2*g*(d + e*x)^2*(a
+ b*Log[c*(d + e*x)^n])^2 - 8*b*(e*f - d*g)*n*(e*(a - b*n)*x + b*(d + e*x)*
Log[c*(d + e*x)^n]) + b*g*n*(b*e*n*x*(2*d + e*x) - 2*(d + e*x)^2*(a + b*Log
[c*(d + e*x)^n])))/(4*e^2)
```

Maple [C] Result contains higher order function than in optimal. Order 9 vs. order 3.
time = 0.61, size = 2616, normalized size = 14.06

method	result	size
risch	Expression too large to display	2616

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(a+b*ln(c*(e*x+d)^n))^2,x,method=_RETURNVERBOSE)
```

```
[Out] I/e*Pi*ln(e*x+d)*b^2*d*f*n*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I/e*Pi*ln(e*x+d)
*b^2*d*f*n*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+1/2*I/e*Pi*b^2*d*g*n*x*c
sgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-1/2*I/e^2*Pi*ln(e*x+d)*b^2*d^2*g*n*c
sgn(I*c)*csgn(I*c*(e*x+d)^n)^2+1/2*a^2*g*x^2+x*a^2*f+2/e*ln(c)*ln(e*x+d)*b^
2*d*f*n+1/e*ln(c)*b^2*d*g*n*x-1/e^2*ln(e*x+d)*a*b*d^2*g*n+2/e*ln(e*x+d)*a*b
*d*f*n-1/2*I*ln(c)*Pi*b^2*g*x^2*csgn(I*c*(e*x+d)^n)^3+1/4*I*Pi*b^2*g*n*x^2*
csgn(I*c*(e*x+d)^n)^3-I*ln(c)*Pi*b^2*f*x*csgn(I*c*(e*x+d)^n)^3-1/2*I*Pi*a*b
*g*x^2*csgn(I*c*(e*x+d)^n)^3-I*Pi*a*b*f*x*csgn(I*c*(e*x+d)^n)^3-1/8*Pi^2*b^
2*g*x^2*csgn(I*c*(e*x+d)^n)^6-1/4*Pi^2*b^2*f*x*csgn(I*c*(e*x+d)^n)^6+ln(c)*
a*b*g*x^2+2*ln(c)*a*b*f*x-1/2*ln(c)*b^2*g*n*x^2-2*ln(c)*b^2*f*n*x+1/4*b^2*g
*n^2*x^2+ln(c)^2*b^2*f*x+1/2*ln(c)^2*b^2*g*x^2+I*ln(c)*Pi*b^2*f*x*csgn(I*c)
*csgn(I*c*(e*x+d)^n)^2+I*ln(c)*Pi*b^2*f*x*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d
)^n)^2+I*Pi*a*b*f*x*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I*Pi*a*b*f*x*csgn(I*(e*
x+d)^n)*csgn(I*c*(e*x+d)^n)^2+1/2*I*ln(c)*Pi*b^2*g*x^2*csgn(I*c)*csgn(I*c*(
e*x+d)^n)^2-1/4*I*Pi*b^2*g*n*x^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+1/2*I*ln(c
)*Pi*b^2*g*x^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-1/4*I*Pi*b^2*g*n*x^2
*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+1/2*I*Pi*a*b*g*x^2*csgn(I*c)*csgn(
I*c*(e*x+d)^n)^2-I*Pi*b^2*f*n*x*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+1/2*I*Pi*a*
b*g*x^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-I*Pi*b^2*f*n*x*csgn(I*(e*x+
d)^n)*csgn(I*c*(e*x+d)^n)^2+1/2*b^2*x*(g*x+2*f)*ln((e*x+d)^n)^2+I*Pi*b^2*f*
n*x*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-I*Pi*a*b*f*x*csgn(I*c)*
csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+1/2*I/e^2*Pi*ln(e*x+d)*b^2*d^2*g*n*cs
gn(I*c*(e*x+d)^n)^3-I/e*Pi*ln(e*x+d)*b^2*d*f*n*csgn(I*c*(e*x+d)^n)^3-1/2*I/
e*Pi*b^2*d*g*n*x*csgn(I*c*(e*x+d)^n)^3-1/2*I*ln(c)*Pi*b^2*g*x^2*csgn(I*c)*c
```

```
sgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+1/4*I*Pi*b^2*g*n*x^2*csgn(I*c)*csgn(I*
(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-I*ln(c)*Pi*b^2*f*x*csgn(I*c)*csgn(I*(e*x+d)^
n)*csgn(I*c*(e*x+d)^n)-1/2*I*Pi*a*b*g*x^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(
I*c*(e*x+d)^n)-2*n^2*b^2*d*f/e*ln(e*x+d)-1/2*b*(-I*Pi*b*e^2*g*x^2*csgn(I*c)
*csgn(I*c*(e*x+d)^n)^2+I*Pi*b*e^2*g*x^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*
c*(e*x+d)^n)+I*Pi*b*e^2*g*x^2*csgn(I*c*(e*x+d)^n)^3+2*I*Pi*b*e^2*f*x*csgn(I
*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-2*I*Pi*b*e^2*f*x*csgn(I*c)*csgn(I
*c*(e*x+d)^n)^2+2*I*Pi*b*e^2*f*x*csgn(I*c*(e*x+d)^n)^3-2*I*Pi*b*e^2*f*x*csg
n(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-I*Pi*b*e^2*g*x^2*csgn(I*(e*x+d)^n)*csg
n(I*c*(e*x+d)^n)^2-2*ln(c)*b*e^2*g*x^2+b*e^2*g*n*x^2+2*ln(e*x+d)*b*d^2*g*n-
4*ln(e*x+d)*b*d*e*f*n-4*ln(c)*b*e^2*f*x-2*a*e^2*g*x^2-2*b*d*e*g*n*x+4*b*e^2
*f*n*x-4*a*e^2*f*x)/e^2*ln((e*x+d)^n)+1/2*I/e*Pi*b^2*d*g*n*x*csgn(I*c)*csgn
(I*c*(e*x+d)^n)^2-1/2*I/e^2*Pi*ln(e*x+d)*b^2*d^2*g*n*csgn(I*(e*x+d)^n)*csgn
(I*c*(e*x+d)^n)^2+1/2*I/e^2*Pi*ln(e*x+d)*b^2*d^2*g*n*csgn(I*c)*csgn(I*(e*x+
d)^n)*csgn(I*c*(e*x+d)^n)-I/e*Pi*ln(e*x+d)*b^2*d*f*n*csgn(I*c)*csgn(I*(e*x+
d)^n)*csgn(I*c*(e*x+d)^n)-1/2*I/e*Pi*b^2*d*g*n*x*csgn(I*c)*csgn(I*(e*x+d)^n
)*csgn(I*c*(e*x+d)^n)-1/2*a*b*g*n*x^2-3/2/e*b^2*d*g*n^2*x-1/8*Pi^2*b^2*g*x^
2*csgn(I*c)^2*csgn(I*c*(e*x+d)^n)^4+1/4*Pi^2*b^2*g*x^2*csgn(I*c)*csgn(I*c*(
e*x+d)^n)^5+1/4*Pi^2*b^2*g*x^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^5-1/8*
Pi^2*b^2*g*x^2*csgn(I*(e*x+d)^n)^2*csgn(I*c*(e*x+d)^n)^4-1/4*Pi^2*b^2*f*x*c
sgn(I*c)^2*csgn(I*c*(e*x+d)^n)^4+1/2*Pi^2*b^2*f*x*csgn(I*c)*csgn(I*c*(e*x+d
)^n)^5+1/2*Pi^2*b^2*f*x*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^5-1/4*Pi^2*b^
2*f*x*csgn(I*(e*x+d)^n)^2*csgn(I*c*(e*x+d)^n)^4+1/2/e^2*b^2*d^2*g*n^2*ln(e*
x+d)^2-1/e*b^2*d*f*n^2*ln(e*x+d)^2+3/2/e^2*ln(e*x+d)*b^2*d^2*g*n^2+1/e*a*b*
d*g*n*x+1/4*Pi^2*b^2*g*x^2*csgn(I*c)^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n
)^3-1/8*Pi^2*b^2*g*x^2*csgn(I*c)^2*csgn(I*(e*x+d)^n)^2*csgn(I*c*(e*x+d)^n)^
2-1/2*Pi^2*b^2*g*x^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^4+1/4*
Pi^2*b^2*g*x^2*csgn(I*c)*csgn(I*(e*x+d)^n)^2*csgn(I*c*(e*x+d)^n)^3+1/2*Pi^2
*b^2*f*x*csgn(I*c)^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^3-1/4*Pi^2*b^2*f
*x*csgn(I*c)^2*csgn(I*(e*x+d)^n)^2*csgn(I*c*(e*x+d)^n)^2-Pi^2*b^2*f*x*csgn(
I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^4+1/2*Pi^2*b^2*f*x*csgn(I*c)*csg
n(I*(e*x+d)^n)^2*csgn(I*c*(e*x+d)^n)^3+I*Pi*b^2*f*n*x*csgn(I*c*(e*x+d)^n)^3
-1/e^2*ln(c)*ln(e*x+d)*b^2*d^2*g*n+2*b^2*f*n^2*x-2*a*b*f*n*x
```

Maxima [A]
time = 0.30, size = 324, normalized size = 1.74

$$\frac{1}{2}b^2gx^2\log\left((xe+d)^nc\right)^2+2\left(de^{(-2)}\log(xe+d)-xe^{(-1)}\right)abfne-\frac{1}{2}\left(2d^2e^{(-3)}\log(xe+d)+\left(x^2e-2dx\right)e^{(-2)}\right)abgne+abgx^2\log\left((xe+d)^nc\right)+b^2fx\log\left((xe+d)^nc\right)^2+\frac{1}{2}a^2gx^2+2abfx\log\left((xe+d)^nc\right)-\left(\left(d\log(xe+d)^2-2xe+2d\log(xe+d)\right)n^2e^{(-1)}-2\left(de^{(-2)}\log(xe+d)-xe^{(-1)}\right)ne\log\left((xe+d)^nc\right)\right)b^2f+\frac{1}{4}\left(\left(2d^2\log(xe+d)^2+x^2e^2-6dxe+6d^2\log(xe+d)\right)n^2e^{(-2)}-2\left(2d^2e^{(-3)}\log(xe+d)+\left(x^2e-2dx\right)e^{(-2)}\right)ne\log\left((xe+d)^nc\right)\right)b^2g+a^2fx$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

```
g*x^2 + 2*a*b*f*x*log((x*e + d)^n*c) - ((d*log(x*e + d)^2 - 2*x*e + 2*d*log
(x*e + d))*n^2*e^(-1) - 2*(d*e^(-2)*log(x*e + d) - x*e^(-1))*n*e*log((x*e +
 d)^n*c))*b^2*f + 1/4*((2*d^2*log(x*e + d)^2 + x^2*e^2 - 6*d*x*e + 6*d^2*lo
g(x*e + d))*n^2*e^(-2) - 2*(2*d^2*e^(-3)*log(x*e + d) + (x^2*e - 2*d*x)*e^(
-2))*n*e*log((x*e + d)^n*c))*b^2*g + a^2*f*x
```

Fricas [A]
time = 0.48, size = 369, normalized size = 1.98

$$\frac{1}{4}\left(2\left(b^2gx^2+2b^2fx\right)e^2\log(c)^2-2\left(3b^2dgn^2-2abdgn\right)xe-2\left(b^2d^2gn^2-2b^2dfn^2e-\left(b^2gn^2x^2+2b^2fn^2x\right)e^2\right)\log(xe+d)^2+\left(\left(b^2gn^2-2abgn+2a^2g\right)x^2+4\left(2b^2fn^2-2abfn+a^2f\right)x\right)e^2+2\left(3b^2d^2gn^2-2abd^2gn-\left(\left(b^2gn^2-2abgn\right)x^2+4\left(b^2fn^2-abfn\right)x\right)e^2+2\left(b^2dgn^2x-2b^2dfn^2+2abdfn\right)e-2\left(b^2d^2gn-2b^2dfne-\left(b^2gnx^2+2b^2fnx\right)e^2\right)\log(c)\right)\log(xe+d)+2\left(2b^2dgnxe-\left(\left(b^2gn-2abg\right)x^2+4\left(b^2fn-abf\right)x\right)e^2\right)\log(c)\right)e^{(-2)}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

Sympy [B] Leaf count of result is larger than twice the leaf count of optimal. 394 vs. $2(177) = 354$.
time = 0.71, size = 394, normalized size = 2.12

$$\begin{cases} a^2fx+\frac{a^2gx^2}{2}-\frac{abd^2g\log(c(d+ex)^n)}{e^2}+\frac{2abdf\log(c(d+ex)^n)}{e}+\frac{abdgnx}{e}-2abfnx+2abfx\log(c(d+ex)^n)-\frac{abgnx^2}{2}+abgx^2\log(c(d+ex)^n)+\frac{3b^2d^2gn\log(c(d+ex)^n)}{2e^2}-\frac{b^2d^2g\log(c(d+ex)^n)^2}{2e^2}-\frac{2b^2dfn\log(c(d+ex)^n)}{e}+\frac{b^2df\log(c(d+ex)^n)^2}{e}-\frac{3b^2dgn^2x}{2e}+\frac{b^2dgnx\log(c(d+ex)^n)}{e}+2b^2fn^2x-2b^2fnx\log(c(d+ex)^n)+b^2fx\log(c(d+ex)^n)^2+\frac{b^2gn^2x^2}{4}-\frac{b^2gnx^2\log(c(d+ex)^n)}{2}+\frac{b^2gx^2\log(c(d+ex)^n)^2}{2} & \text{for}\ e\neq 0 \\ (a+b\log(cd^n))^2\left(fx+\frac{gx^2}{2}\right) & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*ln(c*(e*x+d)**n))**2,x)
```

```
[Out] Piecewise((a**2*f*x + a**2*g*x**2/2 - a*b*d**2*g*log(c*(d + e*x)**n)/e**2 +
 2*a*b*d*f*log(c*(d + e*x)**n)/e + a*b*d*g*n*x/e - 2*a*b*f*n*x + 2*a*b*f*x*
log(c*(d + e*x)**n) - a*b*g*n*x**2/2 + a*b*g*x**2*log(c*(d + e*x)**n) + 3*b
**2*d**2*g*n*log(c*(d + e*x)**n)/(2*e**2) - b**2*d**2*g*log(c*(d + e*x)**n)
**2/(2*e**2) - 2*b**2*d*f*n*log(c*(d + e*x)**n)/e + b**2*d*f*log(c*(d + e*x
)**n)**2/e - 3*b**2*d*g*n**2*x/(2*e) + b**2*d*g*n*x*log(c*(d + e*x)**n)/e +
 2*b**2*f*n**2*x - 2*b**2*f*n*x*log(c*(d + e*x)**n) + b**2*f*x*log(c*(d + e
*x)**n)**2 + b**2*g*n**2*x**2/4 - b**2*g*n*x**2*log(c*(d + e*x)**n)/2 + b**
2*g*x**2*log(c*(d + e*x)**n)**2/2, Ne(e, 0)), ((a + b*log(c*d**n))**2*(f*x
+ g*x**2/2), True))
```

Giac [B] Leaf count of result is larger than twice the leaf count of optimal. 595 vs. $2(187) = 374$.
time = 4.09, size = 595, normalized size = 3.20

$$\frac{1}{2}(xe+d)^2b^2gn^2e^{(-2)}\log(xe+d)^2-(xe+d)b^2dgn^2e^{(-2)}\log(xe+d)^2-\frac{1}{2}(xe+d)^2b^2gn^2e^{(-2)}\log(xe+d)+2(xe+d)b^2dgn^2e^{(-2)}\log(xe+d)+(xe+d)b^2fn^2e^{(-1)}\log(xe+d)^2+(xe+d)^2b^2gne^{(-2)}\log(xe+d)\log(c)-2(xe+d)b^2dgne^{(-2)}\log(xe+d)\log(c)+\frac{1}{4}(xe+d)^2b^2gn^2e^{(-2)}-2(xe+d)b^2dgn^2e^{(-2)}-2(xe+d)b^2fn^2e^{(-1)}\log(xe+d)+(xe+d)^2abgne^{(-2)}\log(xe+d)-2(xe+d)abdgne^{(-2)}\log(xe+d)-\frac{1}{2}(xe+d)^2b^2gne^{(-2)}\log(c)+2(xe+d)b^2dgne^{(-2)}\log(c)+2(xe+d)b^2fne^{(-1)}\log(xe+d)\log(c)+\frac{1}{2}(xe+d)^2b^2ge^{(-2)}\log(c)^2-(xe+d)b^2dge^{(-2)}\log(c)^2+2(xe+d)b^2fn^2e^{(-1)}-\frac{1}{2}(xe+d)^2abgne^{(-2)}+2(xe+d)abdgne^{(-2)}+2(xe+d)abfne^{(-1)}\log(xe+d)-2(xe+d)b^2fne^{(-1)}\log(c)+(xe+d)^2abge^{(-2)}\log(c)-2(xe+d)abdge^{(-2)}\log(c)+(xe+d)b^2fe^{(-1)}\log(c)^2-2(xe+d)abfne^{(-1)}+\frac{1}{2}(xe+d)^2a^2ge^{(-2)}-(xe+d)a^2dge^{(-2)}+2(xe+d)abfe^{(-1)}\log(c)+(xe+d)a^2fe^{(-1)}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/2*(x*e + d)^2*b^2*g*n^2*e^(-2)*log(x*e + d)^2 - (x*e + d)*b^2*d*g*n^2*e^(
-2)*log(x*e + d)^2 - 1/2*(x*e + d)^2*b^2*g*n^2*e^(-2)*log(x*e + d) + 2*(x*e
 + d)*b^2*d*g*n^2*e^(-2)*log(x*e + d) + (x*e + d)*b^2*f*n^2*e^(-1)*log(x*e
+ d)^2 + (x*e + d)^2*b^2*g*n*e^(-2)*log(x*e + d)*log(c) - 2*(x*e + d)*b^2*d
*g*n*e^(-2)*log(x*e + d)*log(c) + 1/4*(x*e + d)^2*b^2*g*n^2*e^(-2) - 2*(x*e
 + d)*b^2*d*g*n^2*e^(-2) - 2*(x*e + d)*b^2*f*n^2*e^(-1)*log(x*e + d) + (x*e
 + d)^2*a*b*g*n*e^(-2)*log(x*e + d) - 2*(x*e + d)*a*b*d*g*n*e^(-2)*log(x*e
+ d) - 1/2*(x*e + d)^2*b^2*g*n*e^(-2)*log(c) + 2*(x*e + d)*b^2*d*g*n*e^(-2)
*log(c) + 2*(x*e + d)*b^2*f*n*e^(-1)*log(x*e + d)*log(c) + 1/2*(x*e + d)^2*
b^2*g*e^(-2)*log(c)^2 - (x*e + d)*b^2*d*g*e^(-2)*log(c)^2 + 2*(x*e + d)*b^2
*f*n^2*e^(-1) - 1/2*(x*e + d)^2*a*b*g*n*e^(-2) + 2*(x*e + d)*a*b*d*g*n*e^(-
2) + 2*(x*e + d)*a*b*f*n*e^(-1)*log(x*e + d) - 2*(x*e + d)*b^2*f*n*e^(-1)*l
og(c) + (x*e + d)^2*a*b*g*e^(-2)*log(c) - 2*(x*e + d)*a*b*d*g*e^(-2)*log(c)
 + (x*e + d)*b^2*f*e^(-1)*log(c)^2 - 2*(x*e + d)*a*b*f*n*e^(-1) + 1/2*(x*e
+ d)^2*a^2*g*e^(-2) - (x*e + d)*a^2*d*g*e^(-2) + 2*(x*e + d)*a*b*f*e^(-1)*l
og(c) + (x*e + d)*a^2*f*e^(-1)
```

Mupad [B]
time = 0.35, size = 268, normalized size = 1.44

$$\ln\left(c\,{\left(d+e\,x\right)}^n\right)^2\,\left(\frac{b^2\,g\,x^2}{2}-\frac{d\,\left(b^2\,d\,g-2\,b^2\,e\,f\right)}{2\,e^2}+b^2\,f\,x\right)+x\,\left(\frac{2\,a^2\,d\,g+2\,a^2\,e\,f-2\,b^2\,d\,g\,n^2+4\,b^2\,e\,f\,n^2-4\,a\,b\,e\,f\,n}{2\,e}-\frac{d\,g\,\left(2\,a^2-2\,a\,b\,n+b^2\,n^2\right)}{2\,e}\right)+\ln\left(c\,{\left(d+e\,x\right)}^n\right)\,\left(\frac{b\,g\,\left(2\,a-b\,n\right)\,x^2}{2}+\left(\frac{2\,b\,\left(a\,d\,g+a\,e\,f-b\,e\,f\,n\right)}{e}-\frac{b\,d\,g\,\left(2\,a-b\,n\right)}{e}\right)\,x\right)+\frac{g\,x^2\,\left(2\,a^2-2\,a\,b\,n+b^2\,n^2\right)}{4}+\frac{\ln\left(d+e\,x\right)\,\left(3\,g\,b^2\,d^2\,n^2-4\,e\,f\,b^2\,d\,n^2-2\,a\,g\,b\,d^2\,n+4\,a\,e\,f\,b\,d\,n\right)}{2\,e^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)*(a + b*log(c*(d + e*x)^n))^2,x)
```

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

3.47 $\int (a+b\log(c(d+ex)^n))^2\,dx$

Optimal. Leaf size=65

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

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

Rubi [A]
time = 0.03, antiderivative size = 65, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}} = 0.188$, Rules used = {2436, 2333, 2332}

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

Antiderivative was successfully verified.

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

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

Rule 2332

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

Rule 2333

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

Rule 2436

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

Rubi steps

$$\int (a+b\log(c(d+ex)^n))^2\,dx = \frac{\text{Subst}\left(\int (a+b\log(cx^n))^2\,dx, x, d+ex\right)}{e}$$
$$= \frac{(d+ex)(a+b\log(c(d+ex)^n))^2}{e} - \frac{(2bn)\text{Subst}\left(\int (a+b\log(cx^n))\,dx, x,\right.}{e}$$
$$= -2abnx + \frac{(d+ex)(a+b\log(c(d+ex)^n))^2}{e} - \frac{(2b^2n)\,\text{Subst}\left(\int \log(cx^n)\,d\right.}{e}$$
$$= -2abnx + 2b^2n^2x - \frac{2b^2n(d+ex)\log(c(d+ex)^n)}{e} + \frac{(d+ex)(a+b\log(c}{e}$$

Mathematica [A]
time = 0.01, size = 59, normalized size = 0.91

$$\frac{(d+ex)(a+b\log(c(d+ex)^n))^2}{e} - 2bn\left(ax - bnx + \frac{b(d+ex)\log(c(d+ex)^n)}{e}\right)$$

Antiderivative was successfully verified.

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

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

Maple [A]
time = 0.08, size = 130, normalized size = 2.00

method	result
norman	$(2b^2n^2-2ban+a^2)x+b^2x\ln\left(c\,e^{n\ln(ex+d)}\right)^2+(-2b^2n+2ba)x\ln\left(c\,e^{n\ln(ex+d)}\right)+\frac{b^2d\ln\left(c\,e^{n\ln(ex+d}\right.}{e}$
default	$a^2x+b^2x\ln\left(c\,e^{n\ln(ex+d)}\right)^2+\frac{b^2d\ln\left(c\,e^{n\ln(ex+d)}\right)^2}{e}+2b^2n^2x-2b^2nx\ln\left(c\,e^{n\ln(ex+d)}\right)-\frac{2n^2b^2d\ln(ex+d)}{e}$
risch	Expression too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))^2,x,method=_RETURNVERBOSE)
```

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

Maxima [B] Leaf count of result is larger than twice the leaf count of optimal. 136 vs. 2(67) = 134.
time = 0.28, size = 136, normalized size = 2.09

$$2\left(de^{(-2)}\log(xe+d) - xe^{(-1)}\right)abne + b^2x\log\left((xe+d)^nc\right)^2 + 2abx\log\left((xe+d)^nc\right) - \left(\left(d\log(xe+d)^2 - 2xe + 2d\log(xe+d)\right)n^2e^{(-1)} - 2\left(de^{(-2)}\log(xe+d) - xe^{(-1)}\right)ne\log\left((xe+d)^nc\right)\right)b^2 + a^2x$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

Fricas [B] Leaf count of result is larger than twice the leaf count of optimal. 142 vs. $2(67) = 134$.
time = 0.35, size = 142, normalized size = 2.18

$$\left(b^{2} x e \log\left(c\right)^{2} - 2 \left(b^{2} n - a b\right) x e \log\left(c\right) + \left(2 \, b^{2} n^{2} - 2 \, a b n + a^{2}\right) x e + \left(b^{2} n^{2} x e + b^{2} d n^{2}\right) \log\left(x e + d\right)^{2} - 2 \left(b^{2} d n^{2} - a b d n + \left(b^{2} n^{2} - a b n\right) x e - \left(b^{2} n x e + b^{2} d n\right) \log\left(c\right)\right) \log\left(x e + d\right)\right) e^{\left(-1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

Sympy [B] Leaf count of result is larger than twice the leaf count of optimal. 146 vs. $2(63) = 126$.
time = 0.37, size = 146, normalized size = 2.25

$$\begin{cases} a^{2} x + \frac{2 a b d \log{\left(c \left(d + e x\right)^{n} \right)}}{e} - 2 a b n x + 2 a b x \log{\left(c \left(d + e x\right)^{n} \right)} - \frac{2 b^{2} d n \log{\left(c \left(d + e x\right)^{n} \right)}}{e} + \frac{b^{2} d \log{\left(c \left(d + e x\right)^{n} \right)}^{2}}{e} + 2 b^{2} n^{2} x - 2 b^{2} n x \log{\left(c \left(d + e x\right)^{n} \right)} + b^{2} x \log{\left(c \left(d + e x\right)^{n} \right)}^{2} & \text{for}\: e \neq 0 \\ x \left(a + b \log{\left(c d^{n} \right)}\right)^{2} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Piecewise((a**2*x + 2*a*b*d*log(c*(d + e*x)**n)/e - 2*a*b*n*x + 2*a*b*x*log
(c*(d + e*x)**n) - 2*b**2*d*n*log(c*(d + e*x)**n)/e + b**2*d*log(c*(d + e*x
)**n)**2/e + 2*b**2*n**2*x - 2*b**2*n*x*log(c*(d + e*x)**n) + b**2*x*log(c*
(d + e*x)**n)**2, Ne(e, 0)), (x*(a + b*log(c*d**n))**2, True))
```

Giac [B] Leaf count of result is larger than twice the leaf count of optimal. 178 vs. $2(67) = 134$.
time = 5.25, size = 178, normalized size = 2.74

$$(x e + d) b^{2} n^{2} e^{\left(-1\right)} \log\left(x e + d\right)^{2} - 2 \,(x e + d) b^{2} n^{2} e^{\left(-1\right)} \log\left(x e + d\right) + 2 \,(x e + d) b^{2} n e^{\left(-1\right)} \log\left(x e + d\right) \log\left(c\right) + 2 \,(x e + d) b^{2} n^{2} e^{\left(-1\right)} + 2 \,(x e + d) a b n e^{\left(-1\right)} \log\left(x e + d\right) - 2 \,(x e + d) b^{2} n e^{\left(-1\right)} \log\left(c\right) + (x e + d) b^{2} e^{\left(-1\right)} \log\left(c\right)^{2} - 2 \,(x e + d) a b n e^{\left(-1\right)} + 2 \,(x e + d) a b e^{\left(-1\right)} \log\left(c\right) + (x e + d) a^{2} e^{\left(-1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

```
*e^(-1) + 2*(x*e + d)*a*b*n*e^(-1)*log(x*e + d) - 2*(x*e + d)*b^2*n*e^(-1)*
log(c) + (x*e + d)*b^2*e^(-1)*log(c)^2 - 2*(x*e + d)*a*b*n*e^(-1) + 2*(x*e
+ d)*a*b*e^(-1)*log(c) + (x*e + d)*a^2*e^(-1)
```

Mupad [B]
time = 0.00, size = 94, normalized size = 1.45

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

Verification of antiderivative is not currently implemented for this CAS.

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

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

3.48 $\int \frac{(a+b\log(c(d+ex)^n))^2}{f+gx}\,dx$

Optimal. Leaf size=111

$$\frac{(a+b\log(c(d+ex)^n))^2\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g}+\frac{2bn(a+b\log(c(d+ex)^n))\operatorname{Li}_2\left(-\frac{g(d+ex)}{ef-dg}\right)}{g}-\frac{2b^2n^2\operatorname{Li}_3\left(-\frac{g(d+ex)}{ef-dg}\right)}{g}$$

```
[Out] (a+b*ln(c*(e*x+d)^n))^2*ln(e*(g*x+f)/(-d*g+e*f))/g+2*b*n*(a+b*ln(c*(e*x+d)^
n))*polylog(2,-g*(e*x+d)/(-d*g+e*f))/g-2*b^2*n^2*polylog(3,-g*(e*x+d)/(-d*g
+e*f))/g
```

Rubi [A]
time = 0.08, antiderivative size = 111, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.167$, Rules used = {2443, 2481, 2421, 6724}

$$\frac{2bn\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)(a+b\log(c(d+ex)^n))}{g}-\frac{2b^2n^2\text{PolyLog}\left(3,-\frac{g(d+ex)}{ef-dg}\right)}{g}+\frac{\log\left(\frac{e(f+gx)}{ef-dg}\right)(a+b\log(c(d+ex)^n))^2}{g}$$

Antiderivative was successfully verified.

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

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

Rule 2421

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> Simp[(-PolyLog[2, (-d)*f*x^m])*((a + b*Log[c
*x^n])^p/m), x] + Dist[b*n*(p/m), Int[PolyLog[2, (-d)*f*x^m]*((a + b*Log[c*
x^n])^(p - 1)/x), x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0
] && EqQ[d*e, 1]
```

Rule 2443

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

Rule 2481

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
```

```
bol] :> Dist[1/e, Subst[Int[(k*(x/d))^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + j*(x/e))^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 6724

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(a+b\log(c(d+ex)^n))^2}{f+gx}\,dx = \frac{(a+b\log(c(d+ex)^n))^2\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g} - \frac{(2ben)\int \frac{(a+b\log(c(d+ex)^n))\log\left(\frac{e(f+g\cdots}{ef-d\cdots}\right.}{d+ex}}{g}$$

$$= \frac{(a+b\log(c(d+ex)^n))^2\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g} - \frac{(2bn)\text{Subst}\left(\int \frac{(a+b\log(cx^n))\log\left(\frac{e(\cdots}{\cdots}\right.}{x}\right.}{g}$$

$$= \frac{(a+b\log(c(d+ex)^n))^2\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g} + \frac{2bn(a+b\log(c(d+ex)^n))\,\text{Li}_2\left(-\cdots\right.}{g}$$

$$= \frac{(a+b\log(c(d+ex)^n))^2\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g} + \frac{2bn(a+b\log(c(d+ex)^n))\,\text{Li}_2\left(-\cdots\right.}{g}$$

Mathematica [A]
time = 0.07, size = 194, normalized size = 1.75

$$\frac{(a-bn\log(d+ex)+b\log(c(d+ex)^n))^2\log(f+gx)+2bn(a-bn\log(d+ex)+b\log(c(d+ex)^n))\left(\log(d+ex)\log\left(\frac{e(f+gx)}{ef-dg}\right)+\text{Li}_2\left(\frac{g(d+ex)}{-ef+dg}\right)\right)+b^2n^2\left(\log^2(d+ex)\log\left(\frac{e(f+gx)}{ef-dg}\right)+2\log(d+ex)\text{Li}_2\left(\frac{g(d+ex)}{-ef+dg}\right)-2\text{Li}_3\left(\frac{g(d+ex)}{-ef+dg}\right)\right)}{g}$$

Antiderivative was successfully verified.

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

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

Maple [C] Result contains higher order function than in optimal. Order 9 vs. order 4.
time = 0.75, size = 2018, normalized size = 18.18

method	result	size
risch	Expression too large to display	2018

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))^2/(g*x+f),x,method=_RETURNVERBOSE)
```

```
[Out] a^2*ln(g*x+f)/g-2*b/g*n*ln(g*x+f)*ln(((g*x+f)*e+d*g-e*f)/(d*g-e*f))*a+b^2*l
n(g*(e*x+d)-d*g+e*f)/g*ln((e*x+d)^n)^2-1/4*ln(g*x+f)/g*Pi^2*b^2*csgn(I*(e*x
+d)^n)^2*csgn(I*c*(e*x+d)^n)^4+I/g*n*ln(g*x+f)*ln(((g*x+f)*e+d*g-e*f)/(d*g-
e*f))*b^2*Pi*csgn(I*c*(e*x+d)^n)^3+I*ln(g*x+f)/g*ln((e*x+d)^n)*b^2*Pi*csgn(
I*c)*csgn(I*c*(e*x+d)^n)^2+I*ln(g*x+f)/g*ln((e*x+d)^n)*b^2*Pi*csgn(I*(e*x+d
)^n)*csgn(I*c*(e*x+d)^n)^2-I/g*n*dilog(((g*x+f)*e+d*g-e*f)/(d*g-e*f))*b^2*P
i*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-I/g*n*dilog(((g*x+f)*e+d*g-e*f)/(d*g-e*f)
)*b^2*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+I*ln(g*x+f)/g*ln(c)*Pi*b^2
*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I*ln(g*x+f)/g*ln(c)*Pi*b^2*csgn(I*(e*x+d)^
n)*csgn(I*c*(e*x+d)^n)^2+I*ln(g*x+f)/g*Pi*a*b*csgn(I*c)*csgn(I*c*(e*x+d)^n)
^2+I*ln(g*x+f)/g*Pi*a*b*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-1/4*ln(g*x+
f)/g*Pi^2*b^2*csgn(I*c*(e*x+d)^n)^6-I/g*n*ln(g*x+f)*ln(((g*x+f)*e+d*g-e*f)/
(d*g-e*f))*b^2*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+b^2*n^2/g*ln(e*x+
d)^2*ln(1-g/(d*g-e*f)*(e*x+d))+2*b^2*n^2/g*ln(e*x+d)*polylog(2,g/(d*g-e*f)*
(e*x+d))-2*b^2*n^2*dilog((g*(e*x+d)-d*g+e*f)/(-d*g+e*f))/g*ln(e*x+d)-2*b^2*
n^2*ln(e*x+d)^2*ln((g*(e*x+d)-d*g+e*f)/(-d*g+e*f))/g+1/2*ln(g*x+f)/g*Pi^2*b
^2*csgn(I*c)^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^3-I*ln(g*x+f)/g*ln((e*
x+d)^n)*b^2*Pi*csgn(I*c*(e*x+d)^n)^3-I*ln(g*x+f)/g*Pi*a*b*csgn(I*c)*csgn(I*
(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-I*ln(g*x+f)/g*ln(c)*Pi*b^2*csgn(I*c)*csgn(I*
(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-I*ln(g*x+f)/g*ln((e*x+d)^n)*b^2*Pi*csgn(I*c)
*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+I/g*n*dilog(((g*x+f)*e+d*g-e*f)/(d*g
-e*f))*b^2*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-I/g*n*ln(g*x+
f)*ln(((g*x+f)*e+d*g-e*f)/(d*g-e*f))*b^2*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2
+I/g*n*ln(g*x+f)*ln(((g*x+f)*e+d*g-e*f)/(d*g-e*f))*b^2*Pi*csgn(I*c)*csgn(I*
(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+2*b^2*n*dilog((g*(e*x+d)-d*g+e*f)/(-d*g+e*f)
)/g*ln((e*x+d)^n)+I/g*n*dilog(((g*x+f)*e+d*g-e*f)/(d*g-e*f))*b^2*Pi*csgn(I*
c*(e*x+d)^n)^3-1/4*ln(g*x+f)/g*Pi^2*b^2*csgn(I*c)^2*csgn(I*c*(e*x+d)^n)^4-2
/g*n*ln(g*x+f)*ln(((g*x+f)*e+d*g-e*f)/(d*g-e*f))*b^2*ln(c)-1/4*ln(g*x+f)/g*
Pi^2*b^2*csgn(I*c)^2*csgn(I*(e*x+d)^n)^2*csgn(I*c*(e*x+d)^n)^2-I*ln(g*x+f)/
g*ln(c)*Pi*b^2*csgn(I*c*(e*x+d)^n)^3-I*ln(g*x+f)/g*Pi*a*b*csgn(I*c*(e*x+d)^
n)^3-ln(g*x+f)/g*Pi^2*b^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^4
+b^2*ln(g*(e*x+d)-d*g+e*f)/g*ln(e*x+d)^2*n^2-2*b^2*ln(g*(e*x+d)-d*g+e*f)/g*
ln(e*x+d)*ln((e*x+d)^n)*n+2*b^2*n*ln(e*x+d)*ln((g*(e*x+d)-d*g+e*f)/(-d*g+e*
f))/g*ln((e*x+d)^n)+1/2*ln(g*x+f)/g*Pi^2*b^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^
5+2*ln(g*x+f)/g*ln(c)*a*b-2/g*n*dilog(((g*x+f)*e+d*g-e*f)/(d*g-e*f))*b^2*ln
(c)-2*b/g*n*dilog(((g*x+f)*e+d*g-e*f)/(d*g-e*f))*a+2*ln(g*x+f)/g*ln((e*x+d)
^n)*b^2*ln(c)+2*b*ln(g*x+f)/g*ln((e*x+d)^n)*a+1/2*ln(g*x+f)/g*Pi^2*b^2*csgn
```

```
(I*c)*csgn(I*(e*x+d)^n)^2*csgn(I*c*(e*x+d)^n)^3+ln(g*x+f)/g*ln(c)^2*b^2-2*b
^2*n^2/g*polylog(3,g/(d*g-e*f)*(e*x+d))+1/2*ln(g*x+f)/g*Pi^2*b^2*csgn(I*(e*
x+d)^n)*csgn(I*c*(e*x+d)^n)^5
```

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

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

$$\int \frac{\left(a + b \log \left(c(d + ex)^{n}\right)\right)^{2}}{f + gx}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

$$\int \frac{(a+b\ln (c(d+ex)^n))^2}{f+gx}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

3.49 $\int \frac{(a+b\log(c(d+ex)^n))^2}{(f+gx)^2}\,dx$

Optimal. Leaf size=132

$$\frac{(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{(ef-dg)(f+gx)}-\frac{2ben(a+b\log\left(c(d+ex)^n\right))\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g(ef-dg)}-\frac{2b^2en^2\text{Li}_2\left(-\frac{g(d+ex)}{ef-dg}\right)}{g(ef-dg)}$$

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

Rubi [A]
time = 0.06, antiderivative size = 132, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.167$, Rules used = {2444, 2441, 2440, 2438}

$$-\frac{2b^2en^2\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)}{g(ef-dg)}-\frac{2ben\log\left(\frac{e(f+gx)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{g(ef-dg)}+\frac{(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{(f+gx)(ef-dg)}$$

Antiderivative was successfully verified.

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

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

Rule 2438

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

Rule 2440

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

Rule 2441

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

Rule 2444

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

Rubi steps

$$\int \frac{(a+b\log(c(d+ex)^n))^2}{(f+gx)^2}\,dx = \frac{(d+ex)\,(a+b\log(c(d+ex)^n))^2}{(ef-dg)(f+gx)} - \frac{(2ben)\int \frac{a+b\log(c(d+ex)^n)}{f+gx}\,dx}{ef-dg}$$

$$= \frac{(d+ex)\,(a+b\log(c(d+ex)^n))^2}{(ef-dg)(f+gx)} - \frac{2ben(a+b\log(c(d+ex)^n))\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g(ef-dg)}$$

$$= \frac{(d+ex)\,(a+b\log(c(d+ex)^n))^2}{(ef-dg)(f+gx)} - \frac{2ben(a+b\log(c(d+ex)^n))\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g(ef-dg)}$$

$$= \frac{(d+ex)\,(a+b\log(c(d+ex)^n))^2}{(ef-dg)(f+gx)} - \frac{2ben(a+b\log(c(d+ex)^n))\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g(ef-dg)}$$

Mathematica [A]
time = 0.06, size = 126, normalized size = 0.95

$$\frac{-\left((a+b\log(c(d+ex)^n))\left(ag(d+ex)+bg(d+ex)\log(c(d+ex)^n)-2ben(f+gx)\log\left(\frac{e(f+gx)}{ef-dg}\right)\right)\right)+2b^2en^2(f+gx)\text{Li}_2\left(\frac{g(d+ex)}{-ef+dg}\right)}{g(-ef+dg)(f+gx)}$$

Antiderivative was successfully verified.

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

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

Maple [C] Result contains higher order function than in optimal. Order 9 vs. order 4.
time = 0.40, size = 1092, normalized size = 8.27

method	result	size
risch	Expression too large to display	1092

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))^2/(g*x+f)^2,x,method=_RETURNVERBOSE)
```

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

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

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

$$\int \frac{(a + b\log (c(d + ex)^n))^2}{(f + gx)^2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

$$\int \frac{(a + b\,\ln (c\,(d + e\,x)^n))^2}{(f + g\,x)^2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

3.50 $\int \frac{(a+b\log(c(d+ex)^n))^2}{(f+gx)^3}\,dx$

Optimal. Leaf size=202

$$-\frac{ben(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)}{(ef-dg)^2(f+gx)}-\frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{2g(f+gx)^2}+\frac{b^2e^2n^2\log(f+gx)}{g(ef-dg)^2}-\frac{be^2n(a+b\log(c(d+}{g(e}$$

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

Rubi [A]
time = 0.23, antiderivative size = 202, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 7, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.292$, Rules used = {2445, 2458, 2389, 2379, 2438, 2351, 31}

$$\frac{b^2e^2n^2\text{PolyLog}\left(2,-\frac{ef-dg}{g(d+ex)}\right)}{g(ef-dg)^2}-\frac{be^2n\log\left(\frac{ef-dg}{g(d+ex)}+1\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{g(ef-dg)^2}-\frac{ben(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)}{(f+gx)(ef-dg)^2}-\frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{2g(f+gx)^2}+\frac{b^2e^2n^2\log(f+gx)}{g(ef-dg)^2}$$

Antiderivative was successfully verified.

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

```
[Out] -((b*e*n*(d + e*x)*(a + b*Log[c*(d + e*x)^n]))/((e*f - d*g)^2*(f + g*x))) -
 (a + b*Log[c*(d + e*x)^n])^2/(2*g*(f + g*x)^2) + (b^2*e^2*n^2*Log[f + g*x]
)/(g*(e*f - d*g)^2) - (b*e^2*n*(a + b*Log[c*(d + e*x)^n])*Log[1 + (e*f - d*
g)/(g*(d + e*x))])/(g*(e*f - d*g)^2) + (b^2*e^2*n^2*PolyLog[2, -((e*f - d*g
)/(g*(d + e*x)))])/(g*(e*f - d*g)^2)
```

Rule 31

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

Rule 2351

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_) + (e_.)*(x_)^(r_.))^(q_), x
_Symbol] :> Simp[x*(d + e*x^r)^(q + 1)*((a + b*Log[c*x^n])/d), x] - Dist[b*
(n/d), Int[(d + e*x^r)^(q + 1), x], x] /; FreeQ[{a, b, c, d, e, n, q, r}, x
] && EqQ[r*(q + 1) + 1, 0]
```

Rule 2379

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

```
1)/x), x], x] /; FreeQ[{a, b, c, d, e, n, r}, x] && IGtQ[p, 0]
```

Rule 2389

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_))/
(x_), x_Symbol] :> Dist[1/d, Int[(d + e*x)^(q + 1)*((a + b*Log[c*x^n])^p/x)
, x], x] - Dist[e/d, Int[(d + e*x)^q*(a + b*Log[c*x^n])^p, x], x] /; FreeQ[
{a, b, c, d, e, n}, x] && IGtQ[p, 0] && LtQ[q, -1] && IntegerQ[2*q]
```

Rule 2438

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

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[(f + g*x)^(q + 1)*((a + b*Log[c*(d + e*x)^
n])^p/(g*(q + 1))), x] - Dist[b*e*n*(p/(g*(q + 1))), Int[(f + g*x)^(q + 1)*
((a + b*Log[c*(d + e*x)^n])^(p - 1)/(d + e*x)), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && GtQ[p, 0] && NeQ[q, -1] && Int
egersQ[2*p, 2*q] && ( !IGtQ[q, 0] || (EqQ[p, 2] && NeQ[q, 1]))
```

Rule 2458

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[(g*(x/e))^q*((e*h - d*i)/e + i*(x/e))^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rubi steps

$$\int \frac{(a+b\log(c(d+ex)^n))^2}{(f+gx)^3}\,dx = -\frac{(a+b\log(c(d+ex)^n))^2}{2g(f+gx)^2}+\frac{(ben)\int \frac{a+b\log(c(d+ex)^n)}{(d+ex)(f+gx)^2}\,dx}{g}$$

$$= -\frac{(a+b\log(c(d+ex)^n))^2}{2g(f+gx)^2}+\frac{(bn)\text{Subst}\left(\int \frac{a+b\log(cx^n)}{x\left(\frac{ef-dg}{e}+\frac{gx}{e}\right)^2}\,dx,x,d+ex\right)}{g}$$

$$= -\frac{(a+b\log(c(d+ex)^n))^2}{2g(f+gx)^2}-\frac{(bn)\text{Subst}\left(\int \frac{a+b\log(cx^n)}{\left(\frac{ef-dg}{e}+\frac{gx}{e}\right)^2}\,dx,x,d+ex\right)}{ef-dg}+$$

$$= -\frac{ben(d+ex)(a+b\log(c(d+ex)^n))}{(ef-dg)^2(f+gx)}-\frac{(a+b\log(c(d+ex)^n))^2}{2g(f+gx)^2}-\frac{(ben)}{}$$

$$= -\frac{ben(d+ex)(a+b\log(c(d+ex)^n))}{(ef-dg)^2(f+gx)}+\frac{e^2(a+b\log(c(d+ex)^n))^2}{2g(ef-dg)^2}-\frac{(a}{}$$

$$= -\frac{ben(d+ex)(a+b\log(c(d+ex)^n))}{(ef-dg)^2(f+gx)}+\frac{e^2(a+b\log(c(d+ex)^n))^2}{2g(ef-dg)^2}-\frac{(a}{}$$

Mathematica [A]
time = 0.14, size = 204, normalized size = 1.01

$$\frac{-(a+b\log(c(d+ex)^n))^2+\frac{e(f+gx)\left(2b(ef-dg)n(a+b\log(c(d+ex)^n))+e(f+gx)(a+b\log(c(d+ex)^n))^2-2b^2en^2(f+gx)(\log(d+ex)-\log(f+gx))-2ben(f+gx)(a+b\log(c(d+ex)^n))\log\left(\frac{e(f+gx)}{ef-dg}\right)-2b^2en^2(f+gx)\text{Li}_2\left(\frac{g(d+ex)}{-ef+dg}\right)\right)}{(ef-dg)^2}}{2g(f+gx)^2}$$

Antiderivative was successfully verified.

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

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

Maple [C] Result contains higher order function than in optimal. Order 9 vs. order 4.
time = 0.46, size = 1473, normalized size = 7.29

method	result	size
risch	Expression too large to display	1473

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))^2/(g*x+f)^3,x,method=_RETURNVERBOSE)
```

```
[Out] 1/2*I/g*n*e^2/(d*g-e*f)^2*ln(g*x+f)*Pi*b^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn
(I*c*(e*x+d)^n)-1/2*I/g*n*e^2/(d*g-e*f)^2*ln(e*x+d)*Pi*b^2*csgn(I*c)*csgn(I
*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-b/(g*x+f)^2/g*ln((e*x+d)^n)*a-1/2*I/g*n*e/(
d*g-e*f)/(g*x+f)*Pi*b^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+1/2*I/g*n*e
/(d*g-e*f)/(g*x+f)*Pi*b^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-1
/2*I/(g*x+f)^2/g*ln((e*x+d)^n)*Pi*b^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-1/2*I
/(g*x+f)^2/g*ln((e*x+d)^n)*Pi*b^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+1
/2*I/(g*x+f)^2/g*ln((e*x+d)^n)*Pi*b^2*csgn(I*c*(e*x+d)^n)^3+b^2/g*n*e^2*ln(
(e*x+d)^n)/(d*g-e*f)^2*ln(e*x+d)-1/2*I/g*n*e/(d*g-e*f)/(g*x+f)*Pi*b^2*csgn(
I*c)*csgn(I*c*(e*x+d)^n)^2+b^2/g*n^2*e^2/(d*g-e*f)^2*ln(g*x+f)*ln(((g*x+f)*
e+d*g-e*f)/(d*g-e*f))-1/2*b^2/(g*x+f)^2/g*ln((e*x+d)^n)^2-1/(g*x+f)^2/g*ln(
(e*x+d)^n)*b^2*ln(c)+1/2*I/g*n*e^2/(d*g-e*f)^2*ln(e*x+d)*Pi*b^2*csgn(I*(e*x
+d)^n)*csgn(I*c*(e*x+d)^n)^2+1/2*I/g*n*e/(d*g-e*f)/(g*x+f)*Pi*b^2*csgn(I*c*
(e*x+d)^n)^3-1/2*I/g*n*e^2/(d*g-e*f)^2*ln(g*x+f)*Pi*b^2*csgn(I*c)*csgn(I*c*
(e*x+d)^n)^2-1/2*I/g*n*e^2/(d*g-e*f)^2*ln(g*x+f)*Pi*b^2*csgn(I*(e*x+d)^n)*c
sgn(I*c*(e*x+d)^n)^2-b/g*n*e/(d*g-e*f)/(g*x+f)*a-b/g*n*e^2/(d*g-e*f)^2*ln(g
*x+f)*a+b/g*n*e^2/(d*g-e*f)^2*ln(e*x+d)*a-1/g*n*e/(d*g-e*f)/(g*x+f)*b^2*ln(
c)-1/g*n*e^2/(d*g-e*f)^2*ln(g*x+f)*b^2*ln(c)+1/g*n*e^2/(d*g-e*f)^2*ln(e*x+d
)*b^2*ln(c)-1/8*(-I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+I*
b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x
+d)^n)^2-I*b*Pi*csgn(I*c*(e*x+d)^n)^3+2*b*ln(c)+2*a)^2/(g*x+f)^2/g-b^2/g*n*
e*ln((e*x+d)^n)/(d*g-e*f)/(g*x+f)-b^2/g*n*e^2*ln((e*x+d)^n)/(d*g-e*f)^2*ln(
g*x+f)-1/2*b^2/g*n^2*e^2/(d*g-e*f)^2*ln(e*x+d)^2+b^2/g*n^2*e^2/(d*g-e*f)^2*
ln(g*x+f)-b^2/g*n^2*e^2/(d*g-e*f)^2*ln(e*x+d)+b^2/g*n^2*e^2/(d*g-e*f)^2*dil
og(((g*x+f)*e+d*g-e*f)/(d*g-e*f))+1/2*I/g*n*e^2/(d*g-e*f)^2*ln(e*x+d)*Pi*b^
2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+1/2*I/g*n*e^2/(d*g-e*f)^2*ln(g*x+f)*Pi*b^
2*csgn(I*c*(e*x+d)^n)^3-1/2*I/g*n*e^2/(d*g-e*f)^2*ln(e*x+d)*Pi*b^2*csgn(I*c
*(e*x+d)^n)^3+1/2*I/(g*x+f)^2/g*ln((e*x+d)^n)*Pi*b^2*csgn(I*c)*csgn(I*(e*x+
d)^n)*csgn(I*c*(e*x+d)^n)
```

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

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/(g*x+f)^3,x, algorithm="maxima")
```

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

```
*log((x*e + d)^n*c)/(g^3*x^2 + 2*f*g^2*x + f^2*g) - 1/2*a^2/(g^3*x^2 + 2*f*
g^2*x + f^2*g)
```

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

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/(g*x+f)^3,x, algorithm="fricas")
[Out] integral((b^2*log((x*e + d)^n*c)^2 + 2*a*b*log((x*e + d)^n*c) + a^2)/(g^3*x
^3 + 3*f*g^2*x^2 + 3*f^2*g*x + f^3), x)
```

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

$$\int \frac{(a + b\log(c(d + ex)^n))^2}{(f + gx)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**2/(g*x+f)**3,x)
[Out] Integral((a + b*log(c*(d + e*x)**n))**2/(f + g*x)**3, x)
```

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

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/(g*x+f)^3,x, algorithm="giac")
[Out] integrate((b*log((x*e + d)^n*c) + a)^2/(g*x + f)^3, x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(a + b\,\ln(c\,(d + e\,x)^n))^2}{(f + g\,x)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

3.51 $\int \frac{(a+b\log(c(d+ex)^n))^2}{(f+gx)^4}\,dx$

Optimal. Leaf size=317

$$-\frac{b^2e^2n^2}{3g(ef-dg)^2(f+gx)}-\frac{b^2e^3n^2\log(d+ex)}{3g(ef-dg)^3}+\frac{ben(a+b\log(c(d+ex)^n))}{3g(ef-dg)(f+gx)^2}-\frac{2be^2n(d+ex)(a+b\log(c(d+e}{3(ef-dg)^3(f+gx)}$$

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

Rubi [A]
time = 0.37, antiderivative size = 317, normalized size of antiderivative = 1.00, number of steps used = 11, number of rules used = 9, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.375$, Rules used = {2445, 2458, 2389, 2379, 2438, 2351, 31, 2356, 46}

$$\frac{2b^2e^3n^2\text{PolyLog}\left(2,-\frac{ef-dg}{g(d+ex)}\right)}{3g(ef-dg)^3}-\frac{2be^3n\log\left(\frac{ef-dg}{g(d+ex)}+1\right)(a+b\log(c(d+ex)^n))}{3g(ef-dg)^3}-\frac{2be^2n(d+ex)(a+b\log(c(d+ex)^n))}{3(f+gx)(ef-dg)^3}+\frac{ben(a+b\log(c(d+ex)^n))}{3g(f+gx)^2(ef-dg)}-\frac{(a+b\log(c(d+ex)^n))^2}{3g(f+gx)^3}-\frac{b^2e^3n^2\log(d+ex)}{3g(ef-dg)^3}+\frac{b^2e^3n^2\log(f+gx)}{g(ef-dg)^3}-\frac{b^2e^2n^2}{3g(f+gx)(ef-dg)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^2/(f + g*x)^4,x]
```

```
[Out] -1/3*(b^2*e^2*n^2)/(g*(e*f - d*g)^2*(f + g*x)) - (b^2*e^3*n^2*Log[d + e*x])
/(3*g*(e*f - d*g)^3) + (b*e*n*(a + b*Log[c*(d + e*x)^n]))/(3*g*(e*f - d*g)*
(f + g*x)^2) - (2*b*e^2*n*(d + e*x)*(a + b*Log[c*(d + e*x)^n]))/(3*(e*f - d
*g)^3*(f + g*x)) - (a + b*Log[c*(d + e*x)^n])^2/(3*g*(f + g*x)^3) + (b^2*e^
3*n^2*Log[f + g*x])/(g*(e*f - d*g)^3) - (2*b*e^3*n*(a + b*Log[c*(d + e*x)^n
])*Log[1 + (e*f - d*g)/(g*(d + e*x))])/(3*g*(e*f - d*g)^3) + (2*b^2*e^3*n^2
*PolyLog[2, -((e*f - d*g)/(g*(d + e*x)))])/(3*g*(e*f - d*g)^3)
```

Rule 31

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

Rule 46

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

Rule 2351

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_) + (e_.)*(x_)^(r_.))^(q_), x
_Symbol] :> Simp[x*(d + e*x^r)^(q + 1)*((a + b*Log[c*x^n])/d), x] - Dist[b*
(n/d), Int[(d + e*x^r)^(q + 1), x], x] /; FreeQ[{a, b, c, d, e, n, q, r}, x
] && EqQ[r*(q + 1) + 1, 0]
```

Rule 2356

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.),
x_Symbol] :> Simp[(d + e*x)^(q + 1)*((a + b*Log[c*x^n])^p/(e*(q + 1))), x]
- Dist[b*n*(p/(e*(q + 1))), Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^(p -
1))/x, x], x] /; FreeQ[{a, b, c, d, e, n, p, q}, x] && GtQ[p, 0] && NeQ[q,
-1] && (EqQ[p, 1] || (IntegersQ[2*p, 2*q] &&  !IGtQ[q, 0]) || (EqQ[p, 2] &&
 NeQ[q, 1]))
```

Rule 2379

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

Rule 2389

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_))/
(x_), x_Symbol] :> Dist[1/d, Int[(d + e*x)^(q + 1)*((a + b*Log[c*x^n])^p/x)
, x], x] - Dist[e/d, Int[(d + e*x)^q*(a + b*Log[c*x^n])^p, x], x] /; FreeQ[
{a, b, c, d, e, n}, x] && IGtQ[p, 0] && LtQ[q, -1] && IntegerQ[2*q]
```

Rule 2438

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

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[(f + g*x)^(q + 1)*((a + b*Log[c*(d + e*x)^
n])^p/(g*(q + 1))), x] - Dist[b*e*n*(p/(g*(q + 1))), Int[(f + g*x)^(q + 1)*
((a + b*Log[c*(d + e*x)^n])^(p - 1)/(d + e*x)), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && GtQ[p, 0] && NeQ[q, -1] && Int
egersQ[2*p, 2*q] && ( !IGtQ[q, 0] || (EqQ[p, 2] && NeQ[q, 1]))
```

Rule 2458

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
```

```
[(g*(x/e))^q*((e*h - d*i)/e + i*(x/e))^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rubi steps

$$\int \frac{(a+b\log(c(d+ex)^n))^2}{(f+gx)^4}\,dx = -\frac{(a+b\log(c(d+ex)^n))^2}{3g(f+gx)^3} + \frac{(2ben)\int \frac{a+b\log(c(d+ex)^n)}{(d+ex)(f+gx)^3}\,dx}{3g}$$

$$= -\frac{(a+b\log(c(d+ex)^n))^2}{3g(f+gx)^3} + \frac{(2bn)\text{Subst}\left(\int \frac{a+b\log(cx^n)}{x\left(\frac{ef-dg}{e}+\frac{gx}{e}\right)^3}\,dx, x, d+ex\right)}{3g}$$

$$= -\frac{(a+b\log(c(d+ex)^n))^2}{3g(f+gx)^3} - \frac{(2bn)\text{Subst}\left(\int \frac{a+b\log(cx^n)}{\left(\frac{ef-dg}{e}+\frac{gx}{e}\right)^3}\,dx, x, d+ex\right)}{3(ef-dg)} + \cdots$$

$$= \frac{ben(a+b\log(c(d+ex)^n))}{3g(ef-dg)(f+gx)^2} - \frac{(a+b\log(c(d+ex)^n))^2}{3g(f+gx)^3} - \frac{(2ben)\text{Subst}\left(\int \cdots\right.}{3(\cdots}$$

$$= \frac{ben(a+b\log(c(d+ex)^n))}{3g(ef-dg)(f+gx)^2} - \frac{2be^2n(d+ex)(a+b\log(c(d+ex)^n))}{3(ef-dg)^3(f+gx)} - \frac{(a+\cdots}{\cdots}$$

$$= -\frac{b^2e^2n^2}{3g(ef-dg)^2(f+gx)} - \frac{b^2e^3n^2\log(d+ex)}{3g(ef-dg)^3} + \frac{ben(a+b\log(c(d+ex)^n))}{3g(ef-dg)(f+gx)^2}\cdots$$

$$= -\frac{b^2e^2n^2}{3g(ef-dg)^2(f+gx)} - \frac{b^2e^3n^2\log(d+ex)}{3g(ef-dg)^3} + \frac{ben(a+b\log(c(d+ex)^n))}{3g(ef-dg)(f+gx)^2}\cdots$$

Mathematica [A]
time = 0.24, size = 302, normalized size = 0.95

$$\frac{-(a+b\log(c(d+ex)^n))^2 + \frac{e(f+gx)\left(b(ef-dg)^2n(a+b\log(c(d+ex)^n))+2be(ef-dg)n(f+gx)(a+b\log(c(d+ex)^n))+e^2(f+gx)^2(a+b\log(c(d+ex)^n))^2-2b^2e^2n^2(f+gx)^2(\log(d+ex)-\log(f+gx))-b^2en^2(f+gx)(ef-dg+e(f+gx)\log(d+ex)-e(f+gx)\log(f+gx))-2be^2n(f+gx)^2(a+b\log(c(d+ex)^n))\log\left(\frac{e(f+gx)}{ef-dg}\right)-2b^2e^2n^2(f+gx)^2\text{Li}_2\left(\frac{g(d+ex)}{-ef+dg}\right)\right)}{(ef-dg)^3}}{3g(f+gx)^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^2/(f + g*x)^4,x]
```

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

```
x)*Log[d + e*x] - e*(f + g*x)*Log[f + g*x]) - 2*b*e^2*n*(f + g*x)^2*(a + b*
Log[c*(d + e*x)^n])*Log[(e*(f + g*x))/(e*f - d*g)] - 2*b^2*e^2*n^2*(f + g*x
)^2*PolyLog[2, (g*(d + e*x))/(-(e*f) + d*g)]))/(e*f - d*g)^3)/(3*g*(f + g*x
)^3)
```

Maple [C] Result contains higher order function than in optimal. Order 9 vs. order 4.
time = 0.47, size = 1815, normalized size = 5.73

method	result	size
risch	Expression too large to display	1815

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))^2/(g*x+f)^4,x,method=_RETURNVERBOSE)
```

```
[Out] -1/3*I/(g*x+f)^3/g*ln((e*x+d)^n)*Pi*b^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-2/3
*b/g*n*e^3/(d*g-e*f)^3*ln(e*x+d)*a+2/3/g*n*e^3/(d*g-e*f)^3*ln(g*x+f)*b^2*ln
(c)-1/3/g*n*e/(d*g-e*f)/(g*x+f)^2*b^2*ln(c)+2/3/g*n*e^2/(d*g-e*f)^2/(g*x+f)
*b^2*ln(c)-2/3/g*n*e^3/(d*g-e*f)^3*ln(e*x+d)*b^2*ln(c)-1/3*I/g*n*e^3/(d*g-e
*f)^3*ln(g*x+f)*Pi*b^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+1/6*
I/g*n*e/(d*g-e*f)/(g*x+f)^2*Pi*b^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*
x+d)^n)+1/6*I/g*n*e/(d*g-e*f)/(g*x+f)^2*Pi*b^2*csgn(I*c*(e*x+d)^n)^3-1/3*I/
(g*x+f)^3/g*ln((e*x+d)^n)*Pi*b^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-2/
3*b^2/g*n^2*e^3/(d*g-e*f)^3*ln(g*x+f)*ln(((g*x+f)*e+d*g-e*f)/(d*g-e*f))-1/6
*I/g*n*e/(d*g-e*f)/(g*x+f)^2*Pi*b^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2
-2/3/(g*x+f)^3/g*ln((e*x+d)^n)*b^2*ln(c)-1/3*b^2/(g*x+f)^3/g*ln((e*x+d)^n)^
2-2/3*b/(g*x+f)^3/g*ln((e*x+d)^n)*a-1/3*I/g*n*e^2/(d*g-e*f)^2/(g*x+f)*Pi*b^
2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-1/3*I/g*n*e^3/(d*g-e*f)^3
*ln(g*x+f)*Pi*b^2*csgn(I*c*(e*x+d)^n)^3+1/3*I/(g*x+f)^3/g*ln((e*x+d)^n)*Pi*
b^2*csgn(I*c*(e*x+d)^n)^3-1/3*b^2/g*n*e*ln((e*x+d)^n)/(d*g-e*f)/(g*x+f)^2+2
/3*b^2/g*n*e^3*ln((e*x+d)^n)/(d*g-e*f)^3*ln(g*x+f)+2/3*b^2/g*n*e^2*ln((e*x+
d)^n)/(d*g-e*f)^2/(g*x+f)-2/3*b^2/g*n*e^3*ln((e*x+d)^n)/(d*g-e*f)^3*ln(e*x+
d)-1/3*b/g*n*e/(d*g-e*f)/(g*x+f)^2*a+2/3*b/g*n*e^2/(d*g-e*f)^2/(g*x+f)*a+2/
3*b/g*n*e^3/(d*g-e*f)^3*ln(g*x+f)*a+1/3*I/g*n*e^3/(d*g-e*f)^3*ln(e*x+d)*Pi*
b^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+1/3*I/g*n*e^3/(d*g-e*f)
^3*ln(e*x+d)*Pi*b^2*csgn(I*c*(e*x+d)^n)^3+1/3*I/(g*x+f)^3/g*ln((e*x+d)^n)*P
i*b^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-1/3*I/g*n*e^2/(d*g-e*
f)^2/(g*x+f)*Pi*b^2*csgn(I*c*(e*x+d)^n)^3-1/3*b^2/g*n^2*e^2/(d*g-e*f)^2/(g*
x+f)-b^2/g*n^2*e^3/(d*g-e*f)^3*ln(g*x+f)+b^2/g*n^2*e^3/(d*g-e*f)^3*ln(e*x+d
)+1/3*b^2/g*n^2*e^3/(d*g-e*f)^3*ln(e*x+d)^2-2/3*b^2/g*n^2*e^3/(d*g-e*f)^3*d
ilog(((g*x+f)*e+d*g-e*f)/(d*g-e*f))+1/3*I/g*n*e^3/(d*g-e*f)^3*ln(g*x+f)*Pi*
b^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-1/12*(-I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^
n)*csgn(I*c*(e*x+d)^n)+I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I*b*Pi*csgn(I
*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-I*b*Pi*csgn(I*c*(e*x+d)^n)^3+2*b*ln(c)+2*
a)^2/(g*x+f)^3/g-1/3*I/g*n*e^3/(d*g-e*f)^3*ln(e*x+d)*Pi*b^2*csgn(I*(e*x+d)^
n)*csgn(I*c*(e*x+d)^n)^2-1/6*I/g*n*e/(d*g-e*f)/(g*x+f)^2*Pi*b^2*csgn(I*c)*c
```

```
sgn(I*c*(e*x+d)^n)^2+1/3*I/g*n*e^3/(d*g-e*f)^3*ln(g*x+f)*Pi*b^2*csgn(I*(e*x
+d)^n)*csgn(I*c*(e*x+d)^n)^2+1/3*I/g*n*e^2/(d*g-e*f)^2/(g*x+f)*Pi*b^2*csgn(
I*c)*csgn(I*c*(e*x+d)^n)^2+1/3*I/g*n*e^2/(d*g-e*f)^2/(g*x+f)*Pi*b^2*csgn(I*
(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-1/3*I/g*n*e^3/(d*g-e*f)^3*ln(e*x+d)*Pi*b^2
*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2
```

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

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/(g*x+f)^4,x, algorithm="maxima")
```

```
[Out] 1/3*a*b*n*(2*e^2*log(g*x + f)/(d^3*g^4 - 3*d^2*f*g^3*e + 3*d*f^2*g^2*e^2 -
f^3*g*e^3) - 2*e^2*log(x*e + d)/(d^3*g^4 - 3*d^2*f*g^3*e + 3*d*f^2*g^2*e^2
- f^3*g*e^3) + (2*g*x*e - d*g + 3*f*e)/(d^2*f^2*g^3 - 2*d*f^3*g^2*e + f^4*g
*e^2 + (d^2*g^5 - 2*d*f*g^4*e + f^2*g^3*e^2)*x^2 + 2*(d^2*f*g^4 - 2*d*f^2*g
^3*e + f^3*g^2*e^2)*x))*e - 1/3*b^2*(log((x*e + d)^n)^2/(g^4*x^3 + 3*f*g^3*
x^2 + 3*f^2*g^2*x + f^3*g) - 3*integrate(1/3*(3*g*x*e*log(c)^2 + 3*d*g*log(
c)^2 + 2*(f*n*e + (g*n + 3*g*log(c))*x*e + 3*d*g*log(c))*log((x*e + d)^n))/
(g^5*x^5*e + d*f^4*g + (d*g^5 + 4*f*g^4*e)*x^4 + 2*(2*d*f*g^4 + 3*f^2*g^3*e
)*x^3 + 2*(3*d*f^2*g^3 + 2*f^3*g^2*e)*x^2 + (4*d*f^3*g^2 + f^4*g*e)*x), x))
 - 2/3*a*b*log((x*e + d)^n*c)/(g^4*x^3 + 3*f*g^3*x^2 + 3*f^2*g^2*x + f^3*g)
 - 1/3*a^2/(g^4*x^3 + 3*f*g^3*x^2 + 3*f^2*g^2*x + f^3*g)
```

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

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/(g*x+f)^4,x, algorithm="fricas")
```

```
[Out] integral((b^2*log((x*e + d)^n*c)^2 + 2*a*b*log((x*e + d)^n*c) + a^2)/(g^4*x
^4 + 4*f*g^3*x^3 + 6*f^2*g^2*x^2 + 4*f^3*g*x + f^4), x)
```

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

$$\int \frac{\left(a + b \log \left(c(d + ex)^n\right)\right)^2}{\left(f + gx\right)^4}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**2/(g*x+f)**4,x)
```

```
[Out] Integral((a + b*log(c*(d + e*x)**n))**2/(f + g*x)**4, x)
```

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

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/(g*x+f)^4,x, algorithm="giac")
[Out] integrate((b*log((x*e + d)^n*c) + a)^2/(g*x + f)^4, x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)^2}{{\left(f+g\,x\right)}^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))^2/(f + g*x)^4,x)
[Out] int((a + b*log(c*(d + e*x)^n))^2/(f + g*x)^4, x)
```

3.52 $\int (f+gx)^3 \left(a+b\log\left(c(d+ex)^n\right)\right)^3\,dx$

Optimal. Leaf size=598

$$\frac{6ab^2(ef-dg)^3n^2x}{e^3}-\frac{6b^3(ef-dg)^3n^3x}{e^3}-\frac{9b^3g(ef-dg)^2n^3(d+ex)^2}{8e^4}-\frac{2b^3g^2(ef-dg)n^3(d+ex)^3}{9e^4}-\frac{3b^3g^3n^3(d}{128}$$

```
[Out] 6*a*b^2*(-d*g+e*f)^3*n^2*x/e^3-6*b^3*(-d*g+e*f)^3*n^3*x/e^3-9/8*b^3*g*(-d*g
+e*f)^2*n^3*(e*x+d)^2/e^4-2/9*b^3*g^2*(-d*g+e*f)*n^3*(e*x+d)^3/e^4-3/128*b^
3*g^3*n^3*(e*x+d)^4/e^4+6*b^3*(-d*g+e*f)^3*n^2*(e*x+d)*ln(c*(e*x+d)^n)/e^4+
9/4*b^2*g*(-d*g+e*f)^2*n^2*(e*x+d)^2*(a+b*ln(c*(e*x+d)^n))/e^4+2/3*b^2*g^2*
(-d*g+e*f)*n^2*(e*x+d)^3*(a+b*ln(c*(e*x+d)^n))/e^4+3/32*b^2*g^3*n^2*(e*x+d)
^4*(a+b*ln(c*(e*x+d)^n))/e^4-3*b*(-d*g+e*f)^3*n*(e*x+d)*(a+b*ln(c*(e*x+d)^n
))^2/e^4-9/4*b*g*(-d*g+e*f)^2*n*(e*x+d)^2*(a+b*ln(c*(e*x+d)^n))^2/e^4-b*g^2
*(-d*g+e*f)*n*(e*x+d)^3*(a+b*ln(c*(e*x+d)^n))^2/e^4-3/16*b*g^3*n*(e*x+d)^4*
(a+b*ln(c*(e*x+d)^n))^2/e^4+(-d*g+e*f)^3*(e*x+d)*(a+b*ln(c*(e*x+d)^n))^3/e^
4+3/2*g*(-d*g+e*f)^2*(e*x+d)^2*(a+b*ln(c*(e*x+d)^n))^3/e^4+g^2*(-d*g+e*f)*(
e*x+d)^3*(a+b*ln(c*(e*x+d)^n))^3/e^4+1/4*g^3*(e*x+d)^4*(a+b*ln(c*(e*x+d)^n)
)^3/e^4
```

Rubi [A]
time = 0.39, antiderivative size = 598, normalized size of antiderivative = 1.00, number of steps used = 19, number of rules used = 7, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.292$, Rules used = {2448, 2436, 2333, 2332, 2437, 2342, 2341}

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)^3*(a + b*Log[c*(d + e*x)^n])^3,x]
```

```
[Out] (6*a*b^2*(e*f - d*g)^3*n^2*x)/e^3 - (6*b^3*(e*f - d*g)^3*n^3*x)/e^3 - (9*b^
3*g*(e*f - d*g)^2*n^3*(d + e*x)^2)/(8*e^4) - (2*b^3*g^2*(e*f - d*g)*n^3*(d
+ e*x)^3)/(9*e^4) - (3*b^3*g^3*n^3*(d + e*x)^4)/(128*e^4) + (6*b^3*(e*f - d
*g)^3*n^2*(d + e*x)*Log[c*(d + e*x)^n])/e^4 + (9*b^2*g*(e*f - d*g)^2*n^2*(d
 + e*x)^2*(a + b*Log[c*(d + e*x)^n]))/(4*e^4) + (2*b^2*g^2*(e*f - d*g)*n^2*
(d + e*x)^3*(a + b*Log[c*(d + e*x)^n]))/(3*e^4) + (3*b^2*g^3*n^2*(d + e*x)^
4*(a + b*Log[c*(d + e*x)^n]))/(32*e^4) - (3*b*(e*f - d*g)^3*n*(d + e*x)*(a
+ b*Log[c*(d + e*x)^n])^2)/e^4 - (9*b*g*(e*f - d*g)^2*n*(d + e*x)^2*(a + b*
Log[c*(d + e*x)^n])^2)/(4*e^4) - (b*g^2*(e*f - d*g)*n*(d + e*x)^3*(a + b*Lo
g[c*(d + e*x)^n])^2)/e^4 - (3*b*g^3*n*(d + e*x)^4*(a + b*Log[c*(d + e*x)^n]
)^2)/(16*e^4) + ((e*f - d*g)^3*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^3)/e^4
+ (3*g*(e*f - d*g)^2*(d + e*x)^2*(a + b*Log[c*(d + e*x)^n])^3)/(2*e^4) + (g
^2*(e*f - d*g)*(d + e*x)^3*(a + b*Log[c*(d + e*x)^n])^3)/e^4 + (g^3*(d + e*
x)^4*(a + b*Log[c*(d + e*x)^n])^3)/(4*e^4)
```

Rule 2332

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

Rule 2333

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

Rule 2341

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_.)*(x_))^(m_.), x_Symbol] :>
Simp[(d*x)^(m + 1)*((a + b*Log[c*x^n])/(d*(m + 1))), x] - Simp[b*n*((d*x)^(
m + 1)/(d*(m + 1)^2)), x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[m, -1]
```

Rule 2342

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_.)*(x_))^(m_.), x_Symbo
l] :> Simp[(d*x)^(m + 1)*((a + b*Log[c*x^n])^p/(d*(m + 1))), x] - Dist[b*n*
(p/(m + 1)), Int[(d*x)^m*(a + b*Log[c*x^n])^(p - 1), x], x] /; FreeQ[{a, b,
 c, d, m, n}, x] && NeQ[m, -1] && GtQ[p, 0]
```

Rule 2436

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

Rule 2437

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

Rule 2448

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

Rubi steps

$$\int (f+gx)^3 \left(a+b\log \left(c(d+ex)^n\right)\right)^3 \, dx = \int \left(\frac{(ef-dg)^3 \left(a+b\log \left(c(d+ex)^n\right)\right)^3}{e^3} + \frac{3g(ef-dg)^2(d+ex)}{}\right.$$
$$= \frac{g^3 \int (d+ex)^3 \left(a+b\log \left(c(d+ex)^n\right)\right)^3 \, dx}{e^3} + \frac{(3g^2(ef-dg)) \int (d+}{}$$
$$= \frac{g^3 \text{Subst}\left(\int x^3(a+b\log (cx^n))^3 \, dx, x, d+ex\right)}{e^4} + \frac{(3g^2(ef-dg)) \text{Su}}{}$$
$$= \frac{(ef-dg)^3(d+ex) \left(a+b\log \left(c(d+ex)^n\right)\right)^3}{e^4} + \frac{3g(ef-dg)^2(d+}{}$$
$$= -\frac{3b(ef-dg)^3n(d+ex) \left(a+b\log \left(c(d+ex)^n\right)\right)^2}{e^4} - \frac{9bg(ef-dg)}{}$$
$$= \frac{6ab^2(ef-dg)^3n^2x}{e^3} - \frac{9b^3g(ef-dg)^2n^3(d+ex)^2}{8e^4} - \frac{2b^3g^2(ef-d}{9}$$
$$= \frac{6ab^2(ef-dg)^3n^2x}{e^3} - \frac{6b^3(ef-dg)^3n^3x}{e^3} - \frac{9b^3g(ef-dg)^2n^3(d+}{8e^4}$$

Mathematica [B] Leaf count is larger than twice the leaf count of optimal. 1241 vs. $2(598) = 1196$.
time $= 0.83$, size $= 1241$, normalized size $= 2.08$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)^3*(a + b*Log[c*(d + e*x)^n])^3,x]
```

```
[Out] (-288*b^3*d*(-4*e^3*f^3 + 6*d*e^2*f^2*g - 4*d^2*e*f*g^2 + d^3*g^3)*n^3*Log[
d + e*x]^3 + 72*b^2*d*n^2*Log[d + e*x]^2*(-12*a*(4*e^3*f^3 - 6*d*e^2*f^2*g
+ 4*d^2*e*f*g^2 - d^3*g^3) + b*(48*e^3*f^3 - 108*d*e^2*f^2*g + 88*d^2*e*f*g
^2 - 25*d^3*g^3)*n - 12*b*(4*e^3*f^3 - 6*d*e^2*f^2*g + 4*d^2*e*f*g^2 - d^3*
g^3)*Log[c*(d + e*x)^n]) - 12*b*d*n*Log[d + e*x]*(-72*a^2*(4*e^3*f^3 - 6*d*
e^2*f^2*g + 4*d^2*e*f*g^2 - d^3*g^3) + 12*a*b*(48*e^3*f^3 - 108*d*e^2*f^2*g
 + 88*d^2*e*f*g^2 - 25*d^3*g^3)*n + b^2*(-576*e^3*f^3 + 1512*d*e^2*f^2*g -
1360*d^2*e*f*g^2 + 415*d^3*g^3)*n^2 - 12*b*(12*a*(4*e^3*f^3 - 6*d*e^2*f^2*g
 + 4*d^2*e*f*g^2 - d^3*g^3) + b*(-48*e^3*f^3 + 108*d*e^2*f^2*g - 88*d^2*e*f
*g^2 + 25*d^3*g^3)*n)*Log[c*(d + e*x)^n] - 72*b^2*(4*e^3*f^3 - 6*d*e^2*f^2*
g + 4*d^2*e*f*g^2 - d^3*g^3)*Log[c*(d + e*x)^n]^2) + e*x*(288*a^3*e^3*(4*f^
3 + 6*f^2*g*x + 4*f*g^2*x^2 + g^3*x^3) - 72*a^2*b*n*(-12*d^3*g^3 + 6*d^2*e*
g^2*(8*f + g*x) - 4*d*e^2*g*(18*f^2 + 6*f*g*x + g^2*x^2) + e^3*(48*f^3 + 36
*f^2*g*x + 16*f*g^2*x^2 + 3*g^3*x^3)) + 12*a*b^2*n^2*(-300*d^3*g^3 + 6*d^2*
e*g^2*(176*f + 13*g*x) - 4*d*e^2*g*(324*f^2 + 60*f*g*x + 7*g^2*x^2) + e^3*(
576*f^3 + 216*f^2*g*x + 64*f*g^2*x^2 + 9*g^3*x^3)) - b^3*n^3*(-4980*d^3*g^3
```

```
 + 30*d^2*e*g^2*(544*f + 23*g*x) - 4*d*e^2*g*(4536*f^2 + 456*f*g*x + 37*g^2
*x^2) + e^3*(6912*f^3 + 1296*f^2*g*x + 256*f*g^2*x^2 + 27*g^3*x^3)) + 12*b*
(72*a^2*e^3*(4*f^3 + 6*f^2*g*x + 4*f*g^2*x^2 + g^3*x^3) - 12*a*b*n*(-12*d^3
*g^3 + 6*d^2*e*g^2*(8*f + g*x) - 4*d*e^2*g*(18*f^2 + 6*f*g*x + g^2*x^2) + e
^3*(48*f^3 + 36*f^2*g*x + 16*f*g^2*x^2 + 3*g^3*x^3)) + b^2*n^2*(-300*d^3*g^
3 + 6*d^2*e*g^2*(176*f + 13*g*x) - 4*d*e^2*g*(324*f^2 + 60*f*g*x + 7*g^2*x^
2) + e^3*(576*f^3 + 216*f^2*g*x + 64*f*g^2*x^2 + 9*g^3*x^3)))*Log[c*(d + e*
x)^n] + 72*b^2*(12*a*e^3*(4*f^3 + 6*f^2*g*x + 4*f*g^2*x^2 + g^3*x^3) - b*n*
(-12*d^3*g^3 + 6*d^2*e*g^2*(8*f + g*x) - 4*d*e^2*g*(18*f^2 + 6*f*g*x + g^2*
x^2) + e^3*(48*f^3 + 36*f^2*g*x + 16*f*g^2*x^2 + 3*g^3*x^3)))*Log[c*(d + e*
x)^n]^2 + 288*b^3*e^3*(4*f^3 + 6*f^2*g*x + 4*f*g^2*x^2 + g^3*x^3)*Log[c*(d
+ e*x)^n]^3))/(1152*e^4)
```

Maple [**C**] Result contains higher order function than in optimal. Order 9 vs. order 3.
time = 3.49, size = 30495, normalized size = 50.99

method	result	size
risch	Expression too large to display	30495

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^3*(a+b*ln(c*(e*x+d)^n))^3,x,method=_RETURNVERBOSE)
```

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

Maxima [**B**] Leaf count of result is larger than twice the leaf count of optimal. 1720 vs. 2(602) = 1204.
time = 0.35, size = 1720, normalized size = 2.88

Too large to display

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/4*b^3*g^3*x^4*log((x*e + d)^n*c)^3 + 3/4*a*b^2*g^3*x^4*log((x*e + d)^n*c)
^2 + b^3*f*g^2*x^3*log((x*e + d)^n*c)^3 + 3/4*a^2*b*g^3*x^4*log((x*e + d)^n
*c) + 3*a*b^2*f*g^2*x^3*log((x*e + d)^n*c)^2 + 3/2*b^3*f^2*g*x^2*log((x*e +
 d)^n*c)^3 + 1/4*a^3*g^3*x^4 + 3*a^2*b*f*g^2*x^3*log((x*e + d)^n*c) + 9/2*a
*b^2*f^2*g*x^2*log((x*e + d)^n*c)^2 + b^3*f^3*x*log((x*e + d)^n*c)^3 + a^3*
f*g^2*x^3 + 3*(d*e^(-2)*log(x*e + d) - x*e^(-1))*a^2*b*f^3*n*e - 9/4*(2*d^2
*e^(-3)*log(x*e + d) + (x^2*e - 2*d*x)*e^(-2))*a^2*b*f^2*g*n*e + 1/2*(6*d^3
*e^(-4)*log(x*e + d) - (2*x^3*e^2 - 3*d*x^2*e + 6*d^2*x)*e^(-3))*a^2*b*f*g^
2*n*e - 1/16*(12*d^4*e^(-5)*log(x*e + d) + (3*x^4*e^3 - 4*d*x^3*e^2 + 6*d^2
*x^2*e - 12*d^3*x)*e^(-4))*a^2*b*g^3*n*e + 9/2*a^2*b*f^2*g*x^2*log((x*e + d
)^n*c) + 3*a*b^2*f^3*x*log((x*e + d)^n*c)^2 + 3/2*a^3*f^2*g*x^2 + 3*a^2*b*f
^3*x*log((x*e + d)^n*c) - 3*((d*log(x*e + d)^2 - 2*x*e + 2*d*log(x*e + d))*
```

```
n^2*e^(-1) - 2*(d*e^(-2)*log(x*e + d) - x*e^(-1))*n*e*log((x*e + d)^n*c))*a
*b^2*f^3 + (3*(d*e^(-2)*log(x*e + d) - x*e^(-1))*n*e*log((x*e + d)^n*c)^2 +
 ((d*log(x*e + d)^3 + 3*d*log(x*e + d)^2 - 6*x*e + 6*d*log(x*e + d))*n^2*e^
(-2) - 3*(d*log(x*e + d)^2 - 2*x*e + 2*d*log(x*e + d))*n*e^(-2)*log((x*e +
d)^n*c))*n*e)*b^3*f^3 + 9/4*((2*d^2*log(x*e + d)^2 + x^2*e^2 - 6*d*x*e + 6*
d^2*log(x*e + d))*n^2*e^(-2) - 2*(2*d^2*e^(-3)*log(x*e + d) + (x^2*e - 2*d*
x)*e^(-2))*n*e*log((x*e + d)^n*c))*a*b^2*f^2*g - 3/8*(6*(2*d^2*e^(-3)*log(x
*e + d) + (x^2*e - 2*d*x)*e^(-2))*n*e*log((x*e + d)^n*c)^2 + ((4*d^2*log(x*
e + d)^3 + 18*d^2*log(x*e + d)^2 + 3*x^2*e^2 - 42*d*x*e + 42*d^2*log(x*e +
d))*n^2*e^(-3) - 6*(2*d^2*log(x*e + d)^2 + x^2*e^2 - 6*d*x*e + 6*d^2*log(x*
e + d))*n*e^(-3)*log((x*e + d)^n*c))*n*e)*b^3*f^2*g - 1/6*((18*d^3*log(x*e
+ d)^2 - 4*x^3*e^3 + 15*d*x^2*e^2 - 66*d^2*x*e + 66*d^3*log(x*e + d))*n^2*e
^(-3) - 6*(6*d^3*e^(-4)*log(x*e + d) - (2*x^3*e^2 - 3*d*x^2*e + 6*d^2*x)*e^
(-3))*n*e*log((x*e + d)^n*c))*a*b^2*f*g^2 + 1/36*(18*(6*d^3*e^(-4)*log(x*e
+ d) - (2*x^3*e^2 - 3*d*x^2*e + 6*d^2*x)*e^(-3))*n*e*log((x*e + d)^n*c)^2 +
 ((36*d^3*log(x*e + d)^3 + 198*d^3*log(x*e + d)^2 - 8*x^3*e^3 + 57*d*x^2*e^
2 - 510*d^2*x*e + 510*d^3*log(x*e + d))*n^2*e^(-4) - 6*(18*d^3*log(x*e + d)
^2 - 4*x^3*e^3 + 15*d*x^2*e^2 - 66*d^2*x*e + 66*d^3*log(x*e + d))*n*e^(-4)*
log((x*e + d)^n*c))*n*e)*b^3*f*g^2 + 1/96*((72*d^4*log(x*e + d)^2 + 9*x^4*e
^4 - 28*d*x^3*e^3 + 78*d^2*x^2*e^2 - 300*d^3*x*e + 300*d^4*log(x*e + d))*n^
2*e^(-4) - 12*(12*d^4*e^(-5)*log(x*e + d) + (3*x^4*e^3 - 4*d*x^3*e^2 + 6*d^
2*x^2*e - 12*d^3*x)*e^(-4))*n*e*log((x*e + d)^n*c))*a*b^2*g^3 - 1/1152*(72*
(12*d^4*e^(-5)*log(x*e + d) + (3*x^4*e^3 - 4*d*x^3*e^2 + 6*d^2*x^2*e - 12*d
^3*x)*e^(-4))*n*e*log((x*e + d)^n*c)^2 + ((288*d^4*log(x*e + d)^3 + 1800*d^
4*log(x*e + d)^2 + 27*x^4*e^4 - 148*d*x^3*e^3 + 690*d^2*x^2*e^2 - 4980*d^3*
x*e + 4980*d^4*log(x*e + d))*n^2*e^(-5) - 12*(72*d^4*log(x*e + d)^2 + 9*x^4
*e^4 - 28*d*x^3*e^3 + 78*d^2*x^2*e^2 - 300*d^3*x*e + 300*d^4*log(x*e + d))*
n*e^(-5)*log((x*e + d)^n*c))*n*e)*b^3*g^3 + a^3*f^3*x
```

Fricas [B] Leaf count of result is larger than twice the leaf count of optimal. 2694 vs. $2(602) = 1204$.
time = 0.41, size = 2694, normalized size = 4.51

Too large to display

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/1152*(288*(b^3*g^3*x^4 + 4*b^3*f*g^2*x^3 + 6*b^3*f^2*g*x^2 + 4*b^3*f^3*x)
*e^4*log(c)^3 - 288*(b^3*d^4*g^3*n^3 - 4*b^3*d^3*f*g^2*n^3*e + 6*b^3*d^2*f^
2*g*n^3*e^2 - 4*b^3*d*f^3*n^3*e^3 - (b^3*g^3*n^3*x^4 + 4*b^3*f*g^2*n^3*x^3
+ 6*b^3*f^2*g*n^3*x^2 + 4*b^3*f^3*n^3*x)*e^4)*log(x*e + d)^3 + 12*(415*b^3*
d^3*g^3*n^3 - 300*a*b^2*d^3*g^3*n^2 + 72*a^2*b*d^3*g^3*n)*x*e + 72*(25*b^3*
d^4*g^3*n^3 - 12*a*b^2*d^4*g^3*n^2 - (3*(b^3*g^3*n^3 - 4*a*b^2*g^3*n^2)*x^4
 + 16*(b^3*f*g^2*n^3 - 3*a*b^2*f*g^2*n^2)*x^3 + 36*(b^3*f^2*g*n^3 - 2*a*b^2
```

*f^2*g*n^2)*x^2 + 48*(b^3*f^3*n^3 - a*b^2*f^3*n^2)*x)*e^4 + 4*(b^3*d*g^3*n^
3*x^3 + 6*b^3*d*f*g^2*n^3*x^2 + 18*b^3*d*f^2*g*n^3*x - 12*b^3*d*f^3*n^3 + 1
2*a*b^2*d*f^3*n^2)*e^3 - 6*(b^3*d^2*g^3*n^3*x^2 + 8*b^3*d^2*f*g^2*n^3*x - 1
8*b^3*d^2*f^2*g*n^3 + 12*a*b^2*d^2*f^2*g*n^2)*e^2 + 4*(3*b^3*d^3*g^3*n^3*x
- 22*b^3*d^3*f*g^2*n^3 + 12*a*b^2*d^3*f*g^2*n^2)*e - 12*(b^3*d^4*g^3*n^2 -
4*b^3*d^3*f*g^2*n^2*e + 6*b^3*d^2*f^2*g*n^2*e^2 - 4*b^3*d*f^3*n^2*e^3 - (b^
3*g^3*n^2*x^4 + 4*b^3*f*g^2*n^2*x^3 + 6*b^3*f^2*g*n^2*x^2 + 4*b^3*f^3*n^2*x
)*e^4)*log(c))*log(x*e + d)^2 + 72*(12*b^3*d^3*g^3*n*x*e - (3*(b^3*g^3*n -
4*a*b^2*g^3)*x^4 + 16*(b^3*f*g^2*n - 3*a*b^2*f*g^2)*x^3 + 36*(b^3*f^2*g*n -
2*a*b^2*f^2*g)*x^2 + 48*(b^3*f^3*n - a*b^2*f^3)*x)*e^4 + 4*(b^3*d*g^3*n*x^
3 + 6*b^3*d*f*g^2*n*x^2 + 18*b^3*d*f^2*g*n*x)*e^3 - 6*(b^3*d^2*g^3*n*x^2 +
8*b^3*d^2*f*g^2*n*x)*e^2)*log(c)^2 - (9*(3*b^3*g^3*n^3 - 12*a*b^2*g^3*n^2 +
24*a^2*b*g^3*n - 32*a^3*g^3)*x^4 + 128*(2*b^3*f*g^2*n^3 - 6*a*b^2*f*g^2*n^
2 + 9*a^2*b*f*g^2*n - 9*a^3*f*g^2)*x^3 + 432*(3*b^3*f^2*g*n^3 - 6*a*b^2*f^2
*g*n^2 + 6*a^2*b*f^2*g*n - 4*a^3*f^2*g)*x^2 + 1152*(6*b^3*f^3*n^3 - 6*a*b^2
*f^3*n^2 + 3*a^2*b*f^3*n - a^3*f^3)*x)*e^4 + 4*((37*b^3*d*g^3*n^3 - 84*a*b^
2*d*g^3*n^2 + 72*a^2*b*d*g^3*n)*x^3 + 24*(19*b^3*d*f*g^2*n^3 - 30*a*b^2*d*f
*g^2*n^2 + 18*a^2*b*d*f*g^2*n)*x^2 + 648*(7*b^3*d*f^2*g*n^3 - 6*a*b^2*d*f^2
*g*n^2 + 2*a^2*b*d*f^2*g*n)*x)*e^3 - 6*((115*b^3*d^2*g^3*n^3 - 156*a*b^2*d^
2*g^3*n^2 + 72*a^2*b*d^2*g^3*n)*x^2 + 32*(85*b^3*d^2*f*g^2*n^3 - 66*a*b^2*d
^2*f*g^2*n^2 + 18*a^2*b*d^2*f*g^2*n)*x)*e^2 - 12*(415*b^3*d^4*g^3*n^3 - 300
*a*b^2*d^4*g^3*n^2 + 72*a^2*b*d^4*g^3*n + 72*(b^3*d^4*g^3*n - 4*b^3*d^3*f*g
^2*n*e + 6*b^3*d^2*f^2*g*n*e^2 - 4*b^3*d*f^3*n*e^3 - (b^3*g^3*n*x^4 + 4*b^3
*f*g^2*n*x^3 + 6*b^3*f^2*g*n*x^2 + 4*b^3*f^3*n*x)*e^4)*log(c)^2 - (9*(b^3*g
^3*n^3 - 4*a*b^2*g^3*n^2 + 8*a^2*b*g^3*n)*x^4 + 32*(2*b^3*f*g^2*n^3 - 6*a*b
^2*f*g^2*n^2 + 9*a^2*b*f*g^2*n)*x^3 + 216*(b^3*f^2*g*n^3 - 2*a*b^2*f^2*g*n^
2 + 2*a^2*b*f^2*g*n)*x^2 + 288*(2*b^3*f^3*n^3 - 2*a*b^2*f^3*n^2 + a^2*b*f^3
*n)*x)*e^4 - 4*(144*b^3*d*f^3*n^3 - 144*a*b^2*d*f^3*n^2 + 72*a^2*b*d*f^3*n
- (7*b^3*d*g^3*n^3 - 12*a*b^2*d*g^3*n^2)*x^3 - 12*(5*b^3*d*f*g^2*n^3 - 6*a*
b^2*d*f*g^2*n^2)*x^2 - 108*(3*b^3*d*f^2*g*n^3 - 2*a*b^2*d*f^2*g*n^2)*x)*e^3
+ 6*(252*b^3*d^2*f^2*g*n^3 - 216*a*b^2*d^2*f^2*g*n^2 + 72*a^2*b*d^2*f^2*g*
n - (13*b^3*d^2*g^3*n^3 - 12*a*b^2*d^2*g^3*n^2)*x^2 - 16*(11*b^3*d^2*f*g^2*
n^3 - 6*a*b^2*d^2*f*g^2*n^2)*x)*e^2 - 4*(340*b^3*d^3*f*g^2*n^3 - 264*a*b^2*
d^3*f*g^2*n^2 + 72*a^2*b*d^3*f*g^2*n - 3*(25*b^3*d^3*g^3*n^3 - 12*a*b^2*d^3
*g^3*n^2)*x)*e - 12*(25*b^3*d^4*g^3*n^2 - 12*a*b^2*d^4*g^3*n - (3*(b^3*g^3*
n^2 - 4*a*b^2*g^3*n)*x^4 + 16*(b^3*f*g^2*n^2 - 3*a*b^2*f*g^2*n)*x^3 + 36*(b
^3*f^2*g*n^2 - 2*a*b^2*f^2*g*n)*x^2 + 48*(b^3*f^3*n^2 - a*b^2*f^3*n)*x)*e^4
+ 4*(b^3*d*g^3*n^2*x^3 + 6*b^3*d*f*g^2*n^2*x^2 + 18*b^3*d*f^2*g*n^2*x - 12
*b^3*d*f^3*n^2 + 12*a*b^2*d*f^3*n)*e^3 - 6*(b^3*d^2*g^3*n^2*x^2 + 8*b^3*d^2
*f*g^2*n^2*x - 18*b^3*d^2*f^2*g*n^2 + 12*a*b^2*d^2*f^2*g*n)*e^2 + 4*(3*b^3*
d^3*g^3*n^2*x - 22*b^3*d^3*f*g^2*n^2 + 12*a*b^2*d^3*f*g^2*n)*e)*log(c))*log
(x*e + d) - 12*(12*(25*b^3*d^3*g^3*n^2 - 12*a*b^2*d^3*g^3*n)*x*e - (9*(b^3*
g^3*n^2 - 4*a*b^2*g^3*n + 8*a^2*b*g^3)*x^4 + 32*(2*b^3*f*g^2*n^2 - 6*a*b^2*
f*g^2*n + 9*a^2*b*f*g^2)*x^3 + 216*(b^3*f^2*g*n^2 - 2*a*b^2*f^2*g*n + 2*a^2
*b*f^2*g)*x^2 + 288*(2*b^3*f^3*n^2 - 2*a*b^2*f^3*n + a^2*b*f^3)*x)*e^4 + 4*

```
((7*b^3*d*g^3*n^2 - 12*a*b^2*d*g^3*n)*x^3 + 12*(5*b^3*d*f*g^2*n^2 - 6*a*b^2
*d*f*g^2*n)*x^2 + 108*(3*b^3*d*f^2*g*n^2 - 2*a*b^2*d*f^2*g*n)*x)*e^3 - 6*((
13*b^3*d^2*g^3*n^2 - 12*a*b^2*d^2*g^3*n)*x^2 + 16*(11*b^3*d^2*f*g^2*n^2 - 6
*a*b^2*d^2*f*g^2*n)*x)*e^2)*log(c))*e^(-4)
```

Sympy [B] Leaf count of result is larger than twice the leaf count of optimal. 2594 vs. $2(583) = 1166$.
time = 5.21, size = 2594, normalized size = 4.34

Too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**3*(a+b*ln(c*(e*x+d)**n))**3,x)
```

```
[Out] Piecewise((a**3*f**3*x + 3*a**3*f**2*g*x**2/2 + a**3*f*g**2*x**3 + a**3*g**
3*x**4/4 - 3*a**2*b*d**4*g**3*log(c*(d + e*x)**n)/(4*e**4) + 3*a**2*b*d**3*
f*g**2*log(c*(d + e*x)**n)/e**3 + 3*a**2*b*d**3*g**3*n*x/(4*e**3) - 9*a**2*
b*d**2*f**2*g*log(c*(d + e*x)**n)/(2*e**2) - 3*a**2*b*d**2*f*g**2*n*x/e**2
- 3*a**2*b*d**2*g**3*n*x**2/(8*e**2) + 3*a**2*b*d*f**3*log(c*(d + e*x)**n)/
e + 9*a**2*b*d*f**2*g*n*x/(2*e) + 3*a**2*b*d*f*g**2*n*x**2/(2*e) + a**2*b*d
*g**3*n*x**3/(4*e) - 3*a**2*b*f**3*n*x + 3*a**2*b*f**3*x*log(c*(d + e*x)**n
) - 9*a**2*b*f**2*g*n*x**2/4 + 9*a**2*b*f**2*g*x**2*log(c*(d + e*x)**n)/2 -
 a**2*b*f*g**2*n*x**3 + 3*a**2*b*f*g**2*x**3*log(c*(d + e*x)**n) - 3*a**2*b
*g**3*n*x**4/16 + 3*a**2*b*g**3*x**4*log(c*(d + e*x)**n)/4 + 25*a*b**2*d**4
*g**3*n*log(c*(d + e*x)**n)/(8*e**4) - 3*a*b**2*d**4*g**3*log(c*(d + e*x)**
n)**2/(4*e**4) - 11*a*b**2*d**3*f*g**2*n*log(c*(d + e*x)**n)/e**3 + 3*a*b**
2*d**3*f*g**2*log(c*(d + e*x)**n)**2/e**3 - 25*a*b**2*d**3*g**3*n**2*x/(8*e
**3) + 3*a*b**2*d**3*g**3*n*x*log(c*(d + e*x)**n)/(2*e**3) + 27*a*b**2*d**2
*f**2*g*n*log(c*(d + e*x)**n)/(2*e**2) - 9*a*b**2*d**2*f**2*g*log(c*(d + e*
x)**n)**2/(2*e**2) + 11*a*b**2*d**2*f*g**2*n**2*x/e**2 - 6*a*b**2*d**2*f*g*
*2*n*x*log(c*(d + e*x)**n)/e**2 + 13*a*b**2*d**2*g**3*n**2*x**2/(16*e**2) -
 3*a*b**2*d**2*g**3*n*x**2*log(c*(d + e*x)**n)/(4*e**2) - 6*a*b**2*d*f**3*n
*log(c*(d + e*x)**n)/e + 3*a*b**2*d*f**3*log(c*(d + e*x)**n)**2/e - 27*a*b*
*2*d*f**2*g*n**2*x/(2*e) + 9*a*b**2*d*f**2*g*n*x*log(c*(d + e*x)**n)/e - 5*
a*b**2*d*f*g**2*n**2*x**2/(2*e) + 3*a*b**2*d*f*g**2*n*x**2*log(c*(d + e*x)*
*n)/e - 7*a*b**2*d*g**3*n**2*x**3/(24*e) + a*b**2*d*g**3*n*x**3*log(c*(d +
e*x)**n)/(2*e) + 6*a*b**2*f**3*n**2*x - 6*a*b**2*f**3*n*x*log(c*(d + e*x)**
n) + 3*a*b**2*f**3*x*log(c*(d + e*x)**n)**2 + 9*a*b**2*f**2*g*n**2*x**2/4 -
 9*a*b**2*f**2*g*n*x**2*log(c*(d + e*x)**n)/2 + 9*a*b**2*f**2*g*x**2*log(c*
(d + e*x)**n)**2/2 + 2*a*b**2*f*g**2*n**2*x**3/3 - 2*a*b**2*f*g**2*n*x**3*l
og(c*(d + e*x)**n) + 3*a*b**2*f*g**2*x**3*log(c*(d + e*x)**n)**2 + 3*a*b**2
*g**3*n**2*x**4/32 - 3*a*b**2*g**3*n*x**4*log(c*(d + e*x)**n)/8 + 3*a*b**2*
g**3*x**4*log(c*(d + e*x)**n)**2/4 - 415*b**3*d**4*g**3*n**2*log(c*(d + e*x
)**n)/(96*e**4) + 25*b**3*d**4*g**3*n*log(c*(d + e*x)**n)**2/(16*e**4) - b*
*3*d**4*g**3*log(c*(d + e*x)**n)**3/(4*e**4) + 85*b**3*d**3*f*g**2*n**2*log
```

```
(c*(d + e*x)**n)/(6*e**3) - 11*b**3*d**3*f*g**2*n*log(c*(d + e*x)**n)**2/(2
*e**3) + b**3*d**3*f*g**2*log(c*(d + e*x)**n)**3/e**3 + 415*b**3*d**3*g**3*
n**3*x/(96*e**3) - 25*b**3*d**3*g**3*n**2*x*log(c*(d + e*x)**n)/(8*e**3) +
3*b**3*d**3*g**3*n*x*log(c*(d + e*x)**n)**2/(4*e**3) - 63*b**3*d**2*f**2*g*
n**2*log(c*(d + e*x)**n)/(4*e**2) + 27*b**3*d**2*f**2*g*n*log(c*(d + e*x)**
n)**2/(4*e**2) - 3*b**3*d**2*f**2*g*log(c*(d + e*x)**n)**3/(2*e**2) - 85*b*
*3*d**2*f*g**2*n**3*x/(6*e**2) + 11*b**3*d**2*f*g**2*n**2*x*log(c*(d + e*x)
**n)/e**2 - 3*b**3*d**2*f*g**2*n*x*log(c*(d + e*x)**n)**2/e**2 - 115*b**3*d
**2*g**3*n**3*x**2/(192*e**2) + 13*b**3*d**2*g**3*n**2*x**2*log(c*(d + e*x)
**n)/(16*e**2) - 3*b**3*d**2*g**3*n*x**2*log(c*(d + e*x)**n)**2/(8*e**2) +
6*b**3*d*f**3*n**2*log(c*(d + e*x)**n)/e - 3*b**3*d*f**3*n*log(c*(d + e*x)*
*n)**2/e + b**3*d*f**3*log(c*(d + e*x)**n)**3/e + 63*b**3*d*f**2*g*n**3*x/(
4*e) - 27*b**3*d*f**2*g*n**2*x*log(c*(d + e*x)**n)/(2*e) + 9*b**3*d*f**2*g*
n*x*log(c*(d + e*x)**n)**2/(2*e) + 19*b**3*d*f*g**2*n**3*x**2/(12*e) - 5*b*
*3*d*f*g**2*n**2*x**2*log(c*(d + e*x)**n)/(2*e) + 3*b**3*d*f*g**2*n*x**2*lo
g(c*(d + e*x)**n)**2/(2*e) + 37*b**3*d*g**3*n**3*x**3/(288*e) - 7*b**3*d*g*
*3*n**2*x**3*log(c*(d + e*x)**n)/(24*e) + b**3*d*g**3*n*x**3*log(c*(d + e*x
)**n)**2/(4*e) - 6*b**3*f**3*n**3*x + 6*b**3*f**3*n**2*x*log(c*(d + e*x)**n
) - 3*b**3*f**3*n*x*log(c*(d + e*x)**n)**2 + b**3*f**3*x*log(c*(d + e*x)**n
)**3 - 9*b**3*f**2*g*n**3*x**2/8 + 9*b**3*f**2*g*n**2*x**2*log(c*(d + e*x)*
*n)/4 - 9*b**3*f**2*g*n*x**2*log(c*(d + e*x)**n)**2/4 + 3*b**3*f**2*g*x**2*
log(c*(d + e*x)**n)**3/2 - 2*b**3*f*g**2*n**3*x**3/9 + 2*b**3*f*g**2*n**2*x
**3*log(c*(d + e*x)**n)/3 - b**3*f*g**2*n*x**3*log(c*(d + e*x)**n)**2 + b**
3*f*g**2*x**3*log(c*(d + e*x)**n)**3 - 3*b**3*g**3*n**3*x**4/128 + 3*b**3*g
**3*n**2*x**4*log(c*(d + e*x)**n)/32 - 3*b**3*g**3*n*x**4*log(c*(d + e*x)**
n)**2/16 + b**3*g**3*x**4*log(c*(d + e*x)**n)**3/4, Ne(e, 0)), ((a + b*log(
c*d**n))**3*(f**3*x + 3*f**2*g*x**2/2 + f*g**2*x**3 + g**3*x**4/4), True))
```

Giac [B] Leaf count of result is larger than twice the leaf count of optimal. 5282 vs. $2(602) = 1204$.
time = 3.98, size = 5282, normalized size = 8.83

Too large to display

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/4*(x*e + d)^4*b^3*g^3*n^3*e^(-4)*log(x*e + d)^3 - (x*e + d)^3*b^3*d*g^3*n
^3*e^(-4)*log(x*e + d)^3 + 3/2*(x*e + d)^2*b^3*d^2*g^3*n^3*e^(-4)*log(x*e +
 d)^3 - (x*e + d)*b^3*d^3*g^3*n^3*e^(-4)*log(x*e + d)^3 - 3/16*(x*e + d)^4*
b^3*g^3*n^3*e^(-4)*log(x*e + d)^2 + (x*e + d)^3*b^3*d*g^3*n^3*e^(-4)*log(x*
e + d)^2 - 9/4*(x*e + d)^2*b^3*d^2*g^3*n^3*e^(-4)*log(x*e + d)^2 + 3*(x*e +
 d)*b^3*d^3*g^3*n^3*e^(-4)*log(x*e + d)^2 + (x*e + d)^3*b^3*f*g^2*n^3*e^(-3
)*log(x*e + d)^3 - 3*(x*e + d)^2*b^3*d*f*g^2*n^3*e^(-3)*log(x*e + d)^3 + 3*
(x*e + d)*b^3*d^2*f*g^2*n^3*e^(-3)*log(x*e + d)^3 + 3/4*(x*e + d)^4*b^3*g^3
```

*n^2*e^(-4)*log(x*e + d)^2*log(c) - 3*(x*e + d)^3*b^3*d*g^3*n^2*e^(-4)*log(
x*e + d)^2*log(c) + 9/2*(x*e + d)^2*b^3*d^2*g^3*n^2*e^(-4)*log(x*e + d)^2*l
og(c) - 3*(x*e + d)*b^3*d^3*g^3*n^2*e^(-4)*log(x*e + d)^2*log(c) + 3/32*(x*
e + d)^4*b^3*g^3*n^3*e^(-4)*log(x*e + d) - 2/3*(x*e + d)^3*b^3*d*g^3*n^3*e^
(-4)*log(x*e + d) + 9/4*(x*e + d)^2*b^3*d^2*g^3*n^3*e^(-4)*log(x*e + d) - 6
*(x*e + d)*b^3*d^3*g^3*n^3*e^(-4)*log(x*e + d) - (x*e + d)^3*b^3*f*g^2*n^3*
e^(-3)*log(x*e + d)^2 + 9/2*(x*e + d)^2*b^3*d*f*g^2*n^3*e^(-3)*log(x*e + d)
^2 - 9*(x*e + d)*b^3*d^2*f*g^2*n^3*e^(-3)*log(x*e + d)^2 + 3/4*(x*e + d)^4*
a*b^2*g^3*n^2*e^(-4)*log(x*e + d)^2 - 3*(x*e + d)^3*a*b^2*d*g^3*n^2*e^(-4)*
log(x*e + d)^2 + 9/2*(x*e + d)^2*a*b^2*d^2*g^3*n^2*e^(-4)*log(x*e + d)^2 -
3*(x*e + d)*a*b^2*d^3*g^3*n^2*e^(-4)*log(x*e + d)^2 + 3/2*(x*e + d)^2*b^3*f
^2*g*n^3*e^(-2)*log(x*e + d)^3 - 3*(x*e + d)*b^3*d*f^2*g*n^3*e^(-2)*log(x*e
 + d)^3 - 3/8*(x*e + d)^4*b^3*g^3*n^2*e^(-4)*log(x*e + d)*log(c) + 2*(x*e +
 d)^3*b^3*d*g^3*n^2*e^(-4)*log(x*e + d)*log(c) - 9/2*(x*e + d)^2*b^3*d^2*g^
3*n^2*e^(-4)*log(x*e + d)*log(c) + 6*(x*e + d)*b^3*d^3*g^3*n^2*e^(-4)*log(x
*e + d)*log(c) + 3*(x*e + d)^3*b^3*f*g^2*n^2*e^(-3)*log(x*e + d)^2*log(c) -
 9*(x*e + d)^2*b^3*d*f*g^2*n^2*e^(-3)*log(x*e + d)^2*log(c) + 9*(x*e + d)*b
^3*d^2*f*g^2*n^2*e^(-3)*log(x*e + d)^2*log(c) + 3/4*(x*e + d)^4*b^3*g^3*n*e
^(-4)*log(x*e + d)*log(c)^2 - 3*(x*e + d)^3*b^3*d*g^3*n*e^(-4)*log(x*e + d)
log(c)^2 + 9/2(x*e + d)^2*b^3*d^2*g^3*n*e^(-4)*log(x*e + d)*log(c)^2 - 3*
(x*e + d)*b^3*d^3*g^3*n*e^(-4)*log(x*e + d)*log(c)^2 - 3/128*(x*e + d)^4*b^
3*g^3*n^3*e^(-4) + 2/9*(x*e + d)^3*b^3*d*g^3*n^3*e^(-4) - 9/8*(x*e + d)^2*b
^3*d^2*g^3*n^3*e^(-4) + 6*(x*e + d)*b^3*d^3*g^3*n^3*e^(-4) + 2/3*(x*e + d)^
3*b^3*f*g^2*n^3*e^(-3)*log(x*e + d) - 9/2*(x*e + d)^2*b^3*d*f*g^2*n^3*e^(-3
)*log(x*e + d) + 18*(x*e + d)*b^3*d^2*f*g^2*n^3*e^(-3)*log(x*e + d) - 3/8*(
x*e + d)^4*a*b^2*g^3*n^2*e^(-4)*log(x*e + d) + 2*(x*e + d)^3*a*b^2*d*g^3*n^
2*e^(-4)*log(x*e + d) - 9/2*(x*e + d)^2*a*b^2*d^2*g^3*n^2*e^(-4)*log(x*e +
d) + 6*(x*e + d)*a*b^2*d^3*g^3*n^2*e^(-4)*log(x*e + d) - 9/4*(x*e + d)^2*b^
3*f^2*g*n^3*e^(-2)*log(x*e + d)^2 + 9*(x*e + d)*b^3*d*f^2*g*n^3*e^(-2)*log(
x*e + d)^2 + 3*(x*e + d)^3*a*b^2*f*g^2*n^2*e^(-3)*log(x*e + d)^2 - 9*(x*e +
 d)^2*a*b^2*d*f*g^2*n^2*e^(-3)*log(x*e + d)^2 + 9*(x*e + d)*a*b^2*d^2*f*g^2
*n^2*e^(-3)*log(x*e + d)^2 + (x*e + d)*b^3*f^3*n^3*e^(-1)*log(x*e + d)^3 +
3/32*(x*e + d)^4*b^3*g^3*n^2*e^(-4)*log(c) - 2/3*(x*e + d)^3*b^3*d*g^3*n^2*
e^(-4)*log(c) + 9/4*(x*e + d)^2*b^3*d^2*g^3*n^2*e^(-4)*log(c) - 6*(x*e + d)
*b^3*d^3*g^3*n^2*e^(-4)*log(c) - 2*(x*e + d)^3*b^3*f*g^2*n^2*e^(-3)*log(x*e
 + d)*log(c) + 9*(x*e + d)^2*b^3*d*f*g^2*n^2*e^(-3)*log(x*e + d)*log(c) - 1
8*(x*e + d)*b^3*d^2*f*g^2*n^2*e^(-3)*log(x*e + d)*log(c) + 3/2*(x*e + d)^4*
a*b^2*g^3*n*e^(-4)*log(x*e + d)*log(c) - 6*(x*e + d)^3*a*b^2*d*g^3*n*e^(-4)
*log(x*e + d)*log(c) + 9*(x*e + d)^2*a*b^2*d^2*g^3*n*e^(-4)*log(x*e + d)*lo
g(c) - 6*(x*e + d)*a*b^2*d^3*g^3*n*e^(-4)*log(x*e + d)*log(c) + 9/2*(x*e +
d)^2*b^3*f^2*g*n^2*e^(-2)*log(x*e + d)^2*log(c) - 9*(x*e + d)*b^3*d*f^2*g*n
^2*e^(-2)*log(x*e + d)^2*log(c) - 3/16*(x*e + d)^4*b^3*g^3*n*e^(-4)*log(c)^
2 + (x*e + d)^3*b^3*d*g^3*n*e^(-4)*log(c)^2 - 9/4*(x*e + d)^2*b^3*d^2*g^3*n
*e^(-4)*log(c)^2 + 3*(x*e + d)*b^3*d^3*g^3*n*e^(-4)*log(c)^2 + 3*(x*e + d)^
3*b^3*f*g^2*n*e^(-3)*log(x*e + d)*log(c)^2 - 9*(x*e + d)^2*b^3*d*f*g^2*n*e^

```
(-3)*log(x*e + d)*log(c)^2 + 9*(x*e + d)*b^3*d^2*f*g^2*n*e^(-3)*log(x*e + d
)*log(c)^2 + 1/4*(x*e + d)^4*b^3*g^3*e^(-4)*log(c)^3 - (x*e + d)^3*b^3*d*g^
3*e^(-4)*log(c)^3 + 3/2*(x*e + d)^2*b^3*d^2*g^3*e^(-4)*log(c)^3 - (x*e + d)
*b^3*d^3*g^3*e^(-4)*log(c)^3 - 2/9*(x*e + d)^3*b^3*f*g^2*n^3*e^(-3) + 9/4*(
x*e + d)^2*b^3*d*f*g^2*n^3*e^(-3) - 18*(x*e + d)*b^3*d^2*f*g^2*n^3*e^(-3) +
 3/32*(x*e + d)^4*a*b^2*g^3*n^2*e^(-4) - 2/3*(x*e + d)^3*a*b^2*d*g^3*n^2*e^
(-4) + 9/4*(x*e + d)^2*a*b^2*d^2*g^3*n^2*e^(-4) - 6*(x*e + d)*a*b^2*d^3*g^3
*n^2*e^(-4) + 9/4*(x*e + d)^2*b^3*f^2*g*n^3*e^(-2)*log(x*e + d) - 18*(x*e +
 d)*b^3*d*f^2*g*n^3*e^(-2)*log(x*e + d) - 2*(x*e + d)^3*a*b^2*f*g^2*n^2*e^(
-3)*log(x*e + d) + 9*(x*e + d)^2*a*b^2*d*f*g^2*n^2*e^(-3)*log(x*e + d) - 18
*(x*e + d)*a*b^2*d^2*f*g^2*n^2*e^(-3)*log(x*e + d) + 3/4*(x*e + d)^4*a^2*b*
g^3*n*e^(-4)*log(x*e + d) - 3*(x*e + d)^3*a^2*b*d*g^3*n*e^(-4)*log(x*e + d)
 + 9/2*(x*e + d)^2*a^2*b*d^2*g^3*n*e^(-4)*log(x*e + d) - 3*(x*e + d)*a^2*b*
d^3*g^3*n*e^(-4)*log(x*e + d) - 3*(x*e + d)*b^3...
```

Mupad [B]

time = 1.21, size = 2133, normalized size = 3.57

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)^3*(a + b*log(c*(d + e*x)^n))^3,x)
```

```
[Out] x^3*((g^2*(24*a^3*d*g + 72*a^3*e*f + 7*b^3*d*g*n^3 - 16*b^3*e*f*n^3 - 12*a*
b^2*d*g*n^2 + 48*a*b^2*e*f*n^2 - 72*a^2*b*e*f*n))/(72*e) - (d*g^3*(32*a^3 -
 3*b^3*n^3 + 12*a*b^2*n^2 - 24*a^2*b*n))/(96*e)) + log(c*(d + e*x)^n)^3*(b^
3*f^3*x - (d*(b^3*d^3*g^3 - 4*b^3*e^3*f^3 + 6*b^3*d*e^2*f^2*g - 4*b^3*d^2*e
*f*g^2))/(4*e^4) + (b^3*g^3*x^4)/4 + (3*b^3*f^2*g*x^2)/2 + b^3*f*g^2*x^3) -
 x^2*((d*((g^2*(24*a^3*d*g + 72*a^3*e*f + 7*b^3*d*g*n^3 - 16*b^3*e*f*n^3 -
12*a*b^2*d*g*n^2 + 48*a*b^2*e*f*n^2 - 72*a^2*b*e*f*n))/(24*e) - (d*g^3*(32*
a^3 - 3*b^3*n^3 + 12*a*b^2*n^2 - 24*a^2*b*n))/(32*e)))/(2*e) - (g*(48*a^3*e
^2*f^2 - 13*b^3*d^2*g^2*n^3 - 36*b^3*e^2*f^2*n^3 - 72*a^2*b*e^2*f^2*n + 48*
a^3*d*e*f*g + 12*a*b^2*d^2*g^2*n^2 + 72*a*b^2*e^2*f^2*n^2 + 40*b^3*d*e*f*g*
n^3 - 48*a*b^2*d*e*f*g*n^2))/(32*e^2)) + log(c*(d + e*x)^n)^2*((x^3*((4*b^2
*g^2*(a*d*g + 3*a*e*f - b*e*f*n))/e - (b^2*d*g^3*(4*a - b*n))/e))/4 - (x^2*
((d*((48*b^2*g^2*(a*d*g + 3*a*e*f - b*e*f*n))/e - (12*b^2*d*g^3*(4*a - b*n)
)/e))/(8*e) - (9*b^2*f*g*(2*a*d*g + 2*a*e*f - b*e*f*n))/e))/4 + (x*((d*((d*
((48*b^2*g^2*(a*d*g + 3*a*e*f - b*e*f*n))/e - (12*b^2*d*g^3*(4*a - b*n))/e)
)/e - (72*b^2*f*g*(2*a*d*g + 2*a*e*f - b*e*f*n))/e))/(4*e) + (12*b^2*f^2*(3
*a*d*g + a*e*f - b*e*f*n))/e))/4 - (12*a*b^2*d^4*g^3 - 25*b^3*d^4*g^3*n - 4
8*a*b^2*d*e^3*f^3 + 48*b^3*d*e^3*f^3*n + 72*a*b^2*d^2*e^2*f^2*g - 108*b^3*d
^2*e^2*f^2*g*n - 48*a*b^2*d^3*e*f*g^2 + 88*b^3*d^3*e*f*g^2*n)/(16*e^4) + (3
*b^2*g^3*x^4*(4*a - b*n))/16) + x*((96*a^3*e^3*f^3 + 300*b^3*d^3*g^3*n^3 -
576*b^3*e^3*f^3*n^3 + 288*a^3*d*e^2*f^2*g - 288*a^2*b*e^3*f^3*n - 144*a*b^2
*d^3*g^3*n^2 + 576*a*b^2*e^3*f^3*n^2 + 1296*b^3*d*e^2*f^2*g*n^3 - 1056*b^3*
```

```
d^2*e*f*g^2*n^3 - 864*a*b^2*d*e^2*f^2*g*n^2 + 576*a*b^2*d^2*e*f*g^2*n^2)/(9
6*e^3) + (d*((d*((g^2*(24*a^3*d*g + 72*a^3*e*f + 7*b^3*d*g*n^3 - 16*b^3*e*f
*n^3 - 12*a*b^2*d*g*n^2 + 48*a*b^2*e*f*n^2 - 72*a^2*b*e*f*n))/(24*e) - (d*g
^3*(32*a^3 - 3*b^3*n^3 + 12*a*b^2*n^2 - 24*a^2*b*n))/(32*e)))/e - (g*(48*a^
3*e^2*f^2 - 13*b^3*d^2*g^2*n^3 - 36*b^3*e^2*f^2*n^3 - 72*a^2*b*e^2*f^2*n +
48*a^3*d*e*f*g + 12*a*b^2*d^2*g^2*n^2 + 72*a*b^2*e^2*f^2*n^2 + 40*b^3*d*e*f
*g*n^3 - 48*a*b^2*d*e*f*g*n^2))/(16*e^2)))/e) - (log(d + e*x)*(415*b^3*d^4*
g^3*n^3 + 72*a^2*b*d^4*g^3*n - 300*a*b^2*d^4*g^3*n^2 - 576*b^3*d*e^3*f^3*n^
3 + 576*a*b^2*d*e^3*f^3*n^2 - 1360*b^3*d^3*e*f*g^2*n^3 + 1512*b^3*d^2*e^2*f
^2*g*n^3 - 288*a^2*b*d*e^3*f^3*n - 1296*a*b^2*d^2*e^2*f^2*g*n^2 - 288*a^2*b
*d^3*e*f*g^2*n + 432*a^2*b*d^2*e^2*f^2*g*n + 1056*a*b^2*d^3*e*f*g^2*n^2))/(
96*e^4) + (g^3*x^4*(32*a^3 - 3*b^3*n^3 + 12*a*b^2*n^2 - 24*a^2*b*n))/128 +
(log(c*(d + e*x)^n)*((x^3*(32*b*e^3*g^2*(6*a^2*d*g + 18*a^2*e*f - b^2*d*g*n
^2 + 4*b^2*e*f*n^2 - 12*a*b*e*f*n) - 24*b*d*e^3*g^3*(8*a^2 + b^2*n^2 - 4*a*
b*n)))/(24*e^2) - (x^2*((d*(32*b*e^3*g^2*(6*a^2*d*g + 18*a^2*e*f - b^2*d*g*
n^2 + 4*b^2*e*f*n^2 - 12*a*b*e*f*n) - 24*b*d*e^3*g^3*(8*a^2 + b^2*n^2 - 4*a
*b*n)))/e - 48*b*e^2*g*(12*a^2*e^2*f^2 + b^2*d^2*g^2*n^2 + 6*b^2*e^2*f^2*n^
2 - 12*a*b*e^2*f^2*n + 12*a^2*d*e*f*g - 4*b^2*d*e*f*g*n^2)))/(16*e^2) + (x*
((192*a^2*b*e^5*f^3 + 384*b^3*e^5*f^3*n^2 - 96*b^3*d^3*e^2*g^3*n^2 - 384*a*
b^2*e^5*f^3*n - 576*b^3*d*e^4*f^2*g*n^2 + 384*b^3*d^2*e^3*f*g^2*n^2 + 576*a
^2*b*d*e^4*f^2*g)/e + (d*((d*(32*b*e^3*g^2*(6*a^2*d*g + 18*a^2*e*f - b^2*d*
g*n^2 + 4*b^2*e*f*n^2 - 12*a*b*e*f*n) - 24*b*d*e^3*g^3*(8*a^2 + b^2*n^2 - 4
*a*b*n)))/e - 48*b*e^2*g*(12*a^2*e^2*f^2 + b^2*d^2*g^2*n^2 + 6*b^2*e^2*f^2*
n^2 - 12*a*b*e^2*f^2*n + 12*a^2*d*e*f*g - 4*b^2*d*e*f*g*n^2)))/e))/(8*e^2)
+ (3*b*e^2*g^3*x^4*(8*a^2 + b^2*n^2 - 4*a*b*n))/4))/(8*e^2)
```

3.53 $\int (f+gx)^2 \left(a+b\log\left(c(d+ex)^n\right)\right)^3 \, dx$

Optimal. Leaf size=432

$$\frac{6ab^2(ef-dg)^2n^2x}{e^2}-\frac{6b^3(ef-dg)^2n^3x}{e^2}-\frac{3b^3g(ef-dg)n^3(d+ex)^2}{4e^3}-\frac{2b^3g^2n^3(d+ex)^3}{27e^3}+\frac{6b^3(ef-dg)^2n^2(d$$

```
[Out] 6*a*b^2*(-d*g+e*f)^2*n^2*x/e^2-6*b^3*(-d*g+e*f)^2*n^3*x/e^2-3/4*b^3*g*(-d*g
+e*f)*n^3*(e*x+d)^2/e^3-2/27*b^3*g^2*n^3*(e*x+d)^3/e^3+6*b^3*(-d*g+e*f)^2*n
^2*(e*x+d)*ln(c*(e*x+d)^n)/e^3+3/2*b^2*g*(-d*g+e*f)*n^2*(e*x+d)^2*(a+b*ln(c
*(e*x+d)^n))/e^3+2/9*b^2*g^2*n^2*(e*x+d)^3*(a+b*ln(c*(e*x+d)^n))/e^3-3*b*(-
d*g+e*f)^2*n*(e*x+d)*(a+b*ln(c*(e*x+d)^n))^2/e^3-3/2*b*g*(-d*g+e*f)*n*(e*x+
d)^2*(a+b*ln(c*(e*x+d)^n))^2/e^3-1/3*b*g^2*n*(e*x+d)^3*(a+b*ln(c*(e*x+d)^n)
)^2/e^3+(-d*g+e*f)^2*(e*x+d)*(a+b*ln(c*(e*x+d)^n))^3/e^3+g*(-d*g+e*f)*(e*x+
d)^2*(a+b*ln(c*(e*x+d)^n))^3/e^3+1/3*g^2*(e*x+d)^3*(a+b*ln(c*(e*x+d)^n))^3/
e^3
```

Rubi [A]
time = 0.27, antiderivative size = 432, normalized size of antiderivative = 1.00, number of steps used = 15, number of rules used = 7, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.292$, Rules used = {2448, 2436, 2333, 2332, 2437, 2342, 2341}

$$\frac{3b^2gn^2(d+ex)^2(ef-dg)\left(a+b\log\left(c(d+ex)^n\right)\right)}{2e^3}+\frac{2b^2g^2n^2(d+ex)^3\left(a+b\log\left(c(d+ex)^n\right)\right)}{9e^3}+\frac{6ab^2n^2x(ef-dg)^2}{e^2}-\frac{3bgn(d+ex)^2(ef-dg)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{2e^3}-\frac{3bn(d+ex)(ef-dg)^2\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{e^3}+\frac{g(d+ex)^2(ef-dg)\left(a+b\log\left(c(d+ex)^n\right)\right)^3}{e^3}+\frac{(d+ex)(ef-dg)^2\left(a+b\log\left(c(d+ex)^n\right)\right)^3}{e^3}-\frac{bg^2n(d+ex)^3\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{3e^3}+\frac{g^2(d+ex)^3\left(a+b\log\left(c(d+ex)^n\right)\right)^3}{3e^3}+\frac{6b^3n^2(d+ex)(ef-dg)^2\log\left(c(d+ex)^n\right)}{e^3}-\frac{3b^3gn^3(d+ex)^2(ef-dg)}{4e^3}-\frac{2b^3g^2n^3(d+ex)^3}{27e^3}-\frac{6b^3n^3x(ef-dg)^2}{e^2}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)^2*(a + b*Log[c*(d + e*x)^n])^3,x]
```

```
[Out] (6*a*b^2*(e*f - d*g)^2*n^2*x)/e^2 - (6*b^3*(e*f - d*g)^2*n^3*x)/e^2 - (3*b^
3*g*(e*f - d*g)*n^3*(d + e*x)^2)/(4*e^3) - (2*b^3*g^2*n^3*(d + e*x)^3)/(27*
e^3) + (6*b^3*(e*f - d*g)^2*n^2*(d + e*x)*Log[c*(d + e*x)^n])/e^3 + (3*b^2*
g*(e*f - d*g)*n^2*(d + e*x)^2*(a + b*Log[c*(d + e*x)^n]))/(2*e^3) + (2*b^2*
g^2*n^2*(d + e*x)^3*(a + b*Log[c*(d + e*x)^n]))/(9*e^3) - (3*b*(e*f - d*g)^
2*n*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^2)/e^3 - (3*b*g*(e*f - d*g)*n*(d +
 e*x)^2*(a + b*Log[c*(d + e*x)^n])^2)/(2*e^3) - (b*g^2*n*(d + e*x)^3*(a + b
*Log[c*(d + e*x)^n])^2)/(3*e^3) + ((e*f - d*g)^2*(d + e*x)*(a + b*Log[c*(d
+ e*x)^n])^3)/e^3 + (g*(e*f - d*g)*(d + e*x)^2*(a + b*Log[c*(d + e*x)^n])^3
)/e^3 + (g^2*(d + e*x)^3*(a + b*Log[c*(d + e*x)^n])^3)/(3*e^3)
```

Rule 2332

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

Rule 2333

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

```
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2341

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_.)*(x_))^(m_.), x_Symbol] :>
Simp[(d*x)^(m + 1)*((a + b*Log[c*x^n])/(d*(m + 1))), x] - Simp[b*n*((d*x)^(
m + 1)/(d*(m + 1)^2)), x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[m, -1]
```

Rule 2342

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_.)*(x_))^(m_.), x_Symbo
l] :> Simp[(d*x)^(m + 1)*((a + b*Log[c*x^n])^p/(d*(m + 1))), x] - Dist[b*n*
(p/(m + 1)), Int[(d*x)^m*(a + b*Log[c*x^n])^(p - 1), x], x] /; FreeQ[{a, b,
 c, d, m, n}, x] && NeQ[m, -1] && GtQ[p, 0]
```

Rule 2436

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

Rule 2437

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

Rule 2448

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

Rubi steps

$$\int (f+gx)^2 \left(a+b\log \left(c(d+ex)^n\right)\right)^3 \, dx = \int \left(\frac{(ef-dg)^2 \left(a+b\log \left(c(d+ex)^n\right)\right)^3}{e^2} + \frac{2g(ef-dg)(d+ex)}{}\right.$$
$$= \frac{g^2 \int (d+ex)^2 \left(a+b\log \left(c(d+ex)^n\right)\right)^3 \, dx}{e^2} + \frac{(2g(ef-dg)) \int (d}{}$$
$$= \frac{g^2\text{Subst}\left(\int x^2(a+b\log (cx^n))^3 \, dx, x, d+ex\right)}{e^3} + \frac{(2g(ef-dg))\text{Su}}{}$$
$$= \frac{(ef-dg)^2(d+ex) \left(a+b\log \left(c(d+ex)^n\right)\right)^3}{e^3} + \frac{g(ef-dg)(d+e}{}$$
$$= -\frac{3b(ef-dg)^2n(d+ex) \left(a+b\log \left(c(d+ex)^n\right)\right)^2}{e^3} - \frac{3bg(ef-d}{}$$
$$= \frac{6ab^2(ef-dg)^2n^2x}{e^2} - \frac{3b^3g(ef-dg)n^3(d+ex)^2}{4e^3} - \frac{2b^3g^2n^3(d+}{27e^3}$$
$$= \frac{6ab^2(ef-dg)^2n^2x}{e^2} - \frac{6b^3(ef-dg)^2n^3x}{e^2} - \frac{3b^3g(ef-dg)n^3(d+}{4e^3}$$

Mathematica [A]
time = 0.53, size = 809, normalized size = 1.87

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)^2*(a + b*Log[c*(d + e*x)^n])^3,x]
```

```
[Out] (36*b^3*d*(3*e^2*f^2 - 3*d*e*f*g + d^2*g^2)*n^3*Log[d + e*x]^3 - 18*b^2*d*n
^2*Log[d + e*x]^2*(6*a*(3*e^2*f^2 - 3*d*e*f*g + d^2*g^2) + b*(-18*e^2*f^2 +
 27*d*e*f*g - 11*d^2*g^2)*n + 6*b*(3*e^2*f^2 - 3*d*e*f*g + d^2*g^2)*Log[c*(
d + e*x)^n]) + 6*b*d*n*Log[d + e*x]*(18*a^2*(3*e^2*f^2 - 3*d*e*f*g + d^2*g^
2) - 6*a*b*(18*e^2*f^2 - 27*d*e*f*g + 11*d^2*g^2)*n + b^2*(108*e^2*f^2 - 18
9*d*e*f*g + 85*d^2*g^2)*n^2 + 6*b*(6*a*(3*e^2*f^2 - 3*d*e*f*g + d^2*g^2) +
b*(-18*e^2*f^2 + 27*d*e*f*g - 11*d^2*g^2)*n)*Log[c*(d + e*x)^n] + 18*b^2*(3
*e^2*f^2 - 3*d*e*f*g + d^2*g^2)*Log[c*(d + e*x)^n]^2) + e*x*(36*a^3*e^2*(3*
f^2 + 3*f*g*x + g^2*x^2) - 18*a^2*b*n*(6*d^2*g^2 - 3*d*e*g*(6*f + g*x) + e^
2*(18*f^2 + 9*f*g*x + 2*g^2*x^2)) + 6*a*b^2*n^2*(66*d^2*g^2 - 3*d*e*g*(54*f
 + 5*g*x) + e^2*(108*f^2 + 27*f*g*x + 4*g^2*x^2)) - b^3*n^3*(510*d^2*g^2 -
3*d*e*g*(378*f + 19*g*x) + e^2*(648*f^2 + 81*f*g*x + 8*g^2*x^2)) + 6*b*(18*
a^2*e^2*(3*f^2 + 3*f*g*x + g^2*x^2) - 6*a*b*n*(6*d^2*g^2 - 3*d*e*g*(6*f + g
*x) + e^2*(18*f^2 + 9*f*g*x + 2*g^2*x^2)) + b^2*n^2*(66*d^2*g^2 - 3*d*e*g*(
54*f + 5*g*x) + e^2*(108*f^2 + 27*f*g*x + 4*g^2*x^2)))*Log[c*(d + e*x)^n] +
 18*b^2*(6*a*e^2*(3*f^2 + 3*f*g*x + g^2*x^2) - b*n*(6*d^2*g^2 - 3*d*e*g*(6*
f + g*x) + e^2*(18*f^2 + 9*f*g*x + 2*g^2*x^2)))*Log[c*(d + e*x)^n]^2 + 36*b
^3*e^2*(3*f^2 + 3*f*g*x + g^2*x^2)*Log[c*(d + e*x)^n]^3))/(108*e^3)
```

Maple [C] Result contains higher order function than in optimal. Order 9 vs. order 3.
time = 2.62, size = 20417, normalized size = 47.26

method	result	size
risch	Expression too large to display	20417

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^2*(a+b*ln(c*(e*x+d)^n))^3,x,method=_RETURNVERBOSE)
```

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

Maxima [B] Leaf count of result is larger than twice the leaf count of optimal. 1172 vs. 2(435) = 870.
time = 0.32, size = 1172, normalized size = 2.71

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2*(a+b*log(c*(e*x+d)^n))^3,x, algorithm="maxima")
```

```
[Out] 1/3*b^3*g^2*x^3*log((x*e + d)^n*c)^3 + a*b^2*g^2*x^3*log((x*e + d)^n*c)^2 +
 b^3*f*g*x^2*log((x*e + d)^n*c)^3 + a^2*b*g^2*x^3*log((x*e + d)^n*c) + 3*a*
b^2*f*g*x^2*log((x*e + d)^n*c)^2 + b^3*f^2*x*log((x*e + d)^n*c)^3 + 1/3*a^3
*g^2*x^3 + 3*(d*e^(-2)*log(x*e + d) - x*e^(-1))*a^2*b*f^2*n*e - 3/2*(2*d^2*
e^(-3)*log(x*e + d) + (x^2*e - 2*d*x)*e^(-2))*a^2*b*f*g*n*e + 1/6*(6*d^3*e^
(-4)*log(x*e + d) - (2*x^3*e^2 - 3*d*x^2*e + 6*d^2*x)*e^(-3))*a^2*b*g^2*n*e
 + 3*a^2*b*f*g*x^2*log((x*e + d)^n*c) + 3*a*b^2*f^2*x*log((x*e + d)^n*c)^2
+ a^3*f*g*x^2 + 3*a^2*b*f^2*x*log((x*e + d)^n*c) - 3*((d*log(x*e + d)^2 - 2
*x*e + 2*d*log(x*e + d))*n^2*e^(-1) - 2*(d*e^(-2)*log(x*e + d) - x*e^(-1))*
n*e*log((x*e + d)^n*c))*a*b^2*f^2 + (3*(d*e^(-2)*log(x*e + d) - x*e^(-1))*n
*e*log((x*e + d)^n*c)^2 + ((d*log(x*e + d)^3 + 3*d*log(x*e + d)^2 - 6*x*e +
 6*d*log(x*e + d))*n^2*e^(-2) - 3*(d*log(x*e + d)^2 - 2*x*e + 2*d*log(x*e +
 d))*n*e^(-2)*log((x*e + d)^n*c))*n*e)*b^3*f^2 + 3/2*((2*d^2*log(x*e + d)^2
 + x^2*e^2 - 6*d*x*e + 6*d^2*log(x*e + d))*n^2*e^(-2) - 2*(2*d^2*e^(-3)*log
(x*e + d) + (x^2*e - 2*d*x)*e^(-2))*n*e*log((x*e + d)^n*c))*a*b^2*f*g - 1/4
*(6*(2*d^2*e^(-3)*log(x*e + d) + (x^2*e - 2*d*x)*e^(-2))*n*e*log((x*e + d)^
n*c)^2 + ((4*d^2*log(x*e + d)^3 + 18*d^2*log(x*e + d)^2 + 3*x^2*e^2 - 42*d*
x*e + 42*d^2*log(x*e + d))*n^2*e^(-3) - 6*(2*d^2*log(x*e + d)^2 + x^2*e^2 -
 6*d*x*e + 6*d^2*log(x*e + d))*n*e^(-3)*log((x*e + d)^n*c))*n*e)*b^3*f*g -
1/18*((18*d^3*log(x*e + d)^2 - 4*x^3*e^3 + 15*d*x^2*e^2 - 66*d^2*x*e + 66*d
^3*log(x*e + d))*n^2*e^(-3) - 6*(6*d^3*e^(-4)*log(x*e + d) - (2*x^3*e^2 - 3
*d*x^2*e + 6*d^2*x)*e^(-3))*n*e*log((x*e + d)^n*c))*a*b^2*g^2 + 1/108*(18*(
6*d^3*e^(-4)*log(x*e + d) - (2*x^3*e^2 - 3*d*x^2*e + 6*d^2*x)*e^(-3))*n*e*l
og((x*e + d)^n*c)^2 + ((36*d^3*log(x*e + d)^3 + 198*d^3*log(x*e + d)^2 - 8*
x^3*e^3 + 57*d*x^2*e^2 - 510*d^2*x*e + 510*d^3*log(x*e + d))*n^2*e^(-4) - 6
```

```
*(18*d^3*log(x*e + d)^2 - 4*x^3*e^3 + 15*d*x^2*e^2 - 66*d^2*x*e + 66*d^3*lo
g(x*e + d))*n*e^(-4)*log((x*e + d)^n*c))*n*e)*b^3*g^2 + a^3*f^2*x
```

Fricas [B] Leaf count of result is larger than twice the leaf count of optimal. 1676 vs. $2(435) = 870$.
time = 0.39, size = 1676, normalized size = 3.88

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2*(a+b*log(c*(e*x+d)^n))^3,x, algorithm="fricas")
```

```
[Out] 1/108*(36*(b^3*g^2*x^3 + 3*b^3*f*g*x^2 + 3*b^3*f^2*x)*e^3*log(c)^3 + 36*(b^
3*d^3*g^2*n^3 - 3*b^3*d^2*f*g*n^3*e + 3*b^3*d*f^2*n^3*e^2 + (b^3*g^2*n^3*x^
3 + 3*b^3*f*g*n^3*x^2 + 3*b^3*f^2*n^3*x)*e^3)*log(x*e + d)^3 - 6*(85*b^3*d^
2*g^2*n^3 - 66*a*b^2*d^2*g^2*n^2 + 18*a^2*b*d^2*g^2*n)*x*e - 18*(11*b^3*d^3
*g^2*n^3 - 6*a*b^2*d^3*g^2*n^2 + (2*(b^3*g^2*n^3 - 3*a*b^2*g^2*n^2)*x^3 + 9
*(b^3*f*g*n^3 - 2*a*b^2*f*g*n^2)*x^2 + 18*(b^3*f^2*n^3 - a*b^2*f^2*n^2)*x)*
e^3 - 3*(b^3*d*g^2*n^3*x^2 + 6*b^3*d*f*g*n^3*x - 6*b^3*d*f^2*n^3 + 6*a*b^2*
d*f^2*n^2)*e^2 + 3*(2*b^3*d^2*g^2*n^3*x - 9*b^3*d^2*f*g*n^3 + 6*a*b^2*d^2*f
*g*n^2)*e - 6*(b^3*d^3*g^2*n^2 - 3*b^3*d^2*f*g*n^2*e + 3*b^3*d*f^2*n^2*e^2
+ (b^3*g^2*n^2*x^3 + 3*b^3*f*g*n^2*x^2 + 3*b^3*f^2*n^2*x)*e^3)*log(c))*log(
x*e + d)^2 - 18*(6*b^3*d^2*g^2*n*x*e + (2*(b^3*g^2*n - 3*a*b^2*g^2)*x^3 + 9
*(b^3*f*g*n - 2*a*b^2*f*g)*x^2 + 18*(b^3*f^2*n - a*b^2*f^2)*x)*e^3 - 3*(b^3
*d*g^2*n*x^2 + 6*b^3*d*f*g*n*x)*e^2)*log(c)^2 - (4*(2*b^3*g^2*n^3 - 6*a*b^2
*g^2*n^2 + 9*a^2*b*g^2*n - 9*a^3*g^2)*x^3 + 27*(3*b^3*f*g*n^3 - 6*a*b^2*f*g
*n^2 + 6*a^2*b*f*g*n - 4*a^3*f*g)*x^2 + 108*(6*b^3*f^2*n^3 - 6*a*b^2*f^2*n^
2 + 3*a^2*b*f^2*n - a^3*f^2)*x)*e^3 + 3*((19*b^3*d*g^2*n^3 - 30*a*b^2*d*g^2
*n^2 + 18*a^2*b*d*g^2*n)*x^2 + 54*(7*b^3*d*f*g*n^3 - 6*a*b^2*d*f*g*n^2 + 2*
a^2*b*d*f*g*n)*x)*e^2 + 6*(85*b^3*d^3*g^2*n^3 - 66*a*b^2*d^3*g^2*n^2 + 18*a
^2*b*d^3*g^2*n + 18*(b^3*d^3*g^2*n - 3*b^3*d^2*f*g*n*e + 3*b^3*d*f^2*n*e^2
+ (b^3*g^2*n*x^3 + 3*b^3*f*g*n*x^2 + 3*b^3*f^2*n*x)*e^3)*log(c)^2 + (2*(2*b
^3*g^2*n^3 - 6*a*b^2*g^2*n^2 + 9*a^2*b*g^2*n)*x^3 + 27*(b^3*f*g*n^3 - 2*a*b
^2*f*g*n^2 + 2*a^2*b*f*g*n)*x^2 + 54*(2*b^3*f^2*n^3 - 2*a*b^2*f^2*n^2 + a^2
*b*f^2*n)*x)*e^3 + 3*(36*b^3*d*f^2*n^3 - 36*a*b^2*d*f^2*n^2 + 18*a^2*b*d*f^
2*n - (5*b^3*d*g^2*n^3 - 6*a*b^2*d*g^2*n^2)*x^2 - 18*(3*b^3*d*f*g*n^3 - 2*a
*b^2*d*f*g*n^2)*x)*e^2 - 3*(63*b^3*d^2*f*g*n^3 - 54*a*b^2*d^2*f*g*n^2 + 18*
a^2*b*d^2*f*g*n - 2*(11*b^3*d^2*g^2*n^3 - 6*a*b^2*d^2*g^2*n^2)*x)*e - 6*(11
*b^3*d^3*g^2*n^2 - 6*a*b^2*d^3*g^2*n + (2*(b^3*g^2*n^2 - 3*a*b^2*g^2*n)*x^3
 + 9*(b^3*f*g*n^2 - 2*a*b^2*f*g*n)*x^2 + 18*(b^3*f^2*n^2 - a*b^2*f^2*n)*x)*
e^3 - 3*(b^3*d*g^2*n^2*x^2 + 6*b^3*d*f*g*n^2*x - 6*b^3*d*f^2*n^2 + 6*a*b^2*
d*f^2*n)*e^2 + 3*(2*b^3*d^2*g^2*n^2*x - 9*b^3*d^2*f*g*n^2 + 6*a*b^2*d^2*f*g
*n)*e)*log(c))*log(x*e + d) + 6*(6*(11*b^3*d^2*g^2*n^2 - 6*a*b^2*d^2*g^2*n)
*x*e + (2*(2*b^3*g^2*n^2 - 6*a*b^2*g^2*n + 9*a^2*b*g^2)*x^3 + 27*(b^3*f*g*n
^2 - 2*a*b^2*f*g*n + 2*a^2*b*f*g)*x^2 + 54*(2*b^3*f^2*n^2 - 2*a*b^2*f^2*n +
```

```
a^2*b*f^2)*x)*e^3 - 3*((5*b^3*d*g^2*n^2 - 6*a*b^2*d*g^2*n)*x^2 + 18*(3*b^3
*d*f*g*n^2 - 2*a*b^2*d*f*g*n)*x)*e^2)*log(c))*e^(-3)
```

Sympy [B] Leaf count of result is larger than twice the leaf count of optimal. 1578 vs. $2(422) = 844$.
time = 2.65, size = 1578, normalized size = 3.65

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**2*(a+b*ln(c*(e*x+d)**n))**3,x)
```

```
[Out] Piecewise((a**3*f**2*x + a**3*f*g*x**2 + a**3*g**2*x**3/3 + a**2*b*d**3*g**
2*log(c*(d + e*x)**n)/e**3 - 3*a**2*b*d**2*f*g*log(c*(d + e*x)**n)/e**2 - a
**2*b*d**2*g**2*n*x/e**2 + 3*a**2*b*d*f**2*log(c*(d + e*x)**n)/e + 3*a**2*b
*d*f*g*n*x/e + a**2*b*d*g**2*n*x**2/(2*e) - 3*a**2*b*f**2*n*x + 3*a**2*b*f*
*2*x*log(c*(d + e*x)**n) - 3*a**2*b*f*g*n*x**2/2 + 3*a**2*b*f*g*x**2*log(c*
(d + e*x)**n) - a**2*b*g**2*n*x**3/3 + a**2*b*g**2*x**3*log(c*(d + e*x)**n)
 - 11*a*b**2*d**3*g**2*n*log(c*(d + e*x)**n)/(3*e**3) + a*b**2*d**3*g**2*lo
g(c*(d + e*x)**n)**2/e**3 + 9*a*b**2*d**2*f*g*n*log(c*(d + e*x)**n)/e**2 -
3*a*b**2*d**2*f*g*log(c*(d + e*x)**n)**2/e**2 + 11*a*b**2*d**2*g**2*n**2*x/
(3*e**2) - 2*a*b**2*d**2*g**2*n*x*log(c*(d + e*x)**n)/e**2 - 6*a*b**2*d*f**
2*n*log(c*(d + e*x)**n)/e + 3*a*b**2*d*f**2*log(c*(d + e*x)**n)**2/e - 9*a*
b**2*d*f*g*n**2*x/e + 6*a*b**2*d*f*g*n*x*log(c*(d + e*x)**n)/e - 5*a*b**2*d
*g**2*n**2*x**2/(6*e) + a*b**2*d*g**2*n*x**2*log(c*(d + e*x)**n)/e + 6*a*b*
*2*f**2*n**2*x - 6*a*b**2*f**2*n*x*log(c*(d + e*x)**n) + 3*a*b**2*f**2*x*lo
g(c*(d + e*x)**n)**2 + 3*a*b**2*f*g*n**2*x**2/2 - 3*a*b**2*f*g*n*x**2*log(c
*(d + e*x)**n) + 3*a*b**2*f*g*x**2*log(c*(d + e*x)**n)**2 + 2*a*b**2*g**2*n
**2*x**3/9 - 2*a*b**2*g**2*n*x**3*log(c*(d + e*x)**n)/3 + a*b**2*g**2*x**3*
log(c*(d + e*x)**n)**2 + 85*b**3*d**3*g**2*n**2*log(c*(d + e*x)**n)/(18*e**
3) - 11*b**3*d**3*g**2*n*log(c*(d + e*x)**n)**2/(6*e**3) + b**3*d**3*g**2*l
og(c*(d + e*x)**n)**3/(3*e**3) - 21*b**3*d**2*f*g*n**2*log(c*(d + e*x)**n)/
(2*e**2) + 9*b**3*d**2*f*g*n*log(c*(d + e*x)**n)**2/(2*e**2) - b**3*d**2*f*
g*log(c*(d + e*x)**n)**3/e**2 - 85*b**3*d**2*g**2*n**3*x/(18*e**2) + 11*b**
3*d**2*g**2*n**2*x*log(c*(d + e*x)**n)/(3*e**2) - b**3*d**2*g**2*n*x*log(c*
(d + e*x)**n)**2/e**2 + 6*b**3*d*f**2*n**2*log(c*(d + e*x)**n)/e - 3*b**3*d
*f**2*n*log(c*(d + e*x)**n)**2/e + b**3*d*f**2*log(c*(d + e*x)**n)**3/e + 2
1*b**3*d*f*g*n**3*x/(2*e) - 9*b**3*d*f*g*n**2*x*log(c*(d + e*x)**n)/e + 3*b
**3*d*f*g*n*x*log(c*(d + e*x)**n)**2/e + 19*b**3*d*g**2*n**3*x**2/(36*e) -
5*b**3*d*g**2*n**2*x**2*log(c*(d + e*x)**n)/(6*e) + b**3*d*g**2*n*x**2*log(
c*(d + e*x)**n)**2/(2*e) - 6*b**3*f**2*n**3*x + 6*b**3*f**2*n**2*x*log(c*(d
 + e*x)**n) - 3*b**3*f**2*n*x*log(c*(d + e*x)**n)**2 + b**3*f**2*x*log(c*(d
 + e*x)**n)**3 - 3*b**3*f*g*n**3*x**2/4 + 3*b**3*f*g*n**2*x**2*log(c*(d + e
*x)**n)/2 - 3*b**3*f*g*n*x**2*log(c*(d + e*x)**n)**2/2 + b**3*f*g*x**2*log(
c*(d + e*x)**n)**3 - 2*b**3*g**2*n**3*x**3/27 + 2*b**3*g**2*n**2*x**3*log(c
```

```
*(d + e*x)**n)/9 - b**3*g**2*n*x**3*log(c*(d + e*x)**n)**2/3 + b**3*g**2*x*
*3*log(c*(d + e*x)**n)**3/3, Ne(e, 0)), ((a + b*log(c*d**n))**3*(f**2*x + f
*g*x**2 + g**2*x**3/3), True))
```

Giac [B] Leaf count of result is larger than twice the leaf count of optimal. 2992 vs. $2(435) = 870$.
time = 4.13, size = 2992, normalized size = 6.93

Too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2*(a+b*log(c*(e*x+d)^n))^3,x, algorithm="giac")
```

```
[Out] 1/3*(x*e + d)^3*b^3*g^2*n^3*e^(-3)*log(x*e + d)^3 - (x*e + d)^2*b^3*d*g^2*n
^3*e^(-3)*log(x*e + d)^3 + (x*e + d)*b^3*d^2*g^2*n^3*e^(-3)*log(x*e + d)^3
- 1/3*(x*e + d)^3*b^3*g^2*n^3*e^(-3)*log(x*e + d)^2 + 3/2*(x*e + d)^2*b^3*d
*g^2*n^3*e^(-3)*log(x*e + d)^2 - 3*(x*e + d)*b^3*d^2*g^2*n^3*e^(-3)*log(x*e
 + d)^2 + (x*e + d)^2*b^3*f*g*n^3*e^(-2)*log(x*e + d)^3 - 2*(x*e + d)*b^3*d
*f*g*n^3*e^(-2)*log(x*e + d)^3 + (x*e + d)^3*b^3*g^2*n^2*e^(-3)*log(x*e + d
)^2*log(c) - 3*(x*e + d)^2*b^3*d*g^2*n^2*e^(-3)*log(x*e + d)^2*log(c) + 3*(
x*e + d)*b^3*d^2*g^2*n^2*e^(-3)*log(x*e + d)^2*log(c) + 2/9*(x*e + d)^3*b^3
*g^2*n^3*e^(-3)*log(x*e + d) - 3/2*(x*e + d)^2*b^3*d*g^2*n^3*e^(-3)*log(x*e
 + d) + 6*(x*e + d)*b^3*d^2*g^2*n^3*e^(-3)*log(x*e + d) - 3/2*(x*e + d)^2*b
^3*f*g*n^3*e^(-2)*log(x*e + d)^2 + 6*(x*e + d)*b^3*d*f*g*n^3*e^(-2)*log(x*e
 + d)^2 + (x*e + d)^3*a*b^2*g^2*n^2*e^(-3)*log(x*e + d)^2 - 3*(x*e + d)^2*a
*b^2*d*g^2*n^2*e^(-3)*log(x*e + d)^2 + 3*(x*e + d)*a*b^2*d^2*g^2*n^2*e^(-3)
*log(x*e + d)^2 + (x*e + d)*b^3*f^2*n^3*e^(-1)*log(x*e + d)^3 - 2/3*(x*e +
d)^3*b^3*g^2*n^2*e^(-3)*log(x*e + d)*log(c) + 3*(x*e + d)^2*b^3*d*g^2*n^2*e
^(-3)*log(x*e + d)*log(c) - 6*(x*e + d)*b^3*d^2*g^2*n^2*e^(-3)*log(x*e + d)
*log(c) + 3*(x*e + d)^2*b^3*f*g*n^2*e^(-2)*log(x*e + d)^2*log(c) - 6*(x*e +
 d)*b^3*d*f*g*n^2*e^(-2)*log(x*e + d)^2*log(c) + (x*e + d)^3*b^3*g^2*n*e^(-
3)*log(x*e + d)*log(c)^2 - 3*(x*e + d)^2*b^3*d*g^2*n*e^(-3)*log(x*e + d)*lo
g(c)^2 + 3*(x*e + d)*b^3*d^2*g^2*n*e^(-3)*log(x*e + d)*log(c)^2 - 2/27*(x*e
 + d)^3*b^3*g^2*n^3*e^(-3) + 3/4*(x*e + d)^2*b^3*d*g^2*n^3*e^(-3) - 6*(x*e
+ d)*b^3*d^2*g^2*n^3*e^(-3) + 3/2*(x*e + d)^2*b^3*f*g*n^3*e^(-2)*log(x*e +
d) - 12*(x*e + d)*b^3*d*f*g*n^3*e^(-2)*log(x*e + d) - 2/3*(x*e + d)^3*a*b^2
*g^2*n^2*e^(-3)*log(x*e + d) + 3*(x*e + d)^2*a*b^2*d*g^2*n^2*e^(-3)*log(x*e
 + d) - 6*(x*e + d)*a*b^2*d^2*g^2*n^2*e^(-3)*log(x*e + d) - 3*(x*e + d)*b^3
*f^2*n^3*e^(-1)*log(x*e + d)^2 + 3*(x*e + d)^2*a*b^2*f*g*n^2*e^(-2)*log(x*e
 + d)^2 - 6*(x*e + d)*a*b^2*d*f*g*n^2*e^(-2)*log(x*e + d)^2 + 2/9*(x*e + d)
^3*b^3*g^2*n^2*e^(-3)*log(c) - 3/2*(x*e + d)^2*b^3*d*g^2*n^2*e^(-3)*log(c)
+ 6*(x*e + d)*b^3*d^2*g^2*n^2*e^(-3)*log(c) - 3*(x*e + d)^2*b^3*f*g*n^2*e^(
-2)*log(x*e + d)*log(c) + 12*(x*e + d)*b^3*d*f*g*n^2*e^(-2)*log(x*e + d)*lo
g(c) + 2*(x*e + d)^3*a*b^2*g^2*n*e^(-3)*log(x*e + d)*log(c) - 6*(x*e + d)^2
*a*b^2*d*g^2*n*e^(-3)*log(x*e + d)*log(c) + 6*(x*e + d)*a*b^2*d^2*g^2*n*e^(
```

```
-3)*log(x*e + d)*log(c) + 3*(x*e + d)*b^3*f^2*n^2*e^(-1)*log(x*e + d)^2*log
(c) - 1/3*(x*e + d)^3*b^3*g^2*n*e^(-3)*log(c)^2 + 3/2*(x*e + d)^2*b^3*d*g^2
*n*e^(-3)*log(c)^2 - 3*(x*e + d)*b^3*d^2*g^2*n*e^(-3)*log(c)^2 + 3*(x*e + d
)^2*b^3*f*g*n*e^(-2)*log(x*e + d)*log(c)^2 - 6*(x*e + d)*b^3*d*f*g*n*e^(-2)
*log(x*e + d)*log(c)^2 + 1/3*(x*e + d)^3*b^3*g^2*e^(-3)*log(c)^3 - (x*e + d
)^2*b^3*d*g^2*e^(-3)*log(c)^3 + (x*e + d)*b^3*d^2*g^2*e^(-3)*log(c)^3 - 3/4
*(x*e + d)^2*b^3*f*g*n^3*e^(-2) + 12*(x*e + d)*b^3*d*f*g*n^3*e^(-2) + 2/9*(
x*e + d)^3*a*b^2*g^2*n^2*e^(-3) - 3/2*(x*e + d)^2*a*b^2*d*g^2*n^2*e^(-3) +
6*(x*e + d)*a*b^2*d^2*g^2*n^2*e^(-3) + 6*(x*e + d)*b^3*f^2*n^3*e^(-1)*log(x
*e + d) - 3*(x*e + d)^2*a*b^2*f*g*n^2*e^(-2)*log(x*e + d) + 12*(x*e + d)*a*
b^2*d*f*g*n^2*e^(-2)*log(x*e + d) + (x*e + d)^3*a^2*b*g^2*n*e^(-3)*log(x*e
+ d) - 3*(x*e + d)^2*a^2*b*d*g^2*n*e^(-3)*log(x*e + d) + 3*(x*e + d)*a^2*b*
d^2*g^2*n*e^(-3)*log(x*e + d) + 3*(x*e + d)*a*b^2*f^2*n^2*e^(-1)*log(x*e +
d)^2 + 3/2*(x*e + d)^2*b^3*f*g*n^2*e^(-2)*log(c) - 12*(x*e + d)*b^3*d*f*g*n
^2*e^(-2)*log(c) - 2/3*(x*e + d)^3*a*b^2*g^2*n*e^(-3)*log(c) + 3*(x*e + d)^
2*a*b^2*d*g^2*n*e^(-3)*log(c) - 6*(x*e + d)*a*b^2*d^2*g^2*n*e^(-3)*log(c) -
 6*(x*e + d)*b^3*f^2*n^2*e^(-1)*log(x*e + d)*log(c) + 6*(x*e + d)^2*a*b^2*f
*g*n*e^(-2)*log(x*e + d)*log(c) - 12*(x*e + d)*a*b^2*d*f*g*n*e^(-2)*log(x*e
 + d)*log(c) - 3/2*(x*e + d)^2*b^3*f*g*n*e^(-2)*log(c)^2 + 6*(x*e + d)*b^3*
d*f*g*n*e^(-2)*log(c)^2 + (x*e + d)^3*a*b^2*g^2*e^(-3)*log(c)^2 - 3*(x*e +
d)^2*a*b^2*d*g^2*e^(-3)*log(c)^2 + 3*(x*e + d)*a*b^2*d^2*g^2*e^(-3)*log(c)^
2 + 3*(x*e + d)*b^3*f^2*n*e^(-1)*log(x*e + d)*log(c)^2 + (x*e + d)^2*b^3*f*
g*e^(-2)*log(c)^3 - 2*(x*e + d)*b^3*d*f*g*e^(-2)*log(c)^3 - 6*(x*e + d)*b^3
*f^2*n^3*e^(-1) + 3/2*(x*e + d)^2*a*b^2*f*g*n^2*e^(-2) - 12*(x*e + d)*a*b^2
*d*f*g*n^2*e^(-2) - 1/3*(x*e + d)^3*a^2*b*g^2*n*e^(-3) + 3/2*(x*e + d)^2*a^
2*b*d*g^2*n*e^(-3) - 3*(x*e + d)*a^2*b*d^2*g^2*n*e^(-3) - 6*(x*e + d)*a*b^2
*f^2*n^2*e^(-1)*log(x*e + d) + 3*(x*e + d)^2*a^2*b*f*g*n*e^(-2)*log(x*e + d
) - 6*(x*e + d)*a^2*b*d*f*g*n*e^(-2)*log(x*e + d) + 6*(x*e + d)*b^3*f^2*n^2
*e^(-1)*log(c) - 3*(x*e + d)^2*a*b^2*f*g*n*e^(-2)*log(c) + 12*(x*e + d)*a*b
^2*d*f*g*n*e^(-2)*log(c) + (x*e + d)^3*a^2*b*g^2*e^(-3)*log(c) - 3*(x*e + d
)^2*a^2*b*d*g^2*e^(-3)*log(c) + 3*(x*e + d)*a^2*b*d^2*g^2*e^(-3)*log(c) + 6
*(x*e + d)*a*b^2*f^2*n*e^(-1)*log(x*e + d)*log(c) - 3*(x*e + d)*b^3*f^2*n*e
^(-1)*log(c)^2 + 3*(x*e + d)^2*a*b^2*f*g*e^(-2)*log(c)^2 - 6*(x*e + d)*a*b^
2*d*f*g*e^(-2)*log(c)^2 + (x*e + d)*b^3*f^2*e^(-1)*log(c)^3 + 6*(x*e + d)*a
*b^2*f^2*n^2*e^(-1) - 3/2*(x*e + d)^2*a^2*b*f*g...
```

Mupad [B]
time = 0.86, size = 1157, normalized size = 2.68

Verification of antiderivative is not currently implemented for this CAS.

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

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

```
/e - (b^2*d*g^2*(3*a - b*n))/e))/e - (3*b^2*f*(2*a*d*g + a*e*f - b*e*f*n))/
e) + (d*(6*a*b^2*d^2*g^2 + 18*a*b^2*e^2*f^2 - 11*b^3*d^2*g^2*n - 18*b^3*e^2
*f^2*n - 18*a*b^2*d*e*f*g + 27*b^3*d*e*f*g*n))/(6*e^3) + (b^2*g^2*x^3*(3*a
- b*n))/3) + x*((18*a^3*e^2*f^2 - 66*b^3*d^2*g^2*n^3 - 108*b^3*e^2*f^2*n^3
- 54*a^2*b*e^2*f^2*n + 36*a^3*d*e*f*g + 36*a*b^2*d^2*g^2*n^2 + 108*a*b^2*e^
2*f^2*n^2 + 162*b^3*d*e*f*g*n^3 - 108*a*b^2*d*e*f*g*n^2)/(18*e^2) - (d*((g*
(6*a^3*d*g + 12*a^3*e*f + 5*b^3*d*g*n^3 - 9*b^3*e*f*n^3 - 6*a*b^2*d*g*n^2 +
 18*a*b^2*e*f*n^2 - 18*a^2*b*e*f*n))/(6*e) - (d*g^2*(9*a^3 - 2*b^3*n^3 + 6*
a*b^2*n^2 - 9*a^2*b*n))/(9*e)))/e) + x^2*((g*(6*a^3*d*g + 12*a^3*e*f + 5*b^
3*d*g*n^3 - 9*b^3*e*f*n^3 - 6*a*b^2*d*g*n^2 + 18*a*b^2*e*f*n^2 - 18*a^2*b*e
*f*n))/(12*e) - (d*g^2*(9*a^3 - 2*b^3*n^3 + 6*a*b^2*n^2 - 9*a^2*b*n))/(18*e
)) + log(c*(d + e*x)^n)^3*(b^3*f^2*x + (b^3*g^2*x^3)/3 + (d*(b^3*d^2*g^2 +
3*b^3*e^2*f^2 - 3*b^3*d*e*f*g))/(3*e^3) + b^3*f*g*x^2) + (g^2*x^3*(9*a^3 -
2*b^3*n^3 + 6*a*b^2*n^2 - 9*a^2*b*n))/27 + (log(d + e*x)*(85*b^3*d^3*g^2*n^
3 + 18*a^2*b*d^3*g^2*n - 66*a*b^2*d^3*g^2*n^2 + 108*b^3*d*e^2*f^2*n^3 - 108
*a*b^2*d*e^2*f^2*n^2 + 54*a^2*b*d*e^2*f^2*n - 189*b^3*d^2*e*f*g*n^3 + 162*a
*b^2*d^2*e*f*g*n^2 - 54*a^2*b*d^2*e*f*g*n))/(18*e^3) + (log(c*(d + e*x)^n)*
((x^2*(9*b*e*g*(3*a^2*d*g + 6*a^2*e*f - b^2*d*g*n^2 + 3*b^2*e*f*n^2 - 6*a*b
*e*f*n) - 3*b*d*e*g^2*(9*a^2 + 2*b^2*n^2 - 6*a*b*n)))/(6*e) + (x*((27*a^2*b
*e^3*f^2 + 54*b^3*e^3*f^2*n^2 - 54*a*b^2*e^3*f^2*n + 18*b^3*d^2*e*g^2*n^2 +
 54*a^2*b*d*e^2*f*g - 54*b^3*d*e^2*f*g*n^2)/e - (d*(9*b*e*g*(3*a^2*d*g + 6*
a^2*e*f - b^2*d*g*n^2 + 3*b^2*e*f*n^2 - 6*a*b*e*f*n) - 3*b*d*e*g^2*(9*a^2 +
 2*b^2*n^2 - 6*a*b*n)))/e))/(3*e) + (b*e*g^2*x^3*(9*a^2 + 2*b^2*n^2 - 6*a*b
*n))/3))/(3*e)
```

3.54 $\int (f+gx)\left(a+b\log\left(c(d+ex)^n\right)\right)^3\,dx$

Optimal. Leaf size=265

$$\frac{6ab^2(ef-dg)n^2x}{e}-\frac{6b^3(ef-dg)n^3x}{e}-\frac{3b^3gn^3(d+ex)^2}{8e^2}+\frac{6b^3(ef-dg)n^2(d+ex)\log\left(c(d+ex)^n\right)}{e^2}+\frac{3b^2gn^2(d}{}$$

```
[Out] 6*a*b^2*(-d*g+e*f)*n^2*x/e-6*b^3*(-d*g+e*f)*n^3*x/e-3/8*b^3*g*n^3*(e*x+d)^2
/e^2+6*b^3*(-d*g+e*f)*n^2*(e*x+d)*ln(c*(e*x+d)^n)/e^2+3/4*b^2*g*n^2*(e*x+d)
^2*(a+b*ln(c*(e*x+d)^n))/e^2-3*b*(-d*g+e*f)*n*(e*x+d)*(a+b*ln(c*(e*x+d)^n))
^2/e^2-3/4*b*g*n*(e*x+d)^2*(a+b*ln(c*(e*x+d)^n))^2/e^2+(-d*g+e*f)*(e*x+d)*(
a+b*ln(c*(e*x+d)^n))^3/e^2+1/2*g*(e*x+d)^2*(a+b*ln(c*(e*x+d)^n))^3/e^2
```

Rubi [A]
time = 0.16, antiderivative size = 265, normalized size of antiderivative = 1.00, number of steps used = 11, number of rules used = 7, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.318$, Rules used = {2448, 2436, 2333, 2332, 2437, 2342, 2341}

$$\frac{3b^2gn^2(d+ex)^2\left(a+b\log\left(c(d+ex)^n\right)\right)}{4e^2}+\frac{6ab^2n^2x(ef-dg)}{e}-\frac{3bn(d+ex)(ef-dg)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{e^2}+\frac{(d+ex)(ef-dg)\left(a+b\log\left(c(d+ex)^n\right)\right)^3}{e^2}-\frac{3bgn(d+ex)^2\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{4e^2}+\frac{g(d+ex)^2\left(a+b\log\left(c(d+ex)^n\right)\right)^3}{2e^2}+\frac{6b^3n^2(d+ex)(ef-dg)\log\left(c(d+ex)^n\right)}{e^2}-\frac{3b^3gn^3(d+ex)^2}{8e^2}-\frac{6b^3n^3x(ef-dg)}{e}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)*(a + b*Log[c*(d + e*x)^n])^3,x]
```

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

Rule 2332

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

Rule 2333

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

Rule 2341

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

```
m + 1)/(d*(m + 1)^2)), x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[m, -1]
```

Rule 2342

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_.)*(x_))^(m_.), x_Symbo
l] :> Simp[(d*x)^(m + 1)*((a + b*Log[c*x^n])^p/(d*(m + 1))), x] - Dist[b*n*
(p/(m + 1)), Int[(d*x)^m*(a + b*Log[c*x^n])^(p - 1), x], x] /; FreeQ[{a, b,
 c, d, m, n}, x] && NeQ[m, -1] && GtQ[p, 0]
```

Rule 2436

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

Rule 2437

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

Rule 2448

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

Rubi steps

$$\int (f+gx)\left(a+b\log\left(c(d+ex)^n\right)\right)^3\,dx = \int \left(\frac{(ef-dg)\left(a+b\log\left(c(d+ex)^n\right)\right)^3}{e}+\frac{g(d+ex)\left(a+b\log\left(c(d\right.\right.}{e}\right.$$

$$=\frac{g\int(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^3\,dx}{e}+\frac{(ef-dg)\int\left(a+b\log\left(\right.\right.}{e}$$

$$=\frac{g\text{Subst}\left(\int x(a+b\log\left(cx^n\right))^3\,dx,x,d+ex\right)}{e^2}+\frac{(ef-dg)\text{Subst}\left(\int(\right.}{}$$

$$=\frac{(ef-dg)(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^3}{e^2}+\frac{g(d+ex)^2\left(a+b\log\right.}{2e^2}$$

$$=-\frac{3b(ef-dg)n(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{e^2}-\frac{3bgn(d+ex)^2}{}$$

$$=\frac{6ab^2(ef-dg)n^2x}{e}-\frac{3b^3gn^3(d+ex)^2}{8e^2}+\frac{3b^2gn^2(d+ex)^2\left(a+b\log\right.}{4e^2}$$

$$=\frac{6ab^2(ef-dg)n^2x}{e}-\frac{6b^3(ef-dg)n^3x}{e}-\frac{3b^3gn^3(d+ex)^2}{8e^2}+\frac{6b^3(e}{}$$

Mathematica [A]
time = 0.10, size = 201, normalized size = 0.76

$$\frac{8(ef-dg)(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^3+4g(d+ex)^2\left(a+b\log\left(c(d+ex)^n\right)\right)^3-24b(ef-dg)n\left((d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^2-2bn\left(e(a-bn)x+b(d+ex)\log\left(c(d+ex)^n\right)\right)\right)-3bgn\left(2(d+ex)^2\left(a+b\log\left(c(d+ex)^n\right)\right)^2+bn\left(benx(2d+ex)-2(d+ex)^2\left(a+b\log\left(c(d+ex)^n\right)\right)\right)\right)}{8e^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)*(a + b*Log[c*(d + e*x)^n])^3,x]
```

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

Maple [C] Result contains higher order function than in optimal. Order 9 vs. order 3.
time = 1.62, size = 11547, normalized size = 43.57

method	result	size
risch	Expression too large to display	11547

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(a+b*ln(c*(e*x+d)^n))^3,x,method=_RETURNVERBOSE)
```

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

Maxima [**B**] Leaf count of result is larger than twice the leaf count of optimal. 687 vs. $2(267) = 534$.
time = 0.30, size = 687, normalized size = 2.59

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/2*b^3*g*x^2*log((x*e + d)^n*c)^3 + 3/2*a*b^2*g*x^2*log((x*e + d)^n*c)^2 +
 b^3*f*x*log((x*e + d)^n*c)^3 + 3*(d*e^(-2)*log(x*e + d) - x*e^(-1))*a^2*b*
f*n*e - 3/4*(2*d^2*e^(-3)*log(x*e + d) + (x^2*e - 2*d*x)*e^(-2))*a^2*b*g*n*
e + 3/2*a^2*b*g*x^2*log((x*e + d)^n*c) + 3*a*b^2*f*x*log((x*e + d)^n*c)^2 +
 1/2*a^3*g*x^2 + 3*a^2*b*f*x*log((x*e + d)^n*c) - 3*((d*log(x*e + d)^2 - 2*
x*e + 2*d*log(x*e + d))*n^2*e^(-1) - 2*(d*e^(-2)*log(x*e + d) - x*e^(-1))*n
*e*log((x*e + d)^n*c))*a*b^2*f + (3*(d*e^(-2)*log(x*e + d) - x*e^(-1))*n*e*
log((x*e + d)^n*c)^2 + ((d*log(x*e + d)^3 + 3*d*log(x*e + d)^2 - 6*x*e + 6*
d*log(x*e + d))*n^2*e^(-2) - 3*(d*log(x*e + d)^2 - 2*x*e + 2*d*log(x*e + d)
)*n*e^(-2)*log((x*e + d)^n*c))*n*e)*b^3*f + 3/4*((2*d^2*log(x*e + d)^2 + x^
2*e^2 - 6*d*x*e + 6*d^2*log(x*e + d))*n^2*e^(-2) - 2*(2*d^2*e^(-3)*log(x*e
+ d) + (x^2*e - 2*d*x)*e^(-2))*n*e*log((x*e + d)^n*c))*a*b^2*g - 1/8*(6*(2*
d^2*e^(-3)*log(x*e + d) + (x^2*e - 2*d*x)*e^(-2))*n*e*log((x*e + d)^n*c)^2
+ ((4*d^2*log(x*e + d)^3 + 18*d^2*log(x*e + d)^2 + 3*x^2*e^2 - 42*d*x*e + 4
2*d^2*log(x*e + d))*n^2*e^(-3) - 6*(2*d^2*log(x*e + d)^2 + x^2*e^2 - 6*d*x*
e + 6*d^2*log(x*e + d))*n*e^(-3)*log((x*e + d)^n*c))*n*e)*b^3*g + a^3*f*x
```

Fricas [**B**] Leaf count of result is larger than twice the leaf count of optimal. 859 vs. $2(267) = 534$.
time = 0.38, size = 859, normalized size = 3.24

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/8*(4*(b^3*g*x^2 + 2*b^3*f*x)*e^2*log(c)^3 - 4*(b^3*d^2*g*n^3 - 2*b^3*d*f*
n^3*e - (b^3*g*n^3*x^2 + 2*b^3*f*n^3*x)*e^2)*log(x*e + d)^3 + 6*(7*b^3*d*g*
n^3 - 6*a*b^2*d*g*n^2 + 2*a^2*b*d*g*n)*x*e + 6*(3*b^3*d^2*g*n^3 - 2*a*b^2*d
^2*g*n^2 - ((b^3*g*n^3 - 2*a*b^2*g*n^2)*x^2 + 4*(b^3*f*n^3 - a*b^2*f*n^2)*x
)*e^2 + 2*(b^3*d*g*n^3*x - 2*b^3*d*f*n^3 + 2*a*b^2*d*f*n^2)*e - 2*(b^3*d^2*
g*n^2 - 2*b^3*d*f*n^2*e - (b^3*g*n^2*x^2 + 2*b^3*f*n^2*x)*e^2)*log(c))*log(
x*e + d)^2 + 6*(2*b^3*d*g*n*x*e - ((b^3*g*n - 2*a*b^2*g)*x^2 + 4*(b^3*f*n -
 a*b^2*f)*x)*e^2)*log(c)^2 - ((3*b^3*g*n^3 - 6*a*b^2*g*n^2 + 6*a^2*b*g*n -
4*a^3*g)*x^2 + 8*(6*b^3*f*n^3 - 6*a*b^2*f*n^2 + 3*a^2*b*f*n - a^3*f)*x)*e^2
 - 6*(7*b^3*d^2*g*n^3 - 6*a*b^2*d^2*g*n^2 + 2*a^2*b*d^2*g*n + 2*(b^3*d^2*g*
```

```
n - 2*b^3*d*f*n*e - (b^3*g*n*x^2 + 2*b^3*f*n*x)*e^2)*log(c)^2 - ((b^3*g*n^3
 - 2*a*b^2*g*n^2 + 2*a^2*b*g*n)*x^2 + 4*(2*b^3*f*n^3 - 2*a*b^2*f*n^2 + a^2*
b*f*n)*x)*e^2 - 2*(4*b^3*d*f*n^3 - 4*a*b^2*d*f*n^2 + 2*a^2*b*d*f*n - (3*b^3
*d*g*n^3 - 2*a*b^2*d*g*n^2)*x)*e - 2*(3*b^3*d^2*g*n^2 - 2*a*b^2*d^2*g*n - (
(b^3*g*n^2 - 2*a*b^2*g*n)*x^2 + 4*(b^3*f*n^2 - a*b^2*f*n)*x)*e^2 + 2*(b^3*d
*g*n^2*x - 2*b^3*d*f*n^2 + 2*a*b^2*d*f*n)*e)*log(c))*log(x*e + d) - 6*(2*(3
*b^3*d*g*n^2 - 2*a*b^2*d*g*n)*x*e - ((b^3*g*n^2 - 2*a*b^2*g*n + 2*a^2*b*g)*
x^2 + 4*(2*b^3*f*n^2 - 2*a*b^2*f*n + a^2*b*f)*x)*e^2)*log(c))*e^(-2)
```

Sympy [B] Leaf count of result is larger than twice the leaf count of optimal. 836 vs. $2(258) = 516$.
time = 1.36, size = 836, normalized size = 3.15

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*ln(c*(e*x+d)**n))**3,x)
```

```
[Out] Piecewise((a**3*f*x + a**3*g*x**2/2 - 3*a**2*b*d**2*g*log(c*(d + e*x)**n)/(
2*e**2) + 3*a**2*b*d*f*log(c*(d + e*x)**n)/e + 3*a**2*b*d*g*n*x/(2*e) - 3*a
**2*b*f*n*x + 3*a**2*b*f*x*log(c*(d + e*x)**n) - 3*a**2*b*g*n*x**2/4 + 3*a*
*2*b*g*x**2*log(c*(d + e*x)**n)/2 + 9*a*b**2*d**2*g*n*log(c*(d + e*x)**n)/(
2*e**2) - 3*a*b**2*d**2*g*log(c*(d + e*x)**n)**2/(2*e**2) - 6*a*b**2*d*f*n*
log(c*(d + e*x)**n)/e + 3*a*b**2*d*f*log(c*(d + e*x)**n)**2/e - 9*a*b**2*d*
g*n**2*x/(2*e) + 3*a*b**2*d*g*n*x*log(c*(d + e*x)**n)/e + 6*a*b**2*f*n**2*x
 - 6*a*b**2*f*n*x*log(c*(d + e*x)**n) + 3*a*b**2*f*x*log(c*(d + e*x)**n)**2
 + 3*a*b**2*g*n**2*x**2/4 - 3*a*b**2*g*n*x**2*log(c*(d + e*x)**n)/2 + 3*a*b
**2*g*x**2*log(c*(d + e*x)**n)**2/2 - 21*b**3*d**2*g*n**2*log(c*(d + e*x)**
n)/(4*e**2) + 9*b**3*d**2*g*n*log(c*(d + e*x)**n)**2/(4*e**2) - b**3*d**2*g
*log(c*(d + e*x)**n)**3/(2*e**2) + 6*b**3*d*f*n**2*log(c*(d + e*x)**n)/e -
3*b**3*d*f*n*log(c*(d + e*x)**n)**2/e + b**3*d*f*log(c*(d + e*x)**n)**3/e +
 21*b**3*d*g*n**3*x/(4*e) - 9*b**3*d*g*n**2*x*log(c*(d + e*x)**n)/(2*e) + 3
*b**3*d*g*n*x*log(c*(d + e*x)**n)**2/(2*e) - 6*b**3*f*n**3*x + 6*b**3*f*n**
2*x*log(c*(d + e*x)**n) - 3*b**3*f*n*x*log(c*(d + e*x)**n)**2 + b**3*f*x*lo
g(c*(d + e*x)**n)**3 - 3*b**3*g*n**3*x**2/8 + 3*b**3*g*n**2*x**2*log(c*(d +
 e*x)**n)/4 - 3*b**3*g*n*x**2*log(c*(d + e*x)**n)**2/4 + b**3*g*x**2*log(c*
(d + e*x)**n)**3/2, Ne(e, 0)), ((a + b*log(c*d**n))**3*(f*x + g*x**2/2), Tr
ue))
```

Giac [B] Leaf count of result is larger than twice the leaf count of optimal. 1351 vs. $2(267) = 534$.
time = 6.18, size = 1351, normalized size = 5.10

Too large to display

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/2*(x*e + d)^2*b^3*g*n^3*e^(-2)*log(x*e + d)^3 - (x*e + d)*b^3*d*g*n^3*e^(
-2)*log(x*e + d)^3 - 3/4*(x*e + d)^2*b^3*g*n^3*e^(-2)*log(x*e + d)^2 + 3*(x
*e + d)*b^3*d*g*n^3*e^(-2)*log(x*e + d)^2 + (x*e + d)*b^3*f*n^3*e^(-1)*log(
x*e + d)^3 + 3/2*(x*e + d)^2*b^3*g*n^2*e^(-2)*log(x*e + d)^2*log(c) - 3*(x*
e + d)*b^3*d*g*n^2*e^(-2)*log(x*e + d)^2*log(c) + 3/4*(x*e + d)^2*b^3*g*n^3
*e^(-2)*log(x*e + d) - 6*(x*e + d)*b^3*d*g*n^3*e^(-2)*log(x*e + d) - 3*(x*e
 + d)*b^3*f*n^3*e^(-1)*log(x*e + d)^2 + 3/2*(x*e + d)^2*a*b^2*g*n^2*e^(-2)*
log(x*e + d)^2 - 3*(x*e + d)*a*b^2*d*g*n^2*e^(-2)*log(x*e + d)^2 - 3/2*(x*e
 + d)^2*b^3*g*n^2*e^(-2)*log(x*e + d)*log(c) + 6*(x*e + d)*b^3*d*g*n^2*e^(-
2)*log(x*e + d)*log(c) + 3*(x*e + d)*b^3*f*n^2*e^(-1)*log(x*e + d)^2*log(c)
 + 3/2*(x*e + d)^2*b^3*g*n*e^(-2)*log(x*e + d)*log(c)^2 - 3*(x*e + d)*b^3*d
*g*n*e^(-2)*log(x*e + d)*log(c)^2 - 3/8*(x*e + d)^2*b^3*g*n^3*e^(-2) + 6*(x
*e + d)*b^3*d*g*n^3*e^(-2) + 6*(x*e + d)*b^3*f*n^3*e^(-1)*log(x*e + d) - 3/
2*(x*e + d)^2*a*b^2*g*n^2*e^(-2)*log(x*e + d) + 6*(x*e + d)*a*b^2*d*g*n^2*e
^(-2)*log(x*e + d) + 3*(x*e + d)*a*b^2*f*n^2*e^(-1)*log(x*e + d)^2 + 3/4*(x
*e + d)^2*b^3*g*n^2*e^(-2)*log(c) - 6*(x*e + d)*b^3*d*g*n^2*e^(-2)*log(c) -
 6*(x*e + d)*b^3*f*n^2*e^(-1)*log(x*e + d)*log(c) + 3*(x*e + d)^2*a*b^2*g*n
*e^(-2)*log(x*e + d)*log(c) - 6*(x*e + d)*a*b^2*d*g*n*e^(-2)*log(x*e + d)*l
og(c) - 3/4*(x*e + d)^2*b^3*g*n*e^(-2)*log(c)^2 + 3*(x*e + d)*b^3*d*g*n*e^(
-2)*log(c)^2 + 3*(x*e + d)*b^3*f*n*e^(-1)*log(x*e + d)*log(c)^2 + 1/2*(x*e
+ d)^2*b^3*g*e^(-2)*log(c)^3 - (x*e + d)*b^3*d*g*e^(-2)*log(c)^3 - 6*(x*e +
 d)*b^3*f*n^3*e^(-1) + 3/4*(x*e + d)^2*a*b^2*g*n^2*e^(-2) - 6*(x*e + d)*a*b
^2*d*g*n^2*e^(-2) - 6*(x*e + d)*a*b^2*f*n^2*e^(-1)*log(x*e + d) + 3/2*(x*e
+ d)^2*a^2*b*g*n*e^(-2)*log(x*e + d) - 3*(x*e + d)*a^2*b*d*g*n*e^(-2)*log(x
*e + d) + 6*(x*e + d)*b^3*f*n^2*e^(-1)*log(c) - 3/2*(x*e + d)^2*a*b^2*g*n*e
^(-2)*log(c) + 6*(x*e + d)*a*b^2*d*g*n*e^(-2)*log(c) + 6*(x*e + d)*a*b^2*f*
n*e^(-1)*log(x*e + d)*log(c) - 3*(x*e + d)*b^3*f*n*e^(-1)*log(c)^2 + 3/2*(x
*e + d)^2*a*b^2*g*e^(-2)*log(c)^2 - 3*(x*e + d)*a*b^2*d*g*e^(-2)*log(c)^2 +
 (x*e + d)*b^3*f*e^(-1)*log(c)^3 + 6*(x*e + d)*a*b^2*f*n^2*e^(-1) - 3/4*(x*
e + d)^2*a^2*b*g*n*e^(-2) + 3*(x*e + d)*a^2*b*d*g*n*e^(-2) + 3*(x*e + d)*a^
2*b*f*n*e^(-1)*log(x*e + d) - 6*(x*e + d)*a*b^2*f*n*e^(-1)*log(c) + 3/2*(x*
e + d)^2*a^2*b*g*e^(-2)*log(c) - 3*(x*e + d)*a^2*b*d*g*e^(-2)*log(c) + 3*(x
*e + d)*a*b^2*f*e^(-1)*log(c)^2 - 3*(x*e + d)*a^2*b*f*n*e^(-1) + 1/2*(x*e +
 d)^2*a^3*g*e^(-2) - (x*e + d)*a^3*d*g*e^(-2) + 3*(x*e + d)*a^2*b*f*e^(-1)*
log(c) + (x*e + d)*a^3*f*e^(-1)
```

Mupad [B]
time = 0.57, size = 511, normalized size = 1.93

$$\ln\left(c\,{\left(d+e\,x\right)}^n\right)^3\,\left(\frac{b^3\,g\,x^2}{2}-\frac{d\,\left(b^3\,d\,g-2\,b^3\,e\,f\right)}{2\,e^2}+b^3\,f\,x\right)+\ln\left(c\,{\left(d+e\,x\right)}^n\right)\,\left(\frac{x\,\left(\frac{12\,a^2\,b\,d\,g+12\,a^2\,b\,e\,f-12\,b^3\,d\,g\,n^2+24\,b^3\,e\,f\,n^2-24\,a\,b^2\,e\,f\,n}{2\,e}-\frac{3\,b\,d\,g\,\left(2\,a^2-2\,a\,b\,n+b^2\,n^2\right)}{e}\right)}{2}+\frac{3\,b\,g\,x^2\,\left(2\,a^2-2\,a\,b\,n+b^2\,n^2\right)}{4}\right)+\ln\left(c\,{\left(d+e\,x\right)}^n\right)^2\,\left(\frac{x\,\left(\frac{6\,b^2\,\left(a\,d\,g+a\,e\,f-b\,e\,f\,n\right)}{e}-\frac{3\,b^2\,d\,g\,\left(2\,a-b\,n\right)}{e}\right)}{2}-\frac{3\,d\,\left(2\,a\,b^2\,d\,g-4\,a\,b^2\,e\,f-3\,b^3\,d\,g\,n+4\,b^3\,e\,f\,n\right)}{4\,e^2}+\frac{3\,b^2\,g\,x^2\,\left(2\,a-b\,n\right)}{4}\right)+x\,\left(\frac{4\,a^3\,d\,g+4\,a^3\,e\,f+18\,b^3\,d\,g\,n^3-24\,b^3\,e\,f\,n^3-12\,a\,b^2\,d\,g\,n^2+24\,a\,b^2\,e\,f\,n^2-12\,a^2\,b\,e\,f\,n}{4\,e}-\frac{d\,g\,\left(4\,a^3-6\,a^2\,b\,n+6\,a\,b^2\,n^2-3\,b^3\,n^3\right)}{4\,e}\right)+\frac{g\,x^2\,\left(4\,a^3-6\,a^2\,b\,n+6\,a\,b^2\,n^2-3\,b^3\,n^3\right)}{8}-\frac{\ln\left(d+e\,x\right)\,\left(6\,g\,a^2\,b\,d^2\,n-12\,e\,f\,a^2\,b\,d\,n-18\,g\,a\,b^2\,d^2\,n^2+24\,e\,f\,a\,b^2\,d\,n^2+21\,g\,b^3\,d^2\,n^3-24\,e\,f\,b^3\,d\,n^3\right)}{4\,e^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)*(a + b*log(c*(d + e*x)^n))^3,x)
```

```
[Out] log(c*(d + e*x)^n)^3*((b^3*g*x^2)/2 - (d*(b^3*d*g - 2*b^3*e*f))/(2*e^2) + b
^3*f*x) + log(c*(d + e*x)^n)*((x*((12*a^2*b*d*g + 12*a^2*b*e*f - 12*b^3*d*g
*n^2 + 24*b^3*e*f*n^2 - 24*a*b^2*e*f*n)/(2*e) - (3*b*d*g*(2*a^2 + b^2*n^2 -
 2*a*b*n))/e))/2 + (3*b*g*x^2*(2*a^2 + b^2*n^2 - 2*a*b*n))/4) + log(c*(d +
e*x)^n)^2*((x*((6*b^2*(a*d*g + a*e*f - b*e*f*n))/e - (3*b^2*d*g*(2*a - b*n)
)/e))/2 - (3*d*(2*a*b^2*d*g - 4*a*b^2*e*f - 3*b^3*d*g*n + 4*b^3*e*f*n))/(4*
e^2) + (3*b^2*g*x^2*(2*a - b*n))/4) + x*((4*a^3*d*g + 4*a^3*e*f + 18*b^3*d*
g*n^3 - 24*b^3*e*f*n^3 - 12*a*b^2*d*g*n^2 + 24*a*b^2*e*f*n^2 - 12*a^2*b*e*f
*n)/(4*e) - (d*g*(4*a^3 - 3*b^3*n^3 + 6*a*b^2*n^2 - 6*a^2*b*n))/(4*e)) + (g
*x^2*(4*a^3 - 3*b^3*n^3 + 6*a*b^2*n^2 - 6*a^2*b*n))/8 - (log(d + e*x)*(21*b
^3*d^2*g*n^3 + 6*a^2*b*d^2*g*n - 24*b^3*d*e*f*n^3 - 18*a*b^2*d^2*g*n^2 - 12
*a^2*b*d*e*f*n + 24*a*b^2*d*e*f*n^2))/(4*e^2)
```

3.55 $\int (a+b\log(c(d+ex)^n))^3\, dx$

Optimal. Leaf size=99

$$6ab^2n^2x-6b^3n^3x+\frac{6b^3n^2(d+ex)\log(c(d+ex)^n)}{e}-\frac{3bn(d+ex)(a+b\log(c(d+ex)^n))^2}{e}+\frac{(d+ex)(a+b\log(c(d+ex)^n))^3}{e}$$

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

Rubi [A]
time = 0.04, antiderivative size = 99, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 3, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}} = 0.188$, Rules used = {2436, 2333, 2332}

$$6ab^2n^2x-\frac{3bn(d+ex)(a+b\log(c(d+ex)^n))^2}{e}+\frac{(d+ex)(a+b\log(c(d+ex)^n))^3}{e}+\frac{6b^3n^2(d+ex)\log(c(d+ex)^n)}{e}-6b^3n^3x$$

Antiderivative was successfully verified.

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

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

Rule 2332

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

Rule 2333

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

Rule 2436

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

Rubi steps

$$\int (a+b\log(c(d+ex)^n))^3\,dx = \frac{\text{Subst}\left(\int (a+b\log(cx^n))^3\,dx, x, d+ex\right)}{e}$$
$$= \frac{(d+ex)(a+b\log(c(d+ex)^n))^3}{e} - \frac{(3bn)\text{Subst}\left(\int (a+b\log(cx^n))^2\,dx, x, c\right.}{e}$$
$$= -\frac{3bn(d+ex)(a+b\log(c(d+ex)^n))^2}{e} + \frac{(d+ex)(a+b\log(c(d+ex)^n))^3}{e}$$
$$= 6ab^2n^2x - \frac{3bn(d+ex)(a+b\log(c(d+ex)^n))^2}{e} + \frac{(d+ex)(a+b\log(c(d-}{e}$$
$$= 6ab^2n^2x - 6b^3n^3x + \frac{6b^3n^2(d+ex)\log(c(d+ex)^n)}{e} - \frac{3bn(d+ex)(a+b\log}{e}$$

Mathematica [A]
time = 0.02, size = 85, normalized size = 0.86

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

Antiderivative was successfully verified.

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

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

Maple [C] Result contains higher order function than in optimal. Order 9 vs. order 3.
time = 0.12, size = 4872, normalized size = 49.21

method	result	size
risch	Expression too large to display	4872

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))^3,x,method=_RETURNVERBOSE)
```

```
[Out] ln(c)^3*b^3*x+b^3*x*ln((e*x+d)^n)^3-3*ln(c)*Pi^2*b^3*x*csgn(I*c)*csgn(I*(e*
x+d)^n)*csgn(I*c*(e*x+d)^n)^4+3/4*Pi^2*b^3*n*x*csgn(I*c)^2*csgn(I*(e*x+d)^n
)^2*csgn(I*c*(e*x+d)^n)^2-3/2*Pi^2*b^3*n*x*csgn(I*c)^2*csgn(I*(e*x+d)^n)*cs
gn(I*c*(e*x+d)^n)^3-3/2*Pi^2*b^3*n*x*csgn(I*c)*csgn(I*(e*x+d)^n)^2*csgn(I*c
*(e*x+d)^n)^3+3*Pi^2*b^3*n*x*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n
)^4-3/4*ln(c)*Pi^2*b^3*x*csgn(I*c)^2*csgn(I*(e*x+d)^n)^2*csgn(I*c*(e*x+d)^n
)^2+3/2*ln(c)*Pi^2*b^3*x*csgn(I*c)^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^
3+3/2*ln(c)*Pi^2*b^3*x*csgn(I*c)*csgn(I*(e*x+d)^n)^2*csgn(I*c*(e*x+d)^n)^3-
3/4/e*Pi^2*ln(e*x+d)*b^3*d*n*csgn(I*c*(e*x+d)^n)^6+6/e*ln(c)*ln(e*x+d)*a*b^
2*d*n+3/2*I*ln(c)^2*Pi*b^3*x*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+3*I*Pi*a*b^2*n
```

*x*csgn(I*c*(e*x+d)^n)^3+3*I*ln(c)*Pi*b^3*n*x*csgn(I*c*(e*x+d)^n)^3+3*I*Pi*
b^3*n^2*x*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+3*I*Pi*b^3*n^2*x*csgn(I*(e*x+d)^n
)*csgn(I*c*(e*x+d)^n)^2+3/2*I*Pi*a^2*b*x*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+3/
2*Pi^2*a*b^2*x*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^5+6*a*b^2*n^2*x-3*ln(c
)^2*b^3*n*x+6*ln(c)*b^3*n^2*x-3/2*Pi^2*b^3*n*x*csgn(I*(e*x+d)^n)*csgn(I*c*(
e*x+d)^n)^5-3/4*Pi^2*a*b^2*x*csgn(I*c)^2*csgn(I*c*(e*x+d)^n)^4+3/2*Pi^2*a*b
^2*x*csgn(I*c)*csgn(I*c*(e*x+d)^n)^5-3/4*Pi^2*a*b^2*x*csgn(I*(e*x+d)^n)^2*c
sgn(I*c*(e*x+d)^n)^4+3/4*Pi^2*b^3*n*x*csgn(I*c)^2*csgn(I*c*(e*x+d)^n)^4-6/e
*ln(e*x+d)*a*b^2*d*n^2-6*b^3*n^3*x+a^3*x+3/2*I/e*Pi*b^3*d*n^2*csgn(I*c*(e*x
+d)^n)^3*ln(e*x+d)^2-3/2*I*ln(c)^2*Pi*b^3*x*csgn(I*c)*csgn(I*(e*x+d)^n)*csg
n(I*c*(e*x+d)^n)-3*I*ln(c)*Pi*b^3*n*x*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-3*I*l
n(c)*Pi*b^3*n*x*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-3*I*Pi*b^3*n^2*x*cs
gn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+3*I*ln(c)*Pi*a*b^2*x*csgn(I*c
)*csgn(I*c*(e*x+d)^n)^2+3*I*ln(c)*Pi*a*b^2*x*csgn(I*(e*x+d)^n)*csgn(I*c*(e*
x+d)^n)^2-3*I*Pi*a*b^2*n*x*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-3*I*Pi*a*b^2*n*x
csgn(I(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-3/2*I*Pi*a^2*b*x*csgn(I*c)*csgn(I*
(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+3*I/e*Pi*b^3*d*n^2*csgn(I*c*(e*x+d)^n)^3*ln(
e*x+d)+3/4*b*(-4*I*Pi*ln(e*x+d)*b^2*d*n*csgn(I*c*(e*x+d)^n)^3+4*a^2*e*x-Pi^
2*b^2*e*x*csgn(I*c)^2*csgn(I*c*(e*x+d)^n)^4-4*I*Pi*b^2*e*n*x*csgn(I*c)*csgn
(I*c*(e*x+d)^n)^2+4*I*ln(c)*Pi*b^2*e*x*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n
)^2+4*I*ln(c)*Pi*b^2*e*x*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+4*I*Pi*ln(e*x+d)*b
^2*d*n*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-4*I*ln(c)*Pi*b^2*e*x*csgn(I*
c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+4*I*Pi*ln(e*x+d)*b^2*d*n*csgn(I*c)
*csgn(I*c*(e*x+d)^n)^2-4*I*Pi*a*b*e*x*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*
(e*x+d)^n)+2*Pi^2*b^2*e*x*csgn(I*c)*csgn(I*c*(e*x+d)^n)^5+4*I*Pi*a*b*e*x*cs
gn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+4*I*Pi*a*b*e*x*csgn(I*c)*csgn(I*c*(e*
x+d)^n)^2-4*I*Pi*b^2*e*n*x*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+2*Pi^2*b
^2*e*x*csgn(I*c)^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^3+2*Pi^2*b^2*e*x*c
sgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^5-Pi^2*b^2*e*x*csgn(I*(e*x+d)^n)^2*csg
n(I*c*(e*x+d)^n)^4-4*I*ln(c)*Pi*b^2*e*x*csgn(I*c*(e*x+d)^n)^3+4*ln(c)^2*b^2
*e*x-Pi^2*b^2*e*x*csgn(I*c)^2*csgn(I*(e*x+d)^n)^2*csgn(I*c*(e*x+d)^n)^2-4*P
i^2*b^2*e*x*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^4-4*I*Pi*ln(e*x
+d)*b^2*d*n*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+4*I*Pi*b^2*e*n*
x*csgn(I*c*(e*x+d)^n)^3+4*I*Pi*b^2*e*n*x*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I
c(e*x+d)^n)+2*Pi^2*b^2*e*x*csgn(I*c)*csgn(I*(e*x+d)^n)^2*csgn(I*c*(e*x+d)
^n)^3-4*I*Pi*a*b*e*x*csgn(I*c*(e*x+d)^n)^3-Pi^2*b^2*e*x*csgn(I*c*(e*x+d)^n)
^6-8*ln(e*x+d)*b^2*d*n^2+8*b^2*e*n^2*x+8*ln(c)*a*b*e*x-8*ln(c)*b^2*e*n*x+8*
ln(c)*ln(e*x+d)*b^2*d*n-8*a*b*e*n*x-4*b^2*d*n^2*ln(e*x+d)^2+8*ln(e*x+d)*a*b
*d*n)/e*ln((e*x+d)^n)-6*ln(c)*a*b^2*n*x-3/4*ln(c)*Pi^2*b^3*x*csgn(I*c*(e*x+
d)^n)^6+3/4*Pi^2*b^3*n*x*csgn(I*c*(e*x+d)^n)^6-3/4*Pi^2*a*b^2*x*csgn(I*c*(e
*x+d)^n)^6+1/8*I*Pi^3*b^3*x*csgn(I*c*(e*x+d)^n)^9-3*I/e*ln(c)*Pi*ln(e*x+d)*
b^3*d*n*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-3*I/e*Pi*ln(e*x+d)*
a*b^2*d*n*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+3/2*b^2*(-I*Pi*b*
e*x*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+I*Pi*b*e*x*csgn(I*c)*cs
gn(I*c*(e*x+d)^n)^2+I*Pi*b*e*x*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-I*Pi

```
*b*e*x*csgn(I*c*(e*x+d)^n)^3+2*ln(c)*b*e*x+2*ln(e*x+d)*b*d*n-2*b*e*n*x+2*a*
e*x)/e*ln((e*x+d)^n)^2+3*ln(c)^2*a*b^2*x+3*ln(c)*a^2*b*x+3/2/e*Pi^2*ln(e*x+
d)*b^3*d*n*csgn(I*c)*csgn(I*c*(e*x+d)^n)^5-3/4/e*Pi^2*ln(e*x+d)*b^3*d*n*csg
n(I*c)^2*csgn(I*c*(e*x+d)^n)^4-3/4*ln(c)*Pi^2*b^3*x*csgn(I*c)^2*csgn(I*c*(e
*x+d)^n)^4+3/2*ln(c)*Pi^2*b^3*x*csgn(I*c)*csgn(I*c*(e*x+d)^n)^5-1/8*I*Pi^3*
b^3*x*csgn(I*c)^3*csgn(I*c*(e*x+d)^n)^6-6/e*ln(c)*b^3*d*n^2*ln(e*x+d)-3/e*a
*b^2*d*n^2*ln(e*x+d)^2+3/e*ln(c)^2*ln(e*x+d)*b^3*d*n+3/e*ln(e*x+d)*a^2*b*d*
n-3/4*ln(c)*Pi^2*b^3*x*csgn(I*(e*x+d)^n)^2*csgn(I*c*(e*x+d)^n)^4+3/2*ln(c)*
Pi^2*b^3*x*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^5-3*a^2*b*n*x+1/e*b^3*d*n^
3*ln(e*x+d)^3+3/e*b^3*d*n^3*ln(e*x+d)^2+6/e*ln(e*x+d)*b^3*d*n^3-3/4/e*Pi^2*
ln(e*x+d)*b^3*d*n*csgn(I*c)^2*csgn(I*(e*x+d)^n)^2*csgn(I*c*(e*x+d)^n)^2+3/2
/e*Pi^2*ln(e*x+d)*b^3*d*n*csgn(I*c)^2*csgn(I*(e...
```

Maxima [**B**] Leaf count of result is larger than twice the leaf count of optimal. 294 vs. $2(102) = 204$.
time = 0.30, size = 294, normalized size = 2.97

$$b^3x\log\left((xe+d)^nc\right)^3+3\left(de^{(-2)}\log(xe+d)-xe^{(-1)}\right)a^2bne+3\,ab^2x\log\left((xe+d)^nc\right)^2+3\,a^2bx\log\left((xe+d)^nc\right)-3\left(\left(d\log(xe+d)^2-2\,xe+2\,d\log(xe+d)\right)n^2e^{(-1)}-2\left(de^{(-2)}\log(xe+d)-xe^{(-1)}\right)ne\log\left((xe+d)^nc\right)\right)ab^2+\left(3\left(de^{(-2)}\log(xe+d)-xe^{(-1)}\right)ne\log\left((xe+d)^nc\right)^2+\left(\left(d\log(xe+d)^3+3\,d\log(xe+d)^2-6\,xe+6\,d\log(xe+d)\right)n^2e^{(-2)}-3\left(d\log(xe+d)^2-2\,xe+2\,d\log(xe+d)\right)ne^{(-2)}\log\left((xe+d)^nc\right)\right)ne\right)b^3+a^3x$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] b^3*x*log((x*e + d)^n*c)^3 + 3*(d*e^(-2)*log(x*e + d) - x*e^(-1))*a^2*b*n*e
 + 3*a*b^2*x*log((x*e + d)^n*c)^2 + 3*a^2*b*x*log((x*e + d)^n*c) - 3*((d*lo
g(x*e + d)^2 - 2*x*e + 2*d*log(x*e + d))*n^2*e^(-1) - 2*(d*e^(-2)*log(x*e +
 d) - x*e^(-1))*n*e*log((x*e + d)^n*c))*a*b^2 + (3*(d*e^(-2)*log(x*e + d) -
 x*e^(-1))*n*e*log((x*e + d)^n*c)^2 + ((d*log(x*e + d)^3 + 3*d*log(x*e + d)
^2 - 6*x*e + 6*d*log(x*e + d))*n^2*e^(-2) - 3*(d*log(x*e + d)^2 - 2*x*e + 2
*d*log(x*e + d))*n*e^(-2)*log((x*e + d)^n*c))*n*e)*b^3 + a^3*x
```

Fricas [**B**] Leaf count of result is larger than twice the leaf count of optimal. 326 vs. $2(102) = 204$.
time = 0.37, size = 326, normalized size = 3.29

$$\left(b^3xe\log(c)^3-3\left(b^3n-ab^2\right)xe\log(c)^2+\left(b^3n^3xe+b^3dn^3\right)\log(xe+d)^3+3\left(2\,b^3n^2-2\,ab^2n+a^2b\right)xe\log(c)-\left(6\,b^3n^3-6\,ab^2n^2+3\,a^2bn-a^3\right)xe-3\left(b^3dn^3-ab^2dn^2+\left(b^3n^3-ab^2n^2\right)xe-\left(b^3n^2xe+b^3dn^2\right)\log(c)\right)\log(xe+d)^2+3\left(2\,b^3dn^3-2\,ab^2dn^2+a^2bdn+\left(2\,b^3n^3-2\,ab^2n^2+a^2bn\right)xe+\left(b^3nxe+b^3dn\right)\log(c)^2-2\left(b^3dn^2-ab^2dn+\left(b^3n^2-ab^2n\right)xe\right)\log(c)\right)\log(xe+d)\right)e^{(-1)}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

Sympy [B] Leaf count of result is larger than twice the leaf count of optimal. 294 vs. 2(95) = 190.
time = 0.58, size = 294, normalized size = 2.97

$$\begin{cases} a^3x + \frac{3a^2bd\log(c(d+ex)^n)}{e} - 3a^2bnx + 3a^2bx\log(c(d+ex)^n) - \frac{6ab^2dn\log(c(d+ex)^n)}{e} + \frac{3ab^2d\log(c(d+ex)^n)^2}{e} + 6ab^2n^2x - 6ab^2nx\log(c(d+ex)^n) + 3ab^2x\log(c(d+ex)^n)^2 + \frac{6b^3dn^2\log(c(d+ex)^n)}{e} - \frac{3b^3dn\log(c(d+ex)^n)^2}{e} + \frac{b^3d\log(c(d+ex)^n)^3}{e} - 6b^3n^3x + 6b^3n^2x\log(c(d+ex)^n) - 3b^3nx\log(c(d+ex)^n)^2 + b^3x\log(c(d+ex)^n)^3 & \text{for } e \neq 0 \\ x(a+b\log(cd^n))^3 & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Piecewise((a**3*x + 3*a**2*b*d*log(c*(d + e*x)**n)/e - 3*a**2*b*n*x + 3*a**
2*b*x*log(c*(d + e*x)**n) - 6*a*b**2*d*n*log(c*(d + e*x)**n)/e + 3*a*b**2*d
*log(c*(d + e*x)**n)**2/e + 6*a*b**2*n**2*x - 6*a*b**2*n*x*log(c*(d + e*x)*
*n) + 3*a*b**2*x*log(c*(d + e*x)**n)**2 + 6*b**3*d*n**2*log(c*(d + e*x)**n)
/e - 3*b**3*d*n*log(c*(d + e*x)**n)**2/e + b**3*d*log(c*(d + e*x)**n)**3/e
- 6*b**3*n**3*x + 6*b**3*n**2*x*log(c*(d + e*x)**n) - 3*b**3*n*x*log(c*(d +
 e*x)**n)**2 + b**3*x*log(c*(d + e*x)**n)**3, Ne(e, 0)), (x*(a + b*log(c*d*
*n))**3, True))
```

Giac [B] Leaf count of result is larger than twice the leaf count of optimal. 409 vs. 2(102) = 204.
time = 4.08, size = 409, normalized size = 4.13

$$(xe+d)b^3n^3e^{(-1)}\log(xe+d)^3 - 3(xe+d)b^3n^3e^{(-1)}\log(xe+d)^2 + 3(xe+d)b^3n^2e^{(-1)}\log(xe+d)^2\log(c) + 6(xe+d)b^3n^3e^{(-1)}\log(xe+d) + 3(xe+d)ab^2n^2e^{(-1)}\log(xe+d)^2 - 6(xe+d)b^3n^2e^{(-1)}\log(xe+d)\log(c) + 3(xe+d)b^3ne^{(-1)}\log(xe+d)\log(c)^2 - 6(xe+d)b^3n^3e^{(-1)} - 6(xe+d)ab^2n^2e^{(-1)}\log(xe+d) + 6(xe+d)b^3n^2e^{(-1)}\log(c) + 6(xe+d)ab^2ne^{(-1)}\log(xe+d)\log(c) - 3(xe+d)b^3ne^{(-1)}\log(c)^2 + (xe+d)b^3e^{(-1)}\log(c)^3 + 6(xe+d)ab^2n^2e^{(-1)} + 3(xe+d)a^2bne^{(-1)}\log(xe+d) - 6(xe+d)ab^2ne^{(-1)}\log(c) + 3(xe+d)ab^2e^{(-1)}\log(c)^2 - 3(xe+d)a^2bne^{(-1)} + 3(xe+d)a^2be^{(-1)}\log(c) + (xe+d)a^3e^{(-1)}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] (x*e + d)*b^3*n^3*e^(-1)*log(x*e + d)^3 - 3*(x*e + d)*b^3*n^3*e^(-1)*log(x*
e + d)^2 + 3*(x*e + d)*b^3*n^2*e^(-1)*log(x*e + d)^2*log(c) + 6*(x*e + d)*b
^3*n^3*e^(-1)*log(x*e + d) + 3*(x*e + d)*a*b^2*n^2*e^(-1)*log(x*e + d)^2 -
6*(x*e + d)*b^3*n^2*e^(-1)*log(x*e + d)*log(c) + 3*(x*e + d)*b^3*n*e^(-1)*l
og(x*e + d)*log(c)^2 - 6*(x*e + d)*b^3*n^3*e^(-1) - 6*(x*e + d)*a*b^2*n^2*e
^(-1)*log(x*e + d) + 6*(x*e + d)*b^3*n^2*e^(-1)*log(c) + 6*(x*e + d)*a*b^2*
n*e^(-1)*log(x*e + d)*log(c) - 3*(x*e + d)*b^3*n*e^(-1)*log(c)^2 + (x*e + d
)*b^3*e^(-1)*log(c)^3 + 6*(x*e + d)*a*b^2*n^2*e^(-1) + 3*(x*e + d)*a^2*b*n*
e^(-1)*log(x*e + d) - 6*(x*e + d)*a*b^2*n*e^(-1)*log(c) + 3*(x*e + d)*a*b^2
*e^(-1)*log(c)^2 - 3*(x*e + d)*a^2*b*n*e^(-1) + 3*(x*e + d)*a^2*b*e^(-1)*lo
g(c) + (x*e + d)*a^3*e^(-1)
```

Mupad [B]
time = 0.00, size = 172, normalized size = 1.74

$$x\left(a^3-3a^2bn+6ab^2n^2-6b^3n^3\right)+\ln\left(c\left(d+ex\right)^n\right)^3\left(b^3x+\frac{b^3d}{e}\right)+\ln\left(c\left(d+ex\right)^n\right)^2\left(\frac{3\left(ab^2d-b^3dn\right)}{e}+3b^2x\left(a-bn\right)\right)+\frac{\ln\left(d+ex\right)\left(3da^2bn-6dab^2n^2+6db^3n^3\right)}{e}+3bx\ln\left(c\left(d+ex\right)^n\right)\left(a^2-2abn+2b^2n^2\right)$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

3.56 $\int \frac{(a+b\log(c(d+ex)^n))^3}{f+gx}\,dx$

Optimal. Leaf size=158

$$\frac{(a+b\log\left(c(d+ex)^n\right))^3\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g}+\frac{3bn(a+b\log\left(c(d+ex)^n\right))^2\operatorname{Li}_2\left(-\frac{g(d+ex)}{ef-dg}\right)}{g}-\frac{6b^2n^2(a+b\log\left(c(d+\right.}{g}$$

```
[Out] (a+b*ln(c*(e*x+d)^n))^3*ln(e*(g*x+f)/(-d*g+e*f))/g+3*b*n*(a+b*ln(c*(e*x+d)^
n))^2*polylog(2,-g*(e*x+d)/(-d*g+e*f))/g-6*b^2*n^2*(a+b*ln(c*(e*x+d)^n))*po
lylog(3,-g*(e*x+d)/(-d*g+e*f))/g+6*b^3*n^3*polylog(4,-g*(e*x+d)/(-d*g+e*f))
/g
```

Rubi [A]
time = 0.13, antiderivative size = 158, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.208$, Rules used = {2443, 2481, 2421, 2430, 6724}

$$-\frac{6b^2n^2\text{PolyLog}\left(3,-\frac{g(d+ex)}{ef-dg}\right)(a+b\log\left(c(d+ex)^n\right))}{g}+\frac{3bn\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)(a+b\log\left(c(d+ex)^n\right))^2}{g}+\frac{6b^3n^3\text{PolyLog}\left(4,-\frac{g(d+ex)}{ef-dg}\right)}{g}+\frac{\log\left(\frac{e(f+gx)}{ef-dg}\right)(a+b\log\left(c(d+ex)^n\right))^3}{g}$$

Antiderivative was successfully verified.

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

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

Rule 2421

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> Simp[(-PolyLog[2, (-d)*f*x^m])*((a + b*Log[c
*x^n])^p/m), x] + Dist[b*n*(p/m), Int[PolyLog[2, (-d)*f*x^m]*((a + b*Log[c*
x^n])^(p - 1)/x), x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0
] && EqQ[d*e, 1]
```

Rule 2430

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

Rule 2443

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d
```

```
+ e*x)^n])^p/g), x] - Dist[b*e*n*(p/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]*
((a + b*Log[c*(d + e*x)^n])^(p - 1)/(d + e*x)), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2481

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[(k*(x/d))^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + j*(x/e))^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 6724

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(a+b\log(c(d+ex)^n))^3}{f+gx}\,dx = \frac{(a+b\log(c(d+ex)^n))^3\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g} - \frac{(3ben)\int\frac{(a+b\log(c(d+ex)^n))^2\log\left(\frac{e(f+gx}{ef-dg}\right.}{d+ex}}{g}$$

$$= \frac{(a+b\log(c(d+ex)^n))^3\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g} - \frac{(3bn)\text{Subst}\left(\int\frac{(a+b\log(cx^n))^2\log\left(\frac{e(e}{\right.}}{x}\right.}{g}$$

$$= \frac{(a+b\log(c(d+ex)^n))^3\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g} + \frac{3bn(a+b\log(c(d+ex)^n))^2\,\text{Li}_2\left(-\right.}{g}$$

$$= \frac{(a+b\log(c(d+ex)^n))^3\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g} + \frac{3bn(a+b\log(c(d+ex)^n))^2\,\text{Li}_2\left(-\right.}{g}$$

$$= \frac{(a+b\log(c(d+ex)^n))^3\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g} + \frac{3bn(a+b\log(c(d+ex)^n))^2\,\text{Li}_2\left(-\right.}{g}$$

Mathematica [B] Leaf count is larger than twice the leaf count of optimal. 335 vs. 2(158) = 316.

time = 0.11, size = 335, normalized size = 2.12

$$\frac{(a-bn\log(d+ex)+b\log(c(d+ex)^n))^3\log(f+gx)+3bn(a-bn\log(d+ex)+b\log(c(d+ex)^n))^2\left(\log(d+ex)\log\left(\frac{e(f+gx)}{ef-dg}\right)+\text{Li}_2\left(\frac{g(d+ex)}{-ef+dg}\right)\right)+6b^2n^2(a-bn\log(d+ex)+b\log(c(d+ex)^n))\left(\frac{1}{2}\log^2(d+ex)\log\left(\frac{e(f+gx)}{ef-dg}\right)+\log(d+ex)\text{Li}_2\left(\frac{g(d+ex)}{-ef+dg}\right)-\text{Li}_3\left(\frac{g(d+ex)}{-ef+dg}\right)\right)+b^3n^3\left(\log^3(d+ex)\log\left(\frac{e(f+gx)}{ef-dg}\right)+3\log^2(d+ex)\text{Li}_2\left(\frac{g(d+ex)}{-ef+dg}\right)-6\log(d+ex)\text{Li}_3\left(\frac{g(d+ex)}{-ef+dg}\right)+6\text{Li}_4\left(\frac{g(d+ex)}{-ef+dg}\right)\right)}{g}$$

Antiderivative was successfully verified.

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

```
[Out] ((a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^3*Log[f + g*x] + 3*b*n*(a -
b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2*(Log[d + e*x]*Log[(e*(f + g*x))/
(e*f - d*g)] + PolyLog[2, (g*(d + e*x))/(-(e*f) + d*g)]) + 6*b^2*n^2*(a - b
*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])*((Log[d + e*x]^2*Log[(e*(f + g*x))/
(e*f - d*g)])/2 + Log[d + e*x]*PolyLog[2, (g*(d + e*x))/(-(e*f) + d*g)] - P
olyLog[3, (g*(d + e*x))/(-(e*f) + d*g)]) + b^3*n^3*(Log[d + e*x]^3*Log[(e*(
f + g*x))/(e*f - d*g)] + 3*Log[d + e*x]^2*PolyLog[2, (g*(d + e*x))/(-(e*f)
+ d*g)] - 6*Log[d + e*x]*PolyLog[3, (g*(d + e*x))/(-(e*f) + d*g)] + 6*PolyL
og[4, (g*(d + e*x))/(-(e*f) + d*g)]))/g
```

Maple [C] Result contains higher order function than in optimal. Order 9 vs. order 4.
time = 0.89, size = 9538, normalized size = 60.37

method	result	size
risch	Expression too large to display	9538

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))^3/(g*x+f),x,method=_RETURNVERBOSE)
```

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

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

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

$$\int \frac{(a + b\log(c(d + ex)^n))^3}{f + gx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**3/(g*x+f),x)
[Out] Integral((a + b*log(c*(d + e*x)**n))**3/(f + g*x), x)
```

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

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

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

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

$$\int \frac{(a + b\,\ln(c\,(d + e\,x)^n))^3}{f + g\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))^3/(f + g*x),x)
[Out] int((a + b*log(c*(d + e*x)^n))^3/(f + g*x), x)
```

3.57 $\int \frac{(a+b\log(c(d+ex)^n))^3}{(f+gx)^2}\,dx$

Optimal. Leaf size=190

$$\frac{(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^3}{(ef-dg)(f+gx)}-\frac{3ben(a+b\log\left(c(d+ex)^n\right))^2\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g(ef-dg)}-\frac{6b^2en^2(a+b\log\left(c(d+ex)\right.}{g(ef-dg}$$

```
[Out] (e*x+d)*(a+b*ln(c*(e*x+d)^n))^3/(-d*g+e*f)/(g*x+f)-3*b*e*n*(a+b*ln(c*(e*x+d
)^n))^2*ln(e*(g*x+f)/(-d*g+e*f))/g/(-d*g+e*f)-6*b^2*e*n^2*(a+b*ln(c*(e*x+d)
^n))*polylog(2,-g*(e*x+d)/(-d*g+e*f))/g/(-d*g+e*f)+6*b^3*e*n^3*polylog(3,-g
*(e*x+d)/(-d*g+e*f))/g/(-d*g+e*f)
```

Rubi [A]

time = 0.11, antiderivative size = 190, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.208$, Rules used = {2444, 2443, 2481, 2421, 6724}

$$-\frac{6b^2en^2\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{g(ef-dg)}+\frac{6b^3en^3\text{PolyLog}\left(3,-\frac{g(d+ex)}{ef-dg}\right)}{g(ef-dg)}-\frac{3ben\log\left(\frac{e(f+gx)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{g(ef-dg)}+\frac{(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^3}{(f+gx)(ef-dg)}$$

Antiderivative was successfully verified.

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

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

Rule 2421

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> Simp[(-PolyLog[2, (-d)*f*x^m])*((a + b*Log[c
*x^n])^p/m), x] + Dist[b*n*(p/m), Int[PolyLog[2, (-d)*f*x^m]*((a + b*Log[c*
x^n])^(p - 1)/x), x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0
] && EqQ[d*e, 1]
```

Rule 2443

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

Rule 2444

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

Rule 2481

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[(k*(x/d))^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + j*(x/e))^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 6724

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(a+b\log(c(d+ex)^n))^3}{(f+gx)^2}\,dx = \frac{(d+ex)(a+b\log(c(d+ex)^n))^3}{(ef-dg)(f+gx)} - \frac{(3ben)\int \frac{(a+b\log(c(d+ex)^n))^2}{f+gx}\,dx}{ef-dg}$$

$$= \frac{(d+ex)(a+b\log(c(d+ex)^n))^3}{(ef-dg)(f+gx)} - \frac{3ben(a+b\log(c(d+ex)^n))^2\log\left(\frac{e(f+g}{ef-c}\right.}{g(ef-dg)}$$

$$= \frac{(d+ex)(a+b\log(c(d+ex)^n))^3}{(ef-dg)(f+gx)} - \frac{3ben(a+b\log(c(d+ex)^n))^2\log\left(\frac{e(f+g}{ef-c}\right.}{g(ef-dg)}$$

$$= \frac{(d+ex)(a+b\log(c(d+ex)^n))^3}{(ef-dg)(f+gx)} - \frac{3ben(a+b\log(c(d+ex)^n))^2\log\left(\frac{e(f+g}{ef-c}\right.}{g(ef-dg)}$$

$$= \frac{(d+ex)(a+b\log(c(d+ex)^n))^3}{(ef-dg)(f+gx)} - \frac{3ben(a+b\log(c(d+ex)^n))^2\log\left(\frac{e(f+g}{ef-c}\right.}{g(ef-dg)}$$

Mathematica [B] Leaf count is larger than twice the leaf count of optimal. 410 vs. 2(190) = 380.
time = 0.23, size = 410, normalized size = 2.16

$$\frac{-3b(ef-dg)n\log(d+ex)(a-bn\log(d+ex)+b\log(c(d+ex)^n))^2+3ben(f+gx)\log(d+ex)(a-bn\log(d+ex)+b\log(c(d+ex)^n))^2-(ef-dg)(a-bn\log(d+ex)+b\log(c(d+ex)^n))^3-3ben(f+gx)(a-bn\log(d+ex)+b\log(c(d+ex)^n))^2\log(f+gx)+3b^2n^2(a-bn\log(d+ex)+b\log(c(d+ex)^n))\left(\log(d+ex)\left(g(d+ex)\log(d+ex)-2e(f+gx)\log\left(\frac{e(f+gx)}{ef-dg}\right)\right)-2e(f+gx)\mathrm{Li}_2\left(\frac{g(d+ex)}{-ef+dg}\right)\right)+b^3n^3\left(\log^2(d+ex)\left(g(d+ex)\log(d+ex)-3e(f+gx)\log\left(\frac{e(f+gx)}{ef-dg}\right)\right)-6e(f+gx)\log(d+ex)\mathrm{Li}_2\left(\frac{g(d+ex)}{-ef+dg}\right)+6e(f+gx)\mathrm{Li}_3\left(\frac{g(d+ex)}{-ef+dg}\right)\right)}{g(ef-dg)(f+gx)}$$

Antiderivative was successfully verified.

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

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

Maple [**C**] Result contains higher order function than in optimal. Order 9 vs. order 4.
time = 1.41, size = 5626, normalized size = 29.61

method	result	size
risch	Expression too large to display	5626

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))^3/(g*x+f)^2,x,method=_RETURNVERBOSE)
```

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

Maxima [**F**]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^3/(g*x+f)^2,x, algorithm="maxima")
```

```
[Out] 3*a^2*b*n*(log(g*x + f)/(d*g^2 - f*g*e) - log(x*e + d)/(d*g^2 - f*g*e))*e -
 b^3*log((x*e + d)^n)^3/(g^2*x + f*g) - 3*a^2*b*log((x*e + d)^n*c)/(g^2*x +
 f*g) - a^3/(g^2*x + f*g) + integrate((b^3*d*g*log(c)^3 + 3*a*b^2*d*g*log(c
)^2 + (b^3*g*log(c)^3 + 3*a*b^2*g*log(c)^2)*x*e + 3*(b^3*f*n*e + b^3*d*g*lo
g(c) + a*b^2*d*g + ((g*n + g*log(c))*b^3 + a*b^2*g)*x*e)*log((x*e + d)^n)^2
 + 3*(b^3*d*g*log(c)^2 + 2*a*b^2*d*g*log(c) + (b^3*g*log(c)^2 + 2*a*b^2*g*l
og(c))*x*e)*log((x*e + d)^n))/(g^3*x^3*e + d*f^2*g + (d*g^3 + 2*f*g^2*e)*x^
2 + (2*d*f*g^2 + f^2*g*e)*x), x)
```

Fricas [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^3/(g*x+f)^2,x, algorithm="fricas")
```

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

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

$$\int \frac{\left(a + b\log\left(c(d + ex)^{n}\right)\right)^{3}}{\left(f + gx\right)^{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^3/(g*x+f)^2,x, algorithm="giac")
```

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

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

$$\int \frac{{\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)}^3}{{\left(f+g\,x\right)}^2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

3.58 $\int \frac{(a+b\log(c(d+ex)^n))^3}{(f+gx)^3}\,dx$

Optimal. Leaf size=342

$$-\frac{3ben(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{2(ef-dg)^2(f+gx)}-\frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^3}{2g(f+gx)^2}+\frac{3b^2e^2n^2\left(a+b\log\left(c(d+ex)^n\right)\right)\log\left(\frac{e(f}{ef}\right.}{g(ef-dg)^2}$$

```
[Out] -3/2*b*e*n*(e*x+d)*(a+b*ln(c*(e*x+d)^n))^2/(-d*g+e*f)^2/(g*x+f)-1/2*(a+b*ln
(c*(e*x+d)^n))^3/g/(g*x+f)^2+3*b^2*e^2*n^2*(a+b*ln(c*(e*x+d)^n))*ln(e*(g*x+
f)/(-d*g+e*f))/g/(-d*g+e*f)^2-3/2*b*e^2*n*(a+b*ln(c*(e*x+d)^n))^2*ln(1+(-d*
g+e*f)/g/(e*x+d))/g/(-d*g+e*f)^2+3*b^2*e^2*n^2*(a+b*ln(c*(e*x+d)^n))*polylo
g(2,(d*g-e*f)/g/(e*x+d))/g/(-d*g+e*f)^2+3*b^3*e^2*n^3*polylog(2,-g*(e*x+d)/
(-d*g+e*f))/g/(-d*g+e*f)^2+3*b^3*e^2*n^3*polylog(3,(d*g-e*f)/g/(e*x+d))/g/(
-d*g+e*f)^2
```

Rubi [A]
time = 0.38, antiderivative size = 342, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 9, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.375$, Rules used = {2445, 2458, 2389, 2379, 2421, 6724, 2355, 2354, 2438}

$$\frac{3b^2e^2n^2\text{PolyLog}\left(2,-\frac{ef-dg}{g(d+ex)}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{g(ef-dg)^2}+\frac{3b^3e^2n^3\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)}{g(ef-dg)^2}+\frac{3b^3e^2n^3\text{PolyLog}\left(3,-\frac{ef-dg}{g(d+ex)}\right)}{g(ef-dg)^2}+\frac{3b^2e^2n^2\log\left(\frac{e(f+gx)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{g(ef-dg)^2}-\frac{3be^2n\log\left(\frac{ef-dg}{g(d+ex)}+1\right)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{2g(ef-dg)^2}-\frac{3ben(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{2(f+gx)(ef-dg)^2}-\frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^3}{2g(f+gx)^2}$$

Antiderivative was successfully verified.

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

```
[Out] (-3*b*e*n*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^2)/(2*(e*f - d*g)^2*(f + g*x
)) - (a + b*Log[c*(d + e*x)^n])^3/(2*g*(f + g*x)^2) + (3*b^2*e^2*n^2*(a + b
*Log[c*(d + e*x)^n])*Log[(e*(f + g*x))/(e*f - d*g)])/(g*(e*f - d*g)^2) - (3
*b*e^2*n*(a + b*Log[c*(d + e*x)^n])^2*Log[1 + (e*f - d*g)/(g*(d + e*x))])/(
2*g*(e*f - d*g)^2) + (3*b^2*e^2*n^2*(a + b*Log[c*(d + e*x)^n])*PolyLog[2, -
((e*f - d*g)/(g*(d + e*x)))])/(g*(e*f - d*g)^2) + (3*b^3*e^2*n^3*PolyLog[2,
 -((g*(d + e*x))/(e*f - d*g))])/(g*(e*f - d*g)^2) + (3*b^3*e^2*n^3*PolyLog[
3, -((e*f - d*g)/(g*(d + e*x)))])/(g*(e*f - d*g)^2)
```

Rule 2354

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

Rule 2355

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_))^2, x_Sy
mbol] :> Simp[x*((a + b*Log[c*x^n])^p/(d*(d + e*x))), x] - Dist[b*n*(p/d),
```

```
Int[(a + b*Log[c*x^n])^(p - 1)/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, n
, p}, x] && GtQ[p, 0]
```

Rule 2379

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

Rule 2389

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_))/
(x_), x_Symbol] :> Dist[1/d, Int[(d + e*x)^(q + 1)*((a + b*Log[c*x^n])^p/x)
, x], x] - Dist[e/d, Int[(d + e*x)^q*(a + b*Log[c*x^n])^p, x], x] /; FreeQ[
{a, b, c, d, e, n}, x] && IGtQ[p, 0] && LtQ[q, -1] && IntegerQ[2*q]
```

Rule 2421

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> Simp[(-PolyLog[2, (-d)*f*x^m])*((a + b*Log[c
*x^n])^p/m), x] + Dist[b*n*(p/m), Int[PolyLog[2, (-d)*f*x^m]*((a + b*Log[c*
x^n])^(p - 1)/x), x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0
] && EqQ[d*e, 1]
```

Rule 2438

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

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[(f + g*x)^(q + 1)*((a + b*Log[c*(d + e*x)^
n])^p/(g*(q + 1))), x] - Dist[b*e*n*(p/(g*(q + 1))), Int[(f + g*x)^(q + 1)*
((a + b*Log[c*(d + e*x)^n])^(p - 1)/(d + e*x)), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && GtQ[p, 0] && NeQ[q, -1] && Int
egersQ[2*p, 2*q] && ( !IGtQ[q, 0] || (EqQ[p, 2] && NeQ[q, 1]))
```

Rule 2458

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[(g*(x/e))^q*((e*h - d*i)/e + i*(x/e))^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 6724

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(a+b\log(c(d+ex)^n))^3}{(f+gx)^3}\,dx &= -\frac{(a+b\log(c(d+ex)^n))^3}{2g(f+gx)^2}+\frac{(3ben)\int\frac{(a+b\log(c(d+ex)^n))^2}{(d+ex)(f+gx)^2}\,dx}{2g}\\
&= -\frac{(a+b\log(c(d+ex)^n))^3}{2g(f+gx)^2}+\frac{(3bn)\text{Subst}\left(\int\frac{(a+b\log(cx^n))^2}{x\left(\frac{ef-dg}{e}+\frac{gx}{e}\right)^2}\,dx,x,d+ex\right)}{2g}\\
&= -\frac{(a+b\log(c(d+ex)^n))^3}{2g(f+gx)^2}-\frac{(3bn)\text{Subst}\left(\int\frac{(a+b\log(cx^n))^2}{\left(\frac{ef-dg}{e}+\frac{gx}{e}\right)^2}\,dx,x,d+ex\right)}{2(ef-dg)}+\cdots\\
&= -\frac{3ben(d+ex)(a+b\log(c(d+ex)^n))^2}{2(ef-dg)^2(f+gx)}-\frac{(a+b\log(c(d+ex)^n))^3}{2g(f+gx)^2}-\frac{(3b\cdots}{\cdots}\\
&= -\frac{3ben(d+ex)(a+b\log(c(d+ex)^n))^2}{2(ef-dg)^2(f+gx)}-\frac{(a+b\log(c(d+ex)^n))^3}{2g(f+gx)^2}+\frac{3b^2\cdots}{\cdots}\\
&= -\frac{3ben(d+ex)(a+b\log(c(d+ex)^n))^2}{2(ef-dg)^2(f+gx)}+\frac{e^2(a+b\log(c(d+ex)^n))^3}{2g(ef-dg)^2}-\frac{(\cdots}{\cdots}\\
&= -\frac{3ben(d+ex)(a+b\log(c(d+ex)^n))^2}{2(ef-dg)^2(f+gx)}+\frac{e^2(a+b\log(c(d+ex)^n))^3}{2g(ef-dg)^2}-\frac{(\cdots}{\cdots}
\end{aligned}
$$

Mathematica [A]
time = 0.48, size = 620, normalized size = 1.81

Antiderivative was successfully verified.

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

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

```
] + b*Log[c*(d + e*x)^n])^2 + (e*f - d*g)^2*(a - b*n*Log[d + e*x] + b*Log[c
*(d + e*x)^n])^3 + 3*b*e^2*n*(f + g*x)^2*(a - b*n*Log[d + e*x] + b*Log[c*(d
 + e*x)^n])^2*Log[f + g*x] + 3*b^2*n^2*(a - b*n*Log[d + e*x] + b*Log[c*(d +
 e*x)^n])*(g*(d + e*x)*(d*g - e*(2*f + g*x))*Log[d + e*x]^2 - 2*e^2*(f + g*
x)^2*Log[(e*(f + g*x))/(e*f - d*g)] + 2*e*(f + g*x)*Log[d + e*x]*(g*(d + e*
x) + e*(f + g*x)*Log[(e*(f + g*x))/(e*f - d*g)]) + 2*e^2*(f + g*x)^2*PolyLo
g[2, (g*(d + e*x))/(-(e*f) + d*g)]) + b^3*n^3*(g*(d + e*x)*(d*g - e*(2*f +
g*x))*Log[d + e*x]^3 + 3*e*(f + g*x)*Log[d + e*x]^2*(g*(d + e*x) + e*(f + g
*x)*Log[(e*(f + g*x))/(e*f - d*g)]) - 6*e^2*(f + g*x)^2*Log[d + e*x]*(Log[(
e*(f + g*x))/(e*f - d*g)] - PolyLog[2, (g*(d + e*x))/(-(e*f) + d*g)]) - 6*e
^2*(f + g*x)^2*PolyLog[2, (g*(d + e*x))/(-(e*f) + d*g)] - 6*e^2*(f + g*x)^2
*PolyLog[3, (g*(d + e*x))/(-(e*f) + d*g)]))/(g*(e*f - d*g)^2*(f + g*x)^2)
```

Maple [F]
time = 0.17, size = 0, normalized size = 0.00

$$\int \frac{(a + b \ln (c(ex + d)^n))^3}{(gx + f)^3} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] int((a+b*ln(c*(e*x+d)^n))^3/(g*x+f)^3,x)
```

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

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

$$\int \frac{(a + b\log(c(d + ex)^n))^3}{(f + gx)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate((b*log((x*e + d)^n*c) + a)^3/(g*x + f)^3, x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(a + b\,\ln(c\,(d + e\,x)^n))^3}{(f + g\,x)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] int((a + b*log(c*(d + e*x)^n))^3/(f + g*x)^3, x)
```

3.59 $\int \frac{(a+b\log(c(d+ex)^n))^3}{(f+gx)^4}\,dx$

Optimal. Leaf size=564

$$\frac{b^2e^2n^2(d+ex)\,(a+b\log\left(c(d+ex)^n\right))}{(ef-dg)^3(f+gx)}+\frac{ben(a+b\log\left(c(d+ex)^n\right))^2}{2g(ef-dg)(f+gx)^2}-\frac{be^2n(d+ex)\,(a+b\log\left(c(d+ex)^n\right))^2}{(ef-dg)^3(f+gx)}$$

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

Rubi [A]
time = 0.71, antiderivative size = 564, normalized size of antiderivative = 1.00, number of steps used = 16, number of rules used = 12, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.500$, Rules used = {2445, 2458, 2389, 2379, 2421, 6724, 2355, 2354, 2438, 2356, 2351, 31}

$$\frac{2b^2e^3n^2\text{PolyLog}\left(2,-\frac{ef-dg}{g(d+ex)}\right)(a+b\log\left(c(d+ex)^n\right))}{g(ef-dg)^3}-\frac{b^3e^3n^3\text{PolyLog}\left(2,-\frac{ef-dg}{g(d+ex)}\right)}{g(ef-dg)^3}+\frac{2b^3e^3n^3\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)}{g(ef-dg)^3}+\frac{2b^3e^3n^3\text{PolyLog}\left(3,-\frac{ef-dg}{g(d+ex)}\right)}{g(ef-dg)^3}+\frac{2b^2e^3n^2\log\left(\frac{e(f+gx)}{ef-dg}\right)(a+b\log\left(c(d+ex)^n\right))}{g(ef-dg)^3}+\frac{b^2e^3n^2\log\left(\frac{ef-dg}{g(d+ex)}+1\right)(a+b\log\left(c(d+ex)^n\right))}{g(ef-dg)^3}+\frac{b^2e^2n^2(d+ex)(a+b\log\left(c(d+ex)^n\right))}{(f+gx)(ef-dg)^3}-\frac{be^3n\log\left(\frac{ef-dg}{g(d+ex)}+1\right)(a+b\log\left(c(d+ex)^n\right))^2}{g(ef-dg)^3}-\frac{be^2n(d+ex)(a+b\log\left(c(d+ex)^n\right))^2}{(f+gx)(ef-dg)^3}+\frac{ben(a+b\log\left(c(d+ex)^n\right))^2}{2g(f+gx)^2(ef-dg)}-\frac{(a+b\log\left(c(d+ex)^n\right))^3}{3g(f+gx)^3}-\frac{b^3e^3n^3\log(f+gx)}{g(ef-dg)^3}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^3/(f + g*x)^4,x]
```

```
[Out] (b^2*e^2*n^2*(d + e*x)*(a + b*Log[c*(d + e*x)^n]))/((e*f - d*g)^3*(f + g*x)
) + (b*e*n*(a + b*Log[c*(d + e*x)^n])^2)/(2*g*(e*f - d*g)*(f + g*x)^2) - (b
*e^2*n*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^2)/((e*f - d*g)^3*(f + g*x)) -
(a + b*Log[c*(d + e*x)^n])^3/(3*g*(f + g*x)^3) - (b^3*e^3*n^3*Log[f + g*x])
/(g*(e*f - d*g)^3) + (2*b^2*e^3*n^2*(a + b*Log[c*(d + e*x)^n])*Log[(e*(f +
g*x))/(e*f - d*g)])/(g*(e*f - d*g)^3) + (b^2*e^3*n^2*(a + b*Log[c*(d + e*x)
^n])*Log[1 + (e*f - d*g)/(g*(d + e*x))])/(g*(e*f - d*g)^3) - (b*e^3*n*(a +
b*Log[c*(d + e*x)^n])^2*Log[1 + (e*f - d*g)/(g*(d + e*x))])/(g*(e*f - d*g)^
3) - (b^3*e^3*n^3*PolyLog[2, -((e*f - d*g)/(g*(d + e*x)))])/(g*(e*f - d*g)^
3) + (2*b^2*e^3*n^2*(a + b*Log[c*(d + e*x)^n])*PolyLog[2, -((e*f - d*g)/(g*
(d + e*x)))])/(g*(e*f - d*g)^3) + (2*b^3*e^3*n^3*PolyLog[2, -((g*(d + e*x))
/(e*f - d*g))])/(g*(e*f - d*g)^3) + (2*b^3*e^3*n^3*PolyLog[3, -((e*f - d*g)
/(g*(d + e*x)))])/(g*(e*f - d*g)^3)
```

Rule 31

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

Rule 2351

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_) + (e_.)*(x_)^(r_.))^(q_), x
_Symbol] :> Simp[x*(d + e*x^r)^(q + 1)*((a + b*Log[c*x^n])/d), x] - Dist[b*
(n/d), Int[(d + e*x^r)^(q + 1), x], x] /; FreeQ[{a, b, c, d, e, n, q, r}, x
] && EqQ[r*(q + 1) + 1, 0]
```

Rule 2354

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

Rule 2355

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

Rule 2356

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.),
x_Symbol] :> Simp[(d + e*x)^(q + 1)*((a + b*Log[c*x^n])^p/(e*(q + 1))), x]
- Dist[b*n*(p/(e*(q + 1))), Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^(p -
1))/x, x], x] /; FreeQ[{a, b, c, d, e, n, p, q}, x] && GtQ[p, 0] && NeQ[q,
-1] && (EqQ[p, 1] || (IntegersQ[2*p, 2*q] &&  !IGtQ[q, 0]) || (EqQ[p, 2] &&
 NeQ[q, 1]))
```

Rule 2379

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

Rule 2389

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_))/
(x_), x_Symbol] :> Dist[1/d, Int[(d + e*x)^(q + 1)*((a + b*Log[c*x^n])^p/x)
, x], x] - Dist[e/d, Int[(d + e*x)^q*(a + b*Log[c*x^n])^p, x], x] /; FreeQ[
{a, b, c, d, e, n}, x] && IGtQ[p, 0] && LtQ[q, -1] && IntegerQ[2*q]
```

Rule 2421

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> Simp[(-PolyLog[2, (-d)*f*x^m])*((a + b*Log[c
*x^n])^p/m), x] + Dist[b*n*(p/m), Int[PolyLog[2, (-d)*f*x^m]*((a + b*Log[c*
x^n])^(p - 1)/x), x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0
] && EqQ[d*e, 1]
```

Rule 2438

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

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[(f + g*x)^(q + 1)*((a + b*Log[c*(d + e*x)^
n])^p/(g*(q + 1))), x] - Dist[b*e*n*(p/(g*(q + 1))), Int[(f + g*x)^(q + 1)*
((a + b*Log[c*(d + e*x)^n])^(p - 1)/(d + e*x)), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && GtQ[p, 0] && NeQ[q, -1] && Int
egersQ[2*p, 2*q] && ( !IGtQ[q, 0] || (EqQ[p, 2] && NeQ[q, 1]))
```

Rule 2458

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[(g*(x/e))^q*((e*h - d*i)/e + i*(x/e))^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 6724

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(a+b\log(c(d+ex)^n))^3}{(f+gx)^4}\,dx = -\frac{(a+b\log(c(d+ex)^n))^3}{3g(f+gx)^3} + \frac{(ben)\int \frac{(a+b\log(c(d+ex)^n))^2}{(d+ex)(f+gx)^3}\,dx}{g}$$

$$= -\frac{(a+b\log(c(d+ex)^n))^3}{3g(f+gx)^3} + \frac{(bn)\text{Subst}\left(\int \frac{(a+b\log(cx^n))^2}{x\left(\frac{ef-dg}{e}+\frac{gx}{e}\right)^3}\,dx, x, d+ex\right)}{g}$$

$$= -\frac{(a+b\log(c(d+ex)^n))^3}{3g(f+gx)^3} - \frac{(bn)\text{Subst}\left(\int \frac{(a+b\log(cx^n))^2}{\left(\frac{ef-dg}{e}+\frac{gx}{e}\right)^3}\,dx, x, d+ex\right)}{ef-dg} +$$

$$= \frac{ben(a+b\log(c(d+ex)^n))^2}{2g(ef-dg)(f+gx)^2} - \frac{(a+b\log(c(d+ex)^n))^3}{3g(f+gx)^3} - \frac{(ben)\text{Subst}\left(\int\right.}{}$$

$$= \frac{ben(a+b\log(c(d+ex)^n))^2}{2g(ef-dg)(f+gx)^2} - \frac{be^2n(d+ex)(a+b\log(c(d+ex)^n))^2}{(ef-dg)^3(f+gx)} - \frac{(a}{}$$

$$= \frac{b^2e^2n^2(d+ex)(a+b\log(c(d+ex)^n))}{(ef-dg)^3(f+gx)} + \frac{ben(a+b\log(c(d+ex)^n))^2}{2g(ef-dg)(f+gx)^2} - \frac{b}{}$$

$$= \frac{b^2e^2n^2(d+ex)(a+b\log(c(d+ex)^n))}{(ef-dg)^3(f+gx)} - \frac{be^3n(a+b\log(c(d+ex)^n))^2}{2g(ef-dg)^3} +$$

$$= \frac{b^2e^2n^2(d+ex)(a+b\log(c(d+ex)^n))}{(ef-dg)^3(f+gx)} - \frac{be^3n(a+b\log(c(d+ex)^n))^2}{2g(ef-dg)^3} +$$

Mathematica [A]
time = 0.72, size = 843, normalized size = 1.49

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^3/(f + g*x)^4,x]
```

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

```
b*Log[c*(d + e*x)^n])^3 - 6*b*e^3*n*(f + g*x)^3*(a - b*n*Log[d + e*x] + b*L
og[c*(d + e*x)^n])^2*Log[f + g*x] + 6*b^2*n^2*(a - b*n*Log[d + e*x] + b*Log
[c*(d + e*x)^n])*(e^2*g*(d + e*x)*(f + g*x)^2 + g*(3*d*e^2*f^2 - 3*d^2*e*f*
g + d^3*g^2 + e^3*x*(3*f^2 + 3*f*g*x + g^2*x^2))*Log[d + e*x]^2 + 3*e^3*(f
+ g*x)^3*Log[(e*(f + g*x))/(e*f - d*g)] + e*(f + g*x)*Log[d + e*x]*(g^2*(d
+ e*x)^2 - 4*e*g*(d + e*x)*(f + g*x) - 2*e^2*(f + g*x)^2*Log[(e*(f + g*x))/
(e*f - d*g)]) - 2*e^3*(f + g*x)^3*PolyLog[2, (g*(d + e*x))/(-(e*f) + d*g)])
 + b^3*n^3*(2*g*(3*d*e^2*f^2 - 3*d^2*e*f*g + d^3*g^2 + e^3*x*(3*f^2 + 3*f*g
*x + g^2*x^2))*Log[d + e*x]^3 - 6*e^3*(f + g*x)^3*Log[(e*(f + g*x))/(e*f -
d*g)] + 3*e*(f + g*x)*Log[d + e*x]^2*(g^2*(d + e*x)^2 - 4*e*g*(d + e*x)*(f
+ g*x) - 2*e^2*(f + g*x)^2*Log[(e*(f + g*x))/(e*f - d*g)]) + 18*e^3*(f + g*
x)^3*PolyLog[2, (g*(d + e*x))/(-(e*f) + d*g)] + 6*e^2*(f + g*x)^2*Log[d + e
*x]*(g*(d + e*x) + 3*e*(f + g*x)*Log[(e*(f + g*x))/(e*f - d*g)] - 2*e*(f +
g*x)*PolyLog[2, (g*(d + e*x))/(-(e*f) + d*g)]) + 12*e^3*(f + g*x)^3*PolyLog
[3, (g*(d + e*x))/(-(e*f) + d*g)]))/(6*g*(e*f - d*g)^3*(f + g*x)^3)
```

Maple [**F**]
time = 0.19, size = 0, normalized size = 0.00

$$\int \frac{\left(a + b\ln\left(c\left(ex+d\right)^{n}\right)\right)^{3}}{\left(gx+f\right)^{4}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))^3/(g*x+f)^4,x)
```

```
[Out] int((a+b*ln(c*(e*x+d)^n))^3/(g*x+f)^4,x)
```

Maxima [**F**]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^3/(g*x+f)^4,x, algorithm="maxima")
```

```
[Out] 1/2*a^2*b*n*(2*e^2*log(g*x + f)/(d^3*g^4 - 3*d^2*f*g^3*e + 3*d*f^2*g^2*e^2
- f^3*g*e^3) - 2*e^2*log(x*e + d)/(d^3*g^4 - 3*d^2*f*g^3*e + 3*d*f^2*g^2*e^
2 - f^3*g*e^3) + (2*g*x*e - d*g + 3*f*e)/(d^2*f^2*g^3 - 2*d*f^3*g^2*e + f^4
*g*e^2 + (d^2*g^5 - 2*d*f*g^4*e + f^2*g^3*e^2)*x^2 + 2*(d^2*f*g^4 - 2*d*f^2
*g^3*e + f^3*g^2*e^2)*x))*e - 1/3*b^3*log((x*e + d)^n)^3/(g^4*x^3 + 3*f*g^3
*x^2 + 3*f^2*g^2*x + f^3*g) - a^2*b*log((x*e + d)^n*c)/(g^4*x^3 + 3*f*g^3*x
^2 + 3*f^2*g^2*x + f^3*g) - 1/3*a^3/(g^4*x^3 + 3*f*g^3*x^2 + 3*f^2*g^2*x +
f^3*g) + integrate((b^3*d*g*log(c)^3 + 3*a*b^2*d*g*log(c)^2 + (b^3*g*log(c)
^3 + 3*a*b^2*g*log(c)^2)*x*e + (b^3*f*n*e + 3*b^3*d*g*log(c) + 3*a*b^2*d*g
+ ((g*n + 3*g*log(c))*b^3 + 3*a*b^2*g)*x*e)*log((x*e + d)^n)^2 + 3*(b^3*d*g
*log(c)^2 + 2*a*b^2*d*g*log(c) + (b^3*g*log(c)^2 + 2*a*b^2*g*log(c))*x*e)*l
```

```
og((x*e + d)^n))/(g^5*x^5*e + d*f^4*g + (d*g^5 + 4*f*g^4*e)*x^4 + 2*(2*d*f*
g^4 + 3*f^2*g^3*e)*x^3 + 2*(3*d*f^2*g^3 + 2*f^3*g^2*e)*x^2 + (4*d*f^3*g^2 +
 f^4*g*e)*x), x)
```

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

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^3/(g*x+f)^4,x, algorithm="fricas")
```

```
[Out] integral((b^3*log((x*e + d)^n*c)^3 + 3*a*b^2*log((x*e + d)^n*c)^2 + 3*a^2*b
*log((x*e + d)^n*c) + a^3)/(g^4*x^4 + 4*f*g^3*x^3 + 6*f^2*g^2*x^2 + 4*f^3*g
*x + f^4), x)
```

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

$$\int \frac{(a + b\log(c(d + ex)^n))^3}{(f + gx)^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**3/(g*x+f)**4,x)
```

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

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

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^3/(g*x+f)^4,x, algorithm="giac")
```

```
[Out] integrate((b*log((x*e + d)^n*c) + a)^3/(g*x + f)^4, x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(a + b\,\ln(c\,(d + e\,x)^n))^3}{(f + g\,x)^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))^3/(f + g*x)^4,x)
```

```
[Out] int((a + b*log(c*(d + e*x)^n))^3/(f + g*x)^4, x)
```

3.60 $\int (f+gx)\left(a+b\log\left(c(d+ex)^n\right)\right)^4\,dx$

Optimal. Leaf size=340

$$-\frac{24ab^3(ef-dg)n^3x}{e}+\frac{24b^4(ef-dg)n^4x}{e}+\frac{3b^4gn^4(d+ex)^2}{4e^2}-\frac{24b^4(ef-dg)n^3(d+ex)\log\left(c(d+ex)^n\right)}{e^2}-\frac{3b^3g}{}$$

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

Rubi [A]
time = 0.20, antiderivative size = 340, normalized size of antiderivative = 1.00, number of steps used = 13, number of rules used = 7, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.318$, Rules used = {2448, 2436, 2333, 2332, 2437, 2342, 2341}

$$-\frac{3b^3gn^3(d+ex)^2\left(a+b\log\left(c(d+ex)^n\right)\right)}{2e^2}-\frac{24ab^3n^3x(ef-dg)}{e}+\frac{12b^2n^2(d+ex)(ef-dg)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{e^2}+\frac{3b^2gn^2(d+ex)^2\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{2e^2}-\frac{4bn(d+ex)(ef-dg)\left(a+b\log\left(c(d+ex)^n\right)\right)^3}{e^2}+\frac{(d+ex)(ef-dg)\left(a+b\log\left(c(d+ex)^n\right)\right)^4}{e^2}-\frac{bgn(d+ex)^2\left(a+b\log\left(c(d+ex)^n\right)\right)^3}{e^2}+\frac{g(d+ex)^2\left(a+b\log\left(c(d+ex)^n\right)\right)^4}{2e^2}-\frac{24b^4n^3(d+ex)(ef-dg)\log\left(c(d+ex)^n\right)}{e^2}+\frac{3b^4gn^4(d+ex)^2}{4e^2}+\frac{24b^4n^4x(ef-dg)}{e}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)*(a + b*Log[c*(d + e*x)^n])^4,x]
```

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

Rule 2332

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

Rule 2333

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

Rule 2341

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_.)*(x_))^(m_.), x_Symbol] :>
Simp[(d*x)^(m + 1)*((a + b*Log[c*x^n])/(d*(m + 1))), x] - Simp[b*n*((d*x)^(
m + 1)/(d*(m + 1)^2)), x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[m, -1]
```

Rule 2342

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_.)*(x_))^(m_.), x_Symbo
l] :> Simp[(d*x)^(m + 1)*((a + b*Log[c*x^n])^p/(d*(m + 1))), x] - Dist[b*n*
(p/(m + 1)), Int[(d*x)^m*(a + b*Log[c*x^n])^(p - 1), x], x] /; FreeQ[{a, b,
 c, d, m, n}, x] && NeQ[m, -1] && GtQ[p, 0]
```

Rule 2436

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

Rule 2437

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

Rule 2448

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

Rubi steps

$$\int (f+gx)\left(a+b\log\left(c(d+ex)^n\right)\right)^4\,dx = \int \left(\frac{(ef-dg)\left(a+b\log\left(c(d+ex)^n\right)\right)^4}{e}+\frac{g(d+ex)\left(a+b\log\left(c(d\right.\right.}{e}\right.$$

$$=\frac{g\int (d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^4\,dx}{e}+\frac{(ef-dg)\int\left(a+b\log\left(\right.\right.}{e}$$

$$=\frac{g\text{Subst}\left(\int x\left(a+b\log\left(cx^n\right)\right)^4\,dx,x,d+ex\right)}{e^2}+\frac{(ef-dg)\text{Subst}\left(\int\left(\right.\right.}{}$$

$$=\frac{(ef-dg)(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^4}{e^2}+\frac{g(d+ex)^2\left(a+b\log\right.}{2e^2}$$

$$=-\frac{4b(ef-dg)n(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^3}{e^2}-\frac{bgn(d+ex)^2\left(\right.}{}$$

$$=\frac{12b^2(ef-dg)n^2(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{e^2}+\frac{3b^2gn^2(d+ex}{}$$

$$=-\frac{24ab^3(ef-dg)n^3x}{e}+\frac{3b^4gn^4(d+ex)^2}{4e^2}-\frac{3b^3gn^3(d+ex)^2\left(a+b\right.}{2e^2}$$

$$=-\frac{24ab^3(ef-dg)n^3x}{e}+\frac{24b^4(ef-dg)n^4x}{e}+\frac{3b^4gn^4(d+ex)^2}{4e^2}-\frac{2}{}$$

Mathematica [A]
time = 0.15, size = 258, normalized size = 0.76

$$\frac{4(ef-dg)(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^4+2g(d+ex)^2\left(a+b\log\left(c(d+ex)^n\right)\right)^4-16b(ef-dg)n\left((d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^3-3bn\left((d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^2-2bn\left(e(a-bn)x+b(d+ex)\log\left(c(d+ex)^n\right)\right)\right)\right)-bgn\left(4(d+ex)^2\left(a+b\log\left(c(d+ex)^n\right)\right)^3-3bn\left(2(d+ex)^2\left(a+b\log\left(c(d+ex)^n\right)\right)^2+bn\left(benx(2d+ex)-2(d+ex)^2\left(a+b\log\left(c(d+ex)^n\right)\right)\right)\right)\right)}{4e^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)*(a + b*Log[c*(d + e*x)^n])^4,x]
```

```
[Out] (4*(e*f - d*g)*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^4 + 2*g*(d + e*x)^2*(a
+ b*Log[c*(d + e*x)^n])^4 - 16*b*(e*f - d*g)*n*((d + e*x)*(a + b*Log[c*(d +
 e*x)^n])^3 - 3*b*n*((d + e*x)*(a + b*Log[c*(d + e*x)^n])^2 - 2*b*n*(e*(a -
 b*n)*x + b*(d + e*x)*Log[c*(d + e*x)^n]))) - b*g*n*(4*(d + e*x)^2*(a + b*L
og[c*(d + e*x)^n])^3 - 3*b*n*(2*(d + e*x)^2*(a + b*Log[c*(d + e*x)^n])^2 +
b*n*(b*e*n*x*(2*d + e*x) - 2*(d + e*x)^2*(a + b*Log[c*(d + e*x)^n])))))/(4*
e^2)
```

Maple [C] Result contains higher order function than in optimal. Order 9 vs. order 3.
time = 3.08, size = 37938, normalized size = 111.58

method	result	size
risch	Expression too large to display	37938

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(a+b*ln(c*(e*x+d)^n))^4,x,method=_RETURNVERBOSE)
```

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

Maxima [B] Leaf count of result is larger than twice the leaf count of optimal. 1217 vs. $2(345) = 690$.
time = 0.34, size = 1217, normalized size = 3.58

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/2*b^4*g*x^2*log((x*e + d)^n*c)^4 + 2*a*b^3*g*x^2*log((x*e + d)^n*c)^3 + b
^4*f*x*log((x*e + d)^n*c)^4 + 3*a^2*b^2*g*x^2*log((x*e + d)^n*c)^2 + 4*a*b^
3*f*x*log((x*e + d)^n*c)^3 + 4*(d*e^(-2)*log(x*e + d) - x*e^(-1))*a^3*b*f*n
*e - (2*d^2*e^(-3)*log(x*e + d) + (x^2*e - 2*d*x)*e^(-2))*a^3*b*g*n*e + 2*a
^3*b*g*x^2*log((x*e + d)^n*c) + 6*a^2*b^2*f*x*log((x*e + d)^n*c)^2 + 1/2*a^
4*g*x^2 + 4*a^3*b*f*x*log((x*e + d)^n*c) - 6*((d*log(x*e + d)^2 - 2*x*e + 2
*d*log(x*e + d))*n^2*e^(-1) - 2*(d*e^(-2)*log(x*e + d) - x*e^(-1))*n*e*log(
(x*e + d)^n*c))*a^2*b^2*f + 4*(3*(d*e^(-2)*log(x*e + d) - x*e^(-1))*n*e*log
((x*e + d)^n*c)^2 + ((d*log(x*e + d)^3 + 3*d*log(x*e + d)^2 - 6*x*e + 6*d*l
og(x*e + d))*n^2*e^(-2) - 3*(d*log(x*e + d)^2 - 2*x*e + 2*d*log(x*e + d))*n
*e^(-2)*log((x*e + d)^n*c))*n*e)*a*b^3*f + (4*(d*e^(-2)*log(x*e + d) - x*e^
(-1))*n*e*log((x*e + d)^n*c)^3 - (6*(d*log(x*e + d)^2 - 2*x*e + 2*d*log(x*e
 + d))*n*e^(-2)*log((x*e + d)^n*c)^2 + ((d*log(x*e + d)^4 + 4*d*log(x*e + d
)^3 + 12*d*log(x*e + d)^2 - 24*x*e + 24*d*log(x*e + d))*n^2*e^(-3) - 4*(d*l
og(x*e + d)^3 + 3*d*log(x*e + d)^2 - 6*x*e + 6*d*log(x*e + d))*n*e^(-3)*log
((x*e + d)^n*c))*n*e)*n*e)*b^4*f + 3/2*((2*d^2*log(x*e + d)^2 + x^2*e^2 - 6
*d*x*e + 6*d^2*log(x*e + d))*n^2*e^(-2) - 2*(2*d^2*e^(-3)*log(x*e + d) + (x
^2*e - 2*d*x)*e^(-2))*n*e*log((x*e + d)^n*c))*a^2*b^2*g - 1/2*(6*(2*d^2*e^(
-3)*log(x*e + d) + (x^2*e - 2*d*x)*e^(-2))*n*e*log((x*e + d)^n*c)^2 + ((4*d
^2*log(x*e + d)^3 + 18*d^2*log(x*e + d)^2 + 3*x^2*e^2 - 42*d*x*e + 42*d^2*l
og(x*e + d))*n^2*e^(-3) - 6*(2*d^2*log(x*e + d)^2 + x^2*e^2 - 6*d*x*e + 6*d
^2*log(x*e + d))*n*e^(-3)*log((x*e + d)^n*c))*n*e)*a*b^3*g - 1/4*(4*(2*d^2*
e^(-3)*log(x*e + d) + (x^2*e - 2*d*x)*e^(-2))*n*e*log((x*e + d)^n*c)^3 - (6
*(2*d^2*log(x*e + d)^2 + x^2*e^2 - 6*d*x*e + 6*d^2*log(x*e + d))*n*e^(-3)*l
og((x*e + d)^n*c)^2 + ((2*d^2*log(x*e + d)^4 + 12*d^2*log(x*e + d)^3 + 42*d
^2*log(x*e + d)^2 + 3*x^2*e^2 - 90*d*x*e + 90*d^2*log(x*e + d))*n^2*e^(-4)
- 2*(4*d^2*log(x*e + d)^3 + 18*d^2*log(x*e + d)^2 + 3*x^2*e^2 - 42*d*x*e +
42*d^2*log(x*e + d))*n*e^(-4)*log((x*e + d)^n*c))*n*e)*n*e)*b^4*g + a^4*f*x
```

Fricas [B] Leaf count of result is larger than twice the leaf count of optimal. 1635 vs. $2(345) = 690$.
time = 0.40, size = 1635, normalized size = 4.81

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((g*x+f)*(a+b*log(c*(e*x+d)^n))^4,x, algorithm="fricas")

[Out] 1/4*(2*(b^4*g*x^2 + 2*b^4*f*x)*e^2*log(c)^4 - 2*(b^4*d^2*g*n^4 - 2*b^4*d*f*n^4*e - (b^4*g*n^4*x^2 + 2*b^4*f*n^4*x)*e^2)*log(x*e + d)^4 + 4*(3*b^4*d^2*g*n^4 - 2*a*b^3*d^2*g*n^3 - ((b^4*g*n^4 - 2*a*b^3*g*n^3)*x^2 + 4*(b^4*f*n^4 - a*b^3*f*n^3)*x)*e^2 + 2*(b^4*d*g*n^4*x - 2*b^4*d*f*n^4 + 2*a*b^3*d*f*n^3)*e - 2*(b^4*d^2*g*n^3 - 2*b^4*d*f*n^3*e - (b^4*g*n^3*x^2 + 2*b^4*f*n^3*x)*e^2)*log(c))*log(x*e + d)^3 + 4*(2*b^4*d*g*n*x*e - ((b^4*g*n - 2*a*b^3*g)*x^2 + 4*(b^4*f*n - a*b^3*f)*x)*e^2)*log(c)^3 - 2*(45*b^4*d*g*n^4 - 42*a*b^3*d*g*n^3 + 18*a^2*b^2*d*g*n^2 - 4*a^3*b*d*g*n)*x*e - 6*(7*b^4*d^2*g*n^4 - 6*a*b^3*d^2*g*n^3 + 2*a^2*b^2*d^2*g*n^2 + 2*(b^4*d^2*g*n^2 - 2*b^4*d*f*n^2*e - (b^4*g*n^2*x^2 + 2*b^4*f*n^2*x)*e^2)*log(c)^2 - ((b^4*g*n^4 - 2*a*b^3*g*n^3 + 2*a^2*b^2*g*n^2)*x^2 + 4*(2*b^4*f*n^4 - 2*a*b^3*f*n^3 + a^2*b^2*f*n^2)*x)*e^2 - 2*(4*b^4*d*f*n^4 - 4*a*b^3*d*f*n^3 + 2*a^2*b^2*d*f*n^2 - (3*b^4*d*g*n^4 - 2*a*b^3*d*g*n^3)*x)*e - 2*(3*b^4*d^2*g*n^3 - 2*a*b^3*d^2*g*n^2 - ((b^4*g*n^3 - 2*a*b^3*g*n^2)*x^2 + 4*(b^4*f*n^3 - a*b^3*f*n^2)*x)*e^2 + 2*(b^4*d*g*n^3*x - 2*b^4*d*f*n^3 + 2*a*b^3*d*f*n^2)*e)*log(c))*log(x*e + d)^2 - 6*(2*(3*b^4*d*g*n^2 - 2*a*b^3*d*g*n)*x*e - ((b^4*g*n^2 - 2*a*b^3*g*n + 2*a^2*b^2*g)*x^2 + 4*(2*b^4*f*n^2 - 2*a*b^3*f*n + a^2*b^2*f)*x)*e^2)*log(c)^2 + ((3*b^4*g*n^4 - 6*a*b^3*g*n^3 + 6*a^2*b^2*g*n^2 - 4*a^3*b*g*n + 2*a^4*g)*x^2 + 4*(24*b^4*f*n^4 - 24*a*b^3*f*n^3 + 12*a^2*b^2*f*n^2 - 4*a^3*b*f*n + a^4*f)*x)*e^2 + 2*(45*b^4*d^2*g*n^4 - 42*a*b^3*d^2*g*n^3 + 18*a^2*b^2*d^2*g*n^2 - 4*a^3*b*d^2*g*n - 4*(b^4*d^2*g*n - 2*b^4*d*f*n*e - (b^4*g*n*x^2 + 2*b^4*f*n*x)*e^2)*log(c)^3 + 6*(3*b^4*d^2*g*n^2 - 2*a*b^3*d^2*g*n - ((b^4*g*n^2 - 2*a*b^3*g*n)*x^2 + 4*(b^4*f*n^2 - a*b^3*f*n)*x)*e^2 + 2*(b^4*d*g*n^2*x - 2*b^4*d*f*n^2 + 2*a*b^3*d*f*n)*e)*log(c)^2 - ((3*b^4*g*n^4 - 6*a*b^3*g*n^3 + 6*a^2*b^2*g*n^2 - 4*a^3*b*g*n)*x^2 + 8*(6*b^4*f*n^4 - 6*a*b^3*f*n^3 + 3*a^2*b^2*f*n^2 - a^3*b*f*n)*x)*e^2 - 2*(24*b^4*d*f*n^4 - 24*a*b^3*d*f*n^3 + 12*a^2*b^2*d*f*n^2 - 4*a^3*b*d*f*n - 3*(7*b^4*d*g*n^4 - 6*a*b^3*d*g*n^3 + 2*a^2*b^2*d*g*n^2)*x)*e - 6*(7*b^4*d^2*g*n^3 - 6*a*b^3*d^2*g*n^2 + 2*a^2*b^2*d^2*g*n - ((b^4*g*n^3 - 2*a*b^3*g*n^2 + 2*a^2*b^2*g*n)*x^2 + 4*(2*b^4*f*n^3 - 2*a*b^3*f*n^2 + a^2*b^2*f*n)*x)*e^2 - 2*(4*b^4*d*f*n^3 - 4*a*b^3*d*f*n^2 + 2*a^2*b^2*d*f*n - (3*b^4*d*g*n^3 - 2*a*b^3*d*g*n^2)*x)*e)*log(c))*log(x*e + d) + 2*(6*(7*b^4*d*g*n^3 - 6*a*b^3*d*g*n^2 + 2*a^2*b^2*d*g*n)*x*e - ((3*b^4*g*n^3 - 6*a*b^3*g*n^2 + 6*a^2*b^2*g*n - 4*a^3*b*g)*x^2 + 8*(6*b^4*f*n^3 - 6*a*b^3*f*n^2 + 3*a^2*b^2*f*n - a^3*b*f)*x)*e^2)*log(c))*e^(-2)

Sympy [B] Leaf count of result is larger than twice the leaf count of optimal. 1372 vs. $2(332) = 664$.
time = 2.65, size = 1372, normalized size = 4.04

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*ln(c*(e*x+d)**n))**4,x)
```

```
[Out] Piecewise((a**4*f*x + a**4*g*x**2/2 - 2*a**3*b*d**2*g*log(c*(d + e*x)**n)/e
**2 + 4*a**3*b*d*f*log(c*(d + e*x)**n)/e + 2*a**3*b*d*g*n*x/e - 4*a**3*b*f*
n*x + 4*a**3*b*f*x*log(c*(d + e*x)**n) - a**3*b*g*n*x**2 + 2*a**3*b*g*x**2*
log(c*(d + e*x)**n) + 9*a**2*b**2*d**2*g*n*log(c*(d + e*x)**n)/e**2 - 3*a**
2*b**2*d**2*g*log(c*(d + e*x)**n)**2/e**2 - 12*a**2*b**2*d*f*n*log(c*(d + e
*x)**n)/e + 6*a**2*b**2*d*f*log(c*(d + e*x)**n)**2/e - 9*a**2*b**2*d*g*n**2
*x/e + 6*a**2*b**2*d*g*n*x*log(c*(d + e*x)**n)/e + 12*a**2*b**2*f*n**2*x -
12*a**2*b**2*f*n*x*log(c*(d + e*x)**n) + 6*a**2*b**2*f*x*log(c*(d + e*x)**n
)**2 + 3*a**2*b**2*g*n**2*x**2/2 - 3*a**2*b**2*g*n*x**2*log(c*(d + e*x)**n)
 + 3*a**2*b**2*g*x**2*log(c*(d + e*x)**n)**2 - 21*a*b**3*d**2*g*n**2*log(c*
(d + e*x)**n)/e**2 + 9*a*b**3*d**2*g*n*log(c*(d + e*x)**n)**2/e**2 - 2*a*b*
*3*d**2*g*log(c*(d + e*x)**n)**3/e**2 + 24*a*b**3*d*f*n**2*log(c*(d + e*x)*
*n)/e - 12*a*b**3*d*f*n*log(c*(d + e*x)**n)**2/e + 4*a*b**3*d*f*log(c*(d +
e*x)**n)**3/e + 21*a*b**3*d*g*n**3*x/e - 18*a*b**3*d*g*n**2*x*log(c*(d + e*
x)**n)/e + 6*a*b**3*d*g*n*x*log(c*(d + e*x)**n)**2/e - 24*a*b**3*f*n**3*x +
 24*a*b**3*f*n**2*x*log(c*(d + e*x)**n) - 12*a*b**3*f*n*x*log(c*(d + e*x)**
n)**2 + 4*a*b**3*f*x*log(c*(d + e*x)**n)**3 - 3*a*b**3*g*n**3*x**2/2 + 3*a*
b**3*g*n**2*x**2*log(c*(d + e*x)**n) - 3*a*b**3*g*n*x**2*log(c*(d + e*x)**n
)**2 + 2*a*b**3*g*x**2*log(c*(d + e*x)**n)**3 + 45*b**4*d**2*g*n**3*log(c*(
d + e*x)**n)/(2*e**2) - 21*b**4*d**2*g*n**2*log(c*(d + e*x)**n)**2/(2*e**2)
 + 3*b**4*d**2*g*n*log(c*(d + e*x)**n)**3/e**2 - b**4*d**2*g*log(c*(d + e*x
)**n)**4/(2*e**2) - 24*b**4*d*f*n**3*log(c*(d + e*x)**n)/e + 12*b**4*d*f*n*
*2*log(c*(d + e*x)**n)**2/e - 4*b**4*d*f*n*log(c*(d + e*x)**n)**3/e + b**4*
d*f*log(c*(d + e*x)**n)**4/e - 45*b**4*d*g*n**4*x/(2*e) + 21*b**4*d*g*n**3*
x*log(c*(d + e*x)**n)/e - 9*b**4*d*g*n**2*x*log(c*(d + e*x)**n)**2/e + 2*b*
*4*d*g*n*x*log(c*(d + e*x)**n)**3/e + 24*b**4*f*n**4*x - 24*b**4*f*n**3*x*l
og(c*(d + e*x)**n) + 12*b**4*f*n**2*x*log(c*(d + e*x)**n)**2 - 4*b**4*f*n*x
*log(c*(d + e*x)**n)**3 + b**4*f*x*log(c*(d + e*x)**n)**4 + 3*b**4*g*n**4*x
**2/4 - 3*b**4*g*n**3*x**2*log(c*(d + e*x)**n)/2 + 3*b**4*g*n**2*x**2*log(c
*(d + e*x)**n)**2/2 - b**4*g*n*x**2*log(c*(d + e*x)**n)**3 + b**4*g*x**2*lo
g(c*(d + e*x)**n)**4/2, Ne(e, 0)), ((a + b*log(c*d**n))**4*(f*x + g*x**2/2)
, True))
```

Giac [**B**] Leaf count of result is larger than twice the leaf count of optimal. 2548 vs. $2(345) = 690$.
time = 6.45, size = 2548, normalized size = 7.49

Too large to display

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/2*(x*e + d)^2*b^4*g*n^4*e^(-2)*log(x*e + d)^4 - (x*e + d)*b^4*d*g*n^4*e^(
-2)*log(x*e + d)^4 - (x*e + d)^2*b^4*g*n^4*e^(-2)*log(x*e + d)^3 + 4*(x*e +
```

d)*b^4*d*g*n^4*e^(-2)*log(x*e + d)^3 + (x*e + d)*b^4*f*n^4*e^(-1)*log(x*e
+ d)^4 + 2*(x*e + d)^2*b^4*g*n^3*e^(-2)*log(x*e + d)^3*log(c) - 4*(x*e + d)
*b^4*d*g*n^3*e^(-2)*log(x*e + d)^3*log(c) + 3/2*(x*e + d)^2*b^4*g*n^4*e^(-2
)*log(x*e + d)^2 - 12*(x*e + d)*b^4*d*g*n^4*e^(-2)*log(x*e + d)^2 - 4*(x*e
+ d)*b^4*f*n^4*e^(-1)*log(x*e + d)^3 + 2*(x*e + d)^2*a*b^3*g*n^3*e^(-2)*log
(x*e + d)^3 - 4*(x*e + d)*a*b^3*d*g*n^3*e^(-2)*log(x*e + d)^3 - 3*(x*e + d)
^2*b^4*g*n^3*e^(-2)*log(x*e + d)^2*log(c) + 12*(x*e + d)*b^4*d*g*n^3*e^(-2)
*log(x*e + d)^2*log(c) + 4*(x*e + d)*b^4*f*n^3*e^(-1)*log(x*e + d)^3*log(c)
 + 3*(x*e + d)^2*b^4*g*n^2*e^(-2)*log(x*e + d)^2*log(c)^2 - 6*(x*e + d)*b^4
*d*g*n^2*e^(-2)*log(x*e + d)^2*log(c)^2 - 3/2*(x*e + d)^2*b^4*g*n^4*e^(-2)*
log(x*e + d) + 24*(x*e + d)*b^4*d*g*n^4*e^(-2)*log(x*e + d) + 12*(x*e + d)*
b^4*f*n^4*e^(-1)*log(x*e + d)^2 - 3*(x*e + d)^2*a*b^3*g*n^3*e^(-2)*log(x*e
+ d)^2 + 12*(x*e + d)*a*b^3*d*g*n^3*e^(-2)*log(x*e + d)^2 + 4*(x*e + d)*a*b
^3*f*n^3*e^(-1)*log(x*e + d)^3 + 3*(x*e + d)^2*b^4*g*n^3*e^(-2)*log(x*e + d
)*log(c) - 24*(x*e + d)*b^4*d*g*n^3*e^(-2)*log(x*e + d)*log(c) - 12*(x*e +
d)*b^4*f*n^3*e^(-1)*log(x*e + d)^2*log(c) + 6*(x*e + d)^2*a*b^3*g*n^2*e^(-2
)*log(x*e + d)^2*log(c) - 12*(x*e + d)*a*b^3*d*g*n^2*e^(-2)*log(x*e + d)^2*
log(c) - 3*(x*e + d)^2*b^4*g*n^2*e^(-2)*log(x*e + d)*log(c)^2 + 12*(x*e + d
)*b^4*d*g*n^2*e^(-2)*log(x*e + d)*log(c)^2 + 6*(x*e + d)*b^4*f*n^2*e^(-1)*l
og(x*e + d)^2*log(c)^2 + 2*(x*e + d)^2*b^4*g*n*e^(-2)*log(x*e + d)*log(c)^3
 - 4*(x*e + d)*b^4*d*g*n*e^(-2)*log(x*e + d)*log(c)^3 + 3/4*(x*e + d)^2*b^4
*g*n^4*e^(-2) - 24*(x*e + d)*b^4*d*g*n^4*e^(-2) - 24*(x*e + d)*b^4*f*n^4*e^
(-1)*log(x*e + d) + 3*(x*e + d)^2*a*b^3*g*n^3*e^(-2)*log(x*e + d) - 24*(x*e
 + d)*a*b^3*d*g*n^3*e^(-2)*log(x*e + d) - 12*(x*e + d)*a*b^3*f*n^3*e^(-1)*l
og(x*e + d)^2 + 3*(x*e + d)^2*a^2*b^2*g*n^2*e^(-2)*log(x*e + d)^2 - 6*(x*e
+ d)*a^2*b^2*d*g*n^2*e^(-2)*log(x*e + d)^2 - 3/2*(x*e + d)^2*b^4*g*n^3*e^(-
2)*log(c) + 24*(x*e + d)*b^4*d*g*n^3*e^(-2)*log(c) + 24*(x*e + d)*b^4*f*n^3
*e^(-1)*log(x*e + d)*log(c) - 6*(x*e + d)^2*a*b^3*g*n^2*e^(-2)*log(x*e + d)
log(c) + 24(x*e + d)*a*b^3*d*g*n^2*e^(-2)*log(x*e + d)*log(c) + 12*(x*e +
 d)*a*b^3*f*n^2*e^(-1)*log(x*e + d)^2*log(c) + 3/2*(x*e + d)^2*b^4*g*n^2*e^
(-2)*log(c)^2 - 12*(x*e + d)*b^4*d*g*n^2*e^(-2)*log(c)^2 - 12*(x*e + d)*b^4
*f*n^2*e^(-1)*log(x*e + d)*log(c)^2 + 6*(x*e + d)^2*a*b^3*g*n*e^(-2)*log(x*
e + d)*log(c)^2 - 12*(x*e + d)*a*b^3*d*g*n*e^(-2)*log(x*e + d)*log(c)^2 - (
x*e + d)^2*b^4*g*n*e^(-2)*log(c)^3 + 4*(x*e + d)*b^4*d*g*n*e^(-2)*log(c)^3
+ 4*(x*e + d)*b^4*f*n*e^(-1)*log(x*e + d)*log(c)^3 + 1/2*(x*e + d)^2*b^4*g*
e^(-2)*log(c)^4 - (x*e + d)*b^4*d*g*e^(-2)*log(c)^4 + 24*(x*e + d)*b^4*f*n^
4*e^(-1) - 3/2*(x*e + d)^2*a*b^3*g*n^3*e^(-2) + 24*(x*e + d)*a*b^3*d*g*n^3*
e^(-2) + 24*(x*e + d)*a*b^3*f*n^3*e^(-1)*log(x*e + d) - 3*(x*e + d)^2*a^2*b
^2*g*n^2*e^(-2)*log(x*e + d) + 12*(x*e + d)*a^2*b^2*d*g*n^2*e^(-2)*log(x*e
+ d) + 6*(x*e + d)*a^2*b^2*f*n^2*e^(-1)*log(x*e + d)^2 - 24*(x*e + d)*b^4*f
*n^3*e^(-1)*log(c) + 3*(x*e + d)^2*a*b^3*g*n^2*e^(-2)*log(c) - 24*(x*e + d)
*a*b^3*d*g*n^2*e^(-2)*log(c) - 24*(x*e + d)*a*b^3*f*n^2*e^(-1)*log(x*e + d)
log(c) + 6(x*e + d)^2*a^2*b^2*g*n*e^(-2)*log(x*e + d)*log(c) - 12*(x*e +
d)*a^2*b^2*d*g*n*e^(-2)*log(x*e + d)*log(c) + 12*(x*e + d)*b^4*f*n^2*e^(-1)
log(c)^2 - 3(x*e + d)^2*a*b^3*g*n*e^(-2)*log(c)^2 + 12*(x*e + d)*a*b^3*d*

```
g*n*e^(-2)*log(c)^2 + 12*(x*e + d)*a*b^3*f*n*e^(-1)*log(x*e + d)*log(c)^2 -
 4*(x*e + d)*b^4*f*n*e^(-1)*log(c)^3 + 2*(x*e + d)^2*a*b^3*g*e^(-2)*log(c)^
3 - 4*(x*e + d)*a*b^3*d*g*e^(-2)*log(c)^3 + (x*e + d)*b^4*f*e^(-1)*log(c)^4
 - 24*(x*e + d)*a*b^3*f*n^3*e^(-1) + 3/2*(x*e + d)^2*a^2*b^2*g*n^2*e^(-2) -
 12*(x*e + d)*a^2*b^2*d*g*n^2*e^(-2) - 12*(x*e + d)*a^2*b^2*f*n^2*e^(-1)*lo
g(x*e + d) + 2*(x*e + d)^2*a^3*b*g*n*e^(-2)*log(x*e + d) - 4*(x*e + d)*a^3*
b*d*g*n*e^(-2)*log(x*e + d) + 24*(x*e + d)*a*b^3*f*n^2*e^(-1)*log(c) - 3*(x
*e + d)^2*a^2*b^2*g*n*e^(-2)*log(c) + 12*(x*e + d)*a^2*b^2*d*g*n*e^(-2)*log
(c) + 12*(x*e + d)*a^2*b^2*f*n*e^(-1)*log(x*e + d)*log(c) - 12*(x*e + d)*a*
b^3*f*n*e^(-1)*log(c)^2 + 3*(x*e + d)^2*a^2*b^2*g*e^(-2)*log(c)^2 - 6*(x*e
+ d)*a^2*b^2*d*g*e^(-2)*log(c)^2 + 4*(x*e + d)*a*b^3*f*e^(-1)*log(c)^3 + 12
*(x*e + d)*a^2*b^2*f*n^2*e^(-1) - (x*e + d)^2*a^3*b*g*n*e^(-2) + 4*(x*e + d
)*a^3*b*d*g*n*e^(-2) + 4*(x*e + d)*a^3*b*f*n*e^(-1)*log(x*e + d) - 12*(x*e
+ d)*a^2*b^2*f*n*e^(-1)*log(c) + 2*(x*e + d)^2*a^3*b*g*e^(-2)*log(c) - 4*(x
*e + d)*a^3*b*d*g*e^(-2)*log(c) + 6*(x*e + d)*a^2*b^2*f*e^(-1)*log(c)^2 - 4
*(x*e + d)*a^3*b*f*n*e^(-1) + 1/2*(x*e + d)^2*a^4*g*e^(-2) - (x*e + d)*a^4*
d*g*e^(-2) + 4*(x*e + d)*a^3*b*f*e^(-1)*log(c) + (x*e + d)*a^4*f*e^(-1)
```

Mupad [B]
time = 0.80, size = 823, normalized size = 2.42

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)*(a + b*log(c*(d + e*x)^n))^4,x)
```

```
[Out] x*((2*a^4*d*g + 2*a^4*e*f - 42*b^4*d*g*n^4 + 48*b^4*e*f*n^4 + 36*a*b^3*d*g*
n^3 - 48*a*b^3*e*f*n^3 - 12*a^2*b^2*d*g*n^2 + 24*a^2*b^2*e*f*n^2 - 8*a^3*b*
e*f*n)/(2*e) - (d*g*(2*a^4 + 3*b^4*n^4 - 6*a*b^3*n^3 + 6*a^2*b^2*n^2 - 4*a^
3*b*n))/(2*e)) + log(c*(d + e*x)^n)^4*((b^4*g*x^2)/2 - (d*(b^4*d*g - 2*b^4*
e*f))/(2*e^2) + b^4*f*x) + log(c*(d + e*x)^n)*(x*((4*a^3*b*d*g + 4*a^3*b*e*
f + 18*b^4*d*g*n^3 - 24*b^4*e*f*n^3 - 12*a^2*b^2*e*f*n - 12*a*b^3*d*g*n^2 +
 24*a*b^3*e*f*n^2)/e - (b*d*g*(4*a^3 - 3*b^3*n^3 + 6*a*b^2*n^2 - 6*a^2*b*n)
)/e) + (b*g*x^2*(4*a^3 - 3*b^3*n^3 + 6*a*b^2*n^2 - 6*a^2*b*n))/2) + log(c*(
d + e*x)^n)^3*(x*((4*b^3*(a*d*g + a*e*f - b*e*f*n))/e - (2*b^3*d*g*(2*a - b
*n))/e) - (d*(2*a*b^3*d*g - 4*a*b^3*e*f - 3*b^4*d*g*n + 4*b^4*e*f*n))/e^2 +
 b^3*g*x^2*(2*a - b*n)) + log(c*(d + e*x)^n)^2*(x*((6*a^2*b^2*d*g + 6*a^2*b
^2*e*f - 6*b^4*d*g*n^2 + 12*b^4*e*f*n^2 - 12*a*b^3*e*f*n)/e - (3*b^2*d*g*(2
*a^2 + b^2*n^2 - 2*a*b*n))/e) - (3*d*(2*a^2*b^2*d*g - 4*a^2*b^2*e*f + 7*b^4
*d*g*n^2 - 8*b^4*e*f*n^2 - 6*a*b^3*d*g*n + 8*a*b^3*e*f*n))/(2*e^2) + (3*b^2
*g*x^2*(2*a^2 + b^2*n^2 - 2*a*b*n))/2) + (log(d + e*x)*(45*b^4*d^2*g*n^4 -
4*a^3*b*d^2*g*n - 48*b^4*d*e*f*n^4 - 42*a*b^3*d^2*g*n^3 + 18*a^2*b^2*d^2*g*
n^2 + 8*a^3*b*d*e*f*n + 48*a*b^3*d*e*f*n^3 - 24*a^2*b^2*d*e*f*n^2))/(2*e^2)
 + (g*x^2*(2*a^4 + 3*b^4*n^4 - 6*a*b^3*n^3 + 6*a^2*b^2*n^2 - 4*a^3*b*n))/4
```

3.61 $\int (a+b\log(c(d+ex)^n))^4 \, dx$

Optimal. Leaf size=131

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

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

Rubi [A]
time = 0.05, antiderivative size = 131, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 3, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}} = 0.188$, Rules used = {2436, 2333, 2332}

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

Antiderivative was successfully verified.

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

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

Rule 2332

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

Rule 2333

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

Rule 2436

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

Rubi steps

$$\int (a+b\log(c(d+ex)^n))^4\,dx = \frac{\text{Subst}\left(\int (a+b\log(cx^n))^4\,dx,x,d+ex\right)}{e}$$

$$= \frac{(d+ex)(a+b\log(c(d+ex)^n))^4}{e} - \frac{(4bn)\text{Subst}\left(\int (a+b\log(cx^n))^3\,dx,x\right.}{e}$$

$$= -\frac{4bn(d+ex)(a+b\log(c(d+ex)^n))^3}{e} + \frac{(d+ex)(a+b\log(c(d+ex)^n))}{e}$$

$$= \frac{12b^2n^2(d+ex)(a+b\log(c(d+ex)^n))^2}{e} - \frac{4bn(d+ex)(a+b\log(c(d+e}{e}$$

$$= -24ab^3n^3x + \frac{12b^2n^2(d+ex)(a+b\log(c(d+ex)^n))^2}{e} - \frac{4bn(d+ex)(a+}{}$$

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

Mathematica [A]
time = 0.02, size = 112, normalized size = 0.85

$$\frac{(d+ex)(a+b\log(c(d+ex)^n))^4 - 4bn\left((d+ex)(a+b\log(c(d+ex)^n))^3 - 3bn\left((d+ex)(a+b\log(c(d+ex)^n))^2 - 2bn(e(a-bn)x+b(d+ex)\log(c(d+ex)^n))\right)\right)}{e}$$

Antiderivative was successfully verified.

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

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

Maple [C] Result contains higher order function than in optimal. Order 9 vs. order 3.
time = 0.28, size = 15871, normalized size = 121.15

method	result	size
risch	Expression too large to display	15871

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))^4,x,method=_RETURNVERBOSE)
```

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

Maxima [B] Leaf count of result is larger than twice the leaf count of optimal. 528 vs. 2(135) = 270.
time = 0.30, size = 528, normalized size = 4.03

$$b^4x\log((xe+d)^nc)^4 + 4ab^3x\log((xe+d)^nc)^3 + 4\left(de^{(-2)}\log(xe+d) - xe^{(-1)}\right)a^3bne + 6a^2b^2x\log((xe+d)^nc)^2 + 4a^3bx\log((xe+d)^nc) - 6\left(\left(d\log(xe+d)^2 - 2xe + 2d\log(xe+d)\right)n^2e^{(-1)} - 2\left(de^{(-2)}\log(xe+d) - xe^{(-1)}\right)ne\log((xe+d)^nc)\right)a^2b^2 + 4\left(3\left(de^{(-2)}\log(xe+d) - xe^{(-1)}\right)ne\log((xe+d)^nc)^2 + \left(\left(d\log(xe+d)^3 + 3d\log(xe+d)^2 - 6xe + 6d\log(xe+d)\right)n^2e^{(-2)} - 3\left(d\log(xe+d)^2 - 2xe + 2d\log(xe+d)\right)ne^{(-2)}\log((xe+d)^nc)\right)ne\right)ab^3 + \left(4\left(de^{(-2)}\log(xe+d) - xe^{(-1)}\right)ne\log((xe+d)^nc)^3 - \left(6\left(d\log(xe+d)^2 - 2xe + 2d\log(xe+d)\right)ne^{(-2)}\log((xe+d)^nc)^2 + \left(\left(d\log(xe+d)^4 + 4d\log(xe+d)^3 + 12d\log(xe+d)^2 - 24xe + 24d\log(xe+d)\right)n^2e^{(-3)} - 4\left(d\log(xe+d)^3 + 3d\log(xe+d)^2 - 6xe + 6d\log(xe+d)\right)ne^{(-3)}\log((xe+d)^nc)\right)ne\right)ne\right)b^4 + a^4x$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] b^4*x*log((x*e + d)^n*c)^4 + 4*a*b^3*x*log((x*e + d)^n*c)^3 + 4*(d*e^(-2)*l
og(x*e + d) - x*e^(-1))*a^3*b*n*e + 6*a^2*b^2*x*log((x*e + d)^n*c)^2 + 4*a^
3*b*x*log((x*e + d)^n*c) - 6*((d*log(x*e + d)^2 - 2*x*e + 2*d*log(x*e + d))
*n^2*e^(-1) - 2*(d*e^(-2)*log(x*e + d) - x*e^(-1))*n*e*log((x*e + d)^n*c))*
a^2*b^2 + 4*(3*(d*e^(-2)*log(x*e + d) - x*e^(-1))*n*e*log((x*e + d)^n*c)^2
+ ((d*log(x*e + d)^3 + 3*d*log(x*e + d)^2 - 6*x*e + 6*d*log(x*e + d))*n^2*e
^(-2) - 3*(d*log(x*e + d)^2 - 2*x*e + 2*d*log(x*e + d))*n*e^(-2)*log((x*e +
 d)^n*c))*n*e)*a*b^3 + (4*(d*e^(-2)*log(x*e + d) - x*e^(-1))*n*e*log((x*e +
 d)^n*c)^3 - (6*(d*log(x*e + d)^2 - 2*x*e + 2*d*log(x*e + d))*n*e^(-2)*log(
(x*e + d)^n*c)^2 + ((d*log(x*e + d)^4 + 4*d*log(x*e + d)^3 + 12*d*log(x*e +
 d)^2 - 24*x*e + 24*d*log(x*e + d))*n^2*e^(-3) - 4*(d*log(x*e + d)^3 + 3*d*
log(x*e + d)^2 - 6*x*e + 6*d*log(x*e + d))*n*e^(-3)*log((x*e + d)^n*c))*n*e
)*n*e)*b^4 + a^4*x
```

Fricas [B] Leaf count of result is larger than twice the leaf count of optimal. 611 vs. $2(135) = 270$.
time = 0.36, size = 611, normalized size = 4.66

$$\left(b^4xe\log(c)^4 - 4(b^4n - ab^3)xe\log(c)^3 + (b^4n^4xe + b^4dn^4)\log(xe+d)^4 + 6(2b^4n^2 - 2ab^3n + a^2b^2)xe\log(c)^2 - 4(b^4dn^4 - ab^3dn^3 + (b^4n^4 - ab^3n^3)xe - (b^4n^3xe + b^4dn^3)\log(c))\log(xe+d)^3 - 4(6b^4n^3 - 6ab^3n^2 + 3a^2b^2n - a^3b)xe\log(c) + (24b^4n^4 - 24ab^3n^3 + 12a^2b^2n^2 - 4a^3bn + a^4)xe + 6(2b^4dn^4 - 2ab^3dn^3 + a^2b^2dn^2 + (2b^4n^4 - 2ab^3n^3 + a^2b^2n^2)xe + (b^4n^2xe + b^4dn^2)\log(c)^2 - 2(b^4dn^3 - ab^3dn^2 + (b^4n^3 - ab^3n^2)xe)\log(c))\log(xe+d)^2 - 4(6b^4dn^4 - 6ab^3dn^3 + 3a^2b^2dn^2 - a^3bdn - (b^4nxe + b^4dn)\log(c)^3 + (6b^4n^4 - 6ab^3n^3 + 3a^2b^2n^2 - a^3bn)xe + 3(b^4dn^2 - ab^3dn + (b^4n^2 - ab^3n)xe)\log(c)^2 - 3(2b^4dn^3 - 2ab^3dn^2 + a^2b^2dn + (2b^4n^3 - 2ab^3n^2 + a^2b^2n)xe)\log(c))\log(xe+d)\right)e^{(-1)}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] (b^4*x*e*log(c)^4 - 4*(b^4*n - a*b^3)*x*e*log(c)^3 + (b^4*n^4*x*e + b^4*d*n
^4)*log(x*e + d)^4 + 6*(2*b^4*n^2 - 2*a*b^3*n + a^2*b^2)*x*e*log(c)^2 - 4*(
b^4*d*n^4 - a*b^3*d*n^3 + (b^4*n^4 - a*b^3*n^3)*x*e - (b^4*n^3*x*e + b^4*d*
n^3)*log(c))*log(x*e + d)^3 - 4*(6*b^4*n^3 - 6*a*b^3*n^2 + 3*a^2*b^2*n - a^
3*b)*x*e*log(c) + (24*b^4*n^4 - 24*a*b^3*n^3 + 12*a^2*b^2*n^2 - 4*a^3*b*n +
 a^4)*x*e + 6*(2*b^4*d*n^4 - 2*a*b^3*d*n^3 + a^2*b^2*d*n^2 + (2*b^4*n^4 - 2
*a*b^3*n^3 + a^2*b^2*n^2)*x*e + (b^4*n^2*x*e + b^4*d*n^2)*log(c)^2 - 2*(b^4
*d*n^3 - a*b^3*d*n^2 + (b^4*n^3 - a*b^3*n^2)*x*e)*log(c))*log(x*e + d)^2 -
4*(6*b^4*d*n^4 - 6*a*b^3*d*n^3 + 3*a^2*b^2*d*n^2 - a^3*b*d*n - (b^4*n*x*e +
 b^4*d*n)*log(c)^3 + (6*b^4*n^4 - 6*a*b^3*n^3 + 3*a^2*b^2*n^2 - a^3*b*n)*x*
e + 3*(b^4*d*n^2 - a*b^3*d*n + (b^4*n^2 - a*b^3*n)*x*e)*log(c)^2 - 3*(2*b^4
*d*n^3 - 2*a*b^3*d*n^2 + a^2*b^2*d*n + (2*b^4*n^3 - 2*a*b^3*n^2 + a^2*b^2*n
)*x*e)*log(c))*log(x*e + d))*e^(-1)
```

Sympy [B] Leaf count of result is larger than twice the leaf count of optimal. 495 vs. $2(126) = 252$.
time = 1.09, size = 495, normalized size = 3.78

$$\begin{cases} a^4x + \frac{4a^3bd\log(c(d+ex)^n)}{e} - 4a^3bnx + 4a^3bx\log(c(d+ex)^n) - \frac{12a^2b^2dn\log(c(d+ex)^n)}{e} + \frac{6a^2b^2d\log(c(d+ex)^n)^2}{e} + 12a^2b^2n^2x - 12a^2b^2nx\log(c(d+ex)^n) + 6a^2b^2x\log(c(d+ex)^n)^2 + \frac{24ab^3dn^2\log(c(d+ex)^n)}{e} - \frac{12ab^3dn\log(c(d+ex)^n)^2}{e} + \frac{4ab^3d\log(c(d+ex)^n)^3}{e} - 24ab^3n^3x + 24ab^3n^2x\log(c(d+ex)^n) - 12ab^3nx\log(c(d+ex)^n)^2 + 4ab^3x\log(c(d+ex)^n)^3 - \frac{24b^4dn^3\log(c(d+ex)^n)}{e} + \frac{12b^4dn^2\log(c(d+ex)^n)^2}{e} - \frac{4b^4dn\log(c(d+ex)^n)^3}{e} + \frac{b^4d\log(c(d+ex)^n)^4}{e} + 24b^4n^4x - 24b^4n^3x\log(c(d+ex)^n) + 12b^4n^2x\log(c(d+ex)^n)^2 - 4b^4nx\log(c(d+ex)^n)^3 + b^4x\log(c(d+ex)^n)^4 & \text{for}\: e \neq 0 \\ x(a + b\log(cd^n))^4 & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Piecewise((a**4*x + 4*a**3*b*d*log(c*(d + e*x)**n)/e - 4*a**3*b*n*x + 4*a**
3*b*x*log(c*(d + e*x)**n) - 12*a**2*b**2*d*n*log(c*(d + e*x)**n)/e + 6*a**2
*b**2*d*log(c*(d + e*x)**n)**2/e + 12*a**2*b**2*n**2*x - 12*a**2*b**2*n*x*l
og(c*(d + e*x)**n) + 6*a**2*b**2*x*log(c*(d + e*x)**n)**2 + 24*a*b**3*d*n**
2*log(c*(d + e*x)**n)/e - 12*a*b**3*d*n*log(c*(d + e*x)**n)**2/e + 4*a*b**3
*d*log(c*(d + e*x)**n)**3/e - 24*a*b**3*n**3*x + 24*a*b**3*n**2*x*log(c*(d
+ e*x)**n) - 12*a*b**3*n*x*log(c*(d + e*x)**n)**2 + 4*a*b**3*x*log(c*(d + e
*x)**n)**3 - 24*b**4*d*n**3*log(c*(d + e*x)**n)/e + 12*b**4*d*n**2*log(c*(d
 + e*x)**n)**2/e - 4*b**4*d*n*log(c*(d + e*x)**n)**3/e + b**4*d*log(c*(d +
e*x)**n)**4/e + 24*b**4*n**4*x - 24*b**4*n**3*x*log(c*(d + e*x)**n) + 12*b*
*4*n**2*x*log(c*(d + e*x)**n)**2 - 4*b**4*n*x*log(c*(d + e*x)**n)**3 + b**4
*x*log(c*(d + e*x)**n)**4, Ne(e, 0)), (x*(a + b*log(c*d**n))**4, True))
```

Giac [B] Leaf count of result is larger than twice the leaf count of optimal. 778 vs. $2(135) = 270$.
time = 4.12, size = 778, normalized size = 5.94

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] (x*e + d)*b^4*n^4*e^(-1)*log(x*e + d)^4 - 4*(x*e + d)*b^4*n^4*e^(-1)*log(x*
e + d)^3 + 4*(x*e + d)*b^4*n^3*e^(-1)*log(x*e + d)^3*log(c) + 12*(x*e + d)*
b^4*n^4*e^(-1)*log(x*e + d)^2 + 4*(x*e + d)*a*b^3*n^3*e^(-1)*log(x*e + d)^3
 - 12*(x*e + d)*b^4*n^3*e^(-1)*log(x*e + d)^2*log(c) + 6*(x*e + d)*b^4*n^2*
e^(-1)*log(x*e + d)^2*log(c)^2 - 24*(x*e + d)*b^4*n^4*e^(-1)*log(x*e + d) -
 12*(x*e + d)*a*b^3*n^3*e^(-1)*log(x*e + d)^2 + 24*(x*e + d)*b^4*n^3*e^(-1)
*log(x*e + d)*log(c) + 12*(x*e + d)*a*b^3*n^2*e^(-1)*log(x*e + d)^2*log(c)
- 12*(x*e + d)*b^4*n^2*e^(-1)*log(x*e + d)*log(c)^2 + 4*(x*e + d)*b^4*n*e^(
-1)*log(x*e + d)*log(c)^3 + 24*(x*e + d)*b^4*n^4*e^(-1) + 24*(x*e + d)*a*b^
3*n^3*e^(-1)*log(x*e + d) + 6*(x*e + d)*a^2*b^2*n^2*e^(-1)*log(x*e + d)^2 -
 24*(x*e + d)*b^4*n^3*e^(-1)*log(c) - 24*(x*e + d)*a*b^3*n^2*e^(-1)*log(x*e
 + d)*log(c) + 12*(x*e + d)*b^4*n^2*e^(-1)*log(c)^2 + 12*(x*e + d)*a*b^3*n*
e^(-1)*log(x*e + d)*log(c)^2 - 4*(x*e + d)*b^4*n*e^(-1)*log(c)^3 + (x*e + d
)*b^4*e^(-1)*log(c)^4 - 24*(x*e + d)*a*b^3*n^3*e^(-1) - 12*(x*e + d)*a^2*b^
2*n^2*e^(-1)*log(x*e + d) + 24*(x*e + d)*a*b^3*n^2*e^(-1)*log(c) + 12*(x*e
+ d)*a^2*b^2*n*e^(-1)*log(x*e + d)*log(c) - 12*(x*e + d)*a*b^3*n*e^(-1)*log
(c)^2 + 4*(x*e + d)*a*b^3*e^(-1)*log(c)^3 + 12*(x*e + d)*a^2*b^2*n^2*e^(-1)
 + 4*(x*e + d)*a^3*b*n*e^(-1)*log(x*e + d) - 12*(x*e + d)*a^2*b^2*n*e^(-1)*
log(c) + 6*(x*e + d)*a^2*b^2*e^(-1)*log(c)^2 - 4*(x*e + d)*a^3*b*n*e^(-1) +
 4*(x*e + d)*a^3*b*e^(-1)*log(c) + (x*e + d)*a^4*e^(-1)
```

Mupad [B]
time = 0.00, size = 275, normalized size = 2.10

$$\ln\left(c\,{\left(d+e\,x\right)}^n\right)^2\,\left(\frac{6\,\left(d\,a^2\,b^2-2\,d\,a\,b^3\,n+2\,d\,b^4\,n^2\right)}{e}+6\,b^2\,x\,\left(a^2-2\,a\,b\,n+2\,b^2\,n^2\right)\right)+x\,\left(a^4-4\,a^3\,b\,n+12\,a^2\,b^2\,n^2-24\,a\,b^3\,n^3+24\,b^4\,n^4\right)+\ln\left(c\,{\left(d+e\,x\right)}^n\right)^4\,\left(b^4\,x+\frac{b^4\,d}{e}\right)+\ln\left(c\,{\left(d+e\,x\right)}^n\right)^3\,\left(\frac{4\,\left(a\,b^3\,d-b^4\,d\,n\right)}{e}+4\,b^3\,x\,\left(a-b\,n\right)\right)-\frac{\ln\left(d+e\,x\right)\,\left(-4\,d\,a^3\,b\,n+12\,d\,a^2\,b^2\,n^2-24\,d\,a\,b^3\,n^3+24\,d\,b^4\,n^4\right)}{e}+4\,b\,x\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\,\left(a^3-3\,a^2\,b\,n+6\,a\,b^2\,n^2-6\,b^3\,n^3\right)$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

3.62 $\int \frac{(a+b\log(c(d+ex)^n))^4}{f+gx}\,dx$

Optimal. Leaf size=205

$$\frac{(a+b\log(c(d+ex)^n))^4\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g}+\frac{4bn(a+b\log(c(d+ex)^n))^3\operatorname{Li}_2\left(-\frac{g(d+ex)}{ef-dg}\right)}{g}-\frac{12b^2n^2(a+b\log(c(d+$$

```
[Out] (a+b*ln(c*(e*x+d)^n))^4*ln(e*(g*x+f)/(-d*g+e*f))/g+4*b*n*(a+b*ln(c*(e*x+d)^
n))^3*polylog(2,-g*(e*x+d)/(-d*g+e*f))/g-12*b^2*n^2*(a+b*ln(c*(e*x+d)^n))^2
*polylog(3,-g*(e*x+d)/(-d*g+e*f))/g+24*b^3*n^3*(a+b*ln(c*(e*x+d)^n))*polylo
g(4,-g*(e*x+d)/(-d*g+e*f))/g-24*b^4*n^4*polylog(5,-g*(e*x+d)/(-d*g+e*f))/g
```

Rubi [A]

time = 0.16, antiderivative size = 205, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.208$, Rules used = {2443, 2481, 2421, 2430, 6724}

$$\frac{24b^3n^3\text{PolyLog}\left(4,-\frac{g(d+ex)}{ef-dg}\right)(a+b\log(c(d+ex)^n))}{g}-\frac{12b^2n^2\text{PolyLog}\left(3,-\frac{g(d+ex)}{ef-dg}\right)(a+b\log(c(d+ex)^n))^2}{g}+\frac{4bn\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)(a+b\log(c(d+ex)^n))^3}{g}-\frac{24b^4n^4\text{PolyLog}\left(5,-\frac{g(d+ex)}{ef-dg}\right)}{g}+\frac{\log\left(\frac{e(f+gx)}{ef-dg}\right)(a+b\log(c(d+ex)^n))^4}{g}$$

Antiderivative was successfully verified.

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

```
[Out] ((a + b*Log[c*(d + e*x)^n])^4*Log[(e*(f + g*x))/(e*f - d*g)])/g + (4*b*n*(a
 + b*Log[c*(d + e*x)^n])^3*PolyLog[2, -((g*(d + e*x))/(e*f - d*g))])/g - (1
2*b^2*n^2*(a + b*Log[c*(d + e*x)^n])^2*PolyLog[3, -((g*(d + e*x))/(e*f - d*
g))])/g + (24*b^3*n^3*(a + b*Log[c*(d + e*x)^n])*PolyLog[4, -((g*(d + e*x))
/(e*f - d*g))])/g - (24*b^4*n^4*PolyLog[5, -((g*(d + e*x))/(e*f - d*g))])/g
```

Rule 2421

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> Simp[(-PolyLog[2, (-d)*f*x^m])*((a + b*Log[c
*x^n])^p/m), x] + Dist[b*n*(p/m), Int[PolyLog[2, (-d)*f*x^m]*((a + b*Log[c*
x^n])^(p - 1)/x), x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0
] && EqQ[d*e, 1]
```

Rule 2430

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

Rule 2443

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

Rule 2481

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[(k*(x/d))^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + j*(x/e))^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 6724

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(a+b\log(c(d+ex)^n))^4}{f+gx}\,dx = \frac{(a+b\log(c(d+ex)^n))^4\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g} - \frac{(4ben)\int \frac{(a+b\log(c(d+ex)^n))^3\log\left(\frac{e(f+gx)}{ef-dg}\right)}{d+ex}}{g}$$

$$= \frac{(a+b\log(c(d+ex)^n))^4\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g} - \frac{(4bn)\text{Subst}\left(\int \frac{(a+b\log(cx^n))^3\log\left(\frac{e(e}{}\right.}{x}\right.}{g}$$

$$= \frac{(a+b\log(c(d+ex)^n))^4\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g} + \frac{4bn(a+b\log(c(d+ex)^n))^3\operatorname{Li}_2\left(-\right.}{g}$$

$$= \frac{(a+b\log(c(d+ex)^n))^4\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g} + \frac{4bn(a+b\log(c(d+ex)^n))^3\operatorname{Li}_2\left(-\right.}{g}$$

$$= \frac{(a+b\log(c(d+ex)^n))^4\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g} + \frac{4bn(a+b\log(c(d+ex)^n))^3\operatorname{Li}_2\left(-\right.}{g}$$

$$= \frac{(a+b\log(c(d+ex)^n))^4\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g} + \frac{4bn(a+b\log(c(d+ex)^n))^3\operatorname{Li}_2\left(-\right.}{g}$$

Mathematica [B] Leaf count is larger than twice the leaf count of optimal. 503 vs. 2(205) = 410.
time = 0.10, size = 503, normalized size = 2.45

$$\frac{(a-bn\log(d+ex)+b\log(c(d+ex)^n))^4\log(f+gx)+4bn(a-bn\log(d+ex)+b\log(c(d+ex)^n))^3\left(\log(d+ex)\log\left(\frac{e(f+gx)}{ef-dg}\right)+\text{Li}_2\left(\frac{g(d+ex)}{-ef+dg}\right)\right)+6b^2n^2(a-bn\log(d+ex)+b\log(c(d+ex)^n))^2\left(\log^2(d+ex)\log\left(\frac{e(f+gx)}{ef-dg}\right)+2\log(d+ex)\text{Li}_2\left(\frac{g(d+ex)}{-ef+dg}\right)-2\text{Li}_3\left(\frac{g(d+ex)}{-ef+dg}\right)\right)-4b^3n^3(-a+bn\log(d+ex)-b\log(c(d+ex)^n))\left(\log^3(d+ex)\log\left(\frac{e(f+gx)}{ef-dg}\right)+3\log^2(d+ex)\text{Li}_2\left(\frac{g(d+ex)}{-ef+dg}\right)-6\log(d+ex)\text{Li}_3\left(\frac{g(d+ex)}{-ef+dg}\right)+6\text{Li}_4\left(\frac{g(d+ex)}{-ef+dg}\right)\right)+b^4n^4\left(\log^4(d+ex)\log\left(\frac{e(f+gx)}{ef-dg}\right)+4\log^3(d+ex)\text{Li}_2\left(\frac{g(d+ex)}{-ef+dg}\right)-12\log^2(d+ex)\text{Li}_3\left(\frac{g(d+ex)}{-ef+dg}\right)+24\log(d+ex)\text{Li}_4\left(\frac{g(d+ex)}{-ef+dg}\right)-24\text{Li}_5\left(\frac{g(d+ex)}{-ef+dg}\right)\right)}{g}$$

Antiderivative was successfully verified.

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

```
[Out] ((a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^4*Log[f + g*x] + 4*b*n*(a -
b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^3*(Log[d + e*x]*Log[(e*(f + g*x))/
(e*f - d*g)] + PolyLog[2, (g*(d + e*x))/(-(e*f) + d*g)]) + 6*b^2*n^2*(a - b
*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2*(Log[d + e*x]^2*Log[(e*(f + g*x))
/(e*f - d*g)] + 2*Log[d + e*x]*PolyLog[2, (g*(d + e*x))/(-(e*f) + d*g)] - 2
*PolyLog[3, (g*(d + e*x))/(-(e*f) + d*g)]) - 4*b^3*n^3*(-a + b*n*Log[d + e*
x] - b*Log[c*(d + e*x)^n])*(Log[d + e*x]^3*Log[(e*(f + g*x))/(e*f - d*g)] +
 3*Log[d + e*x]^2*PolyLog[2, (g*(d + e*x))/(-(e*f) + d*g)] - 6*Log[d + e*x]
*PolyLog[3, (g*(d + e*x))/(-(e*f) + d*g)] + 6*PolyLog[4, (g*(d + e*x))/(-(e
*f) + d*g)]) + b^4*n^4*(Log[d + e*x]^4*Log[(e*(f + g*x))/(e*f - d*g)] + 4*L
og[d + e*x]^3*PolyLog[2, (g*(d + e*x))/(-(e*f) + d*g)] - 12*Log[d + e*x]^2*
PolyLog[3, (g*(d + e*x))/(-(e*f) + d*g)] + 24*Log[d + e*x]*PolyLog[4, (g*(d
 + e*x))/(-(e*f) + d*g)] - 24*PolyLog[5, (g*(d + e*x))/(-(e*f) + d*g)]))/g
```

Maple [C] Result contains higher order function than in optimal. Order 9 vs. order 4.
time = 1.42, size = 33189, normalized size = 161.90

method	result	size
risch	Expression too large to display	33189

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))^4/(g*x+f),x,method=_RETURNVERBOSE)
```

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

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

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^4/(g*x+f),x, algorithm="maxima")
```

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

```
 + d)^n)^2 + 4*(b^4*log(c)^3 + 3*a*b^3*log(c)^2 + 3*a^2*b^2*log(c) + a^3*b)
*log((x*e + d)^n))/(g*x + f), x)
```

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

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^4/(g*x+f),x, algorithm="fricas")
```

```
[Out] integral((b^4*log((x*e + d)^n*c)^4 + 4*a*b^3*log((x*e + d)^n*c)^3 + 6*a^2*b
^2*log((x*e + d)^n*c)^2 + 4*a^3*b*log((x*e + d)^n*c) + a^4)/(g*x + f), x)
```

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

$$\int \frac{(a + b\log{(c(d + ex)^n)})^4}{f + gx}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Integral((a + b*log(c*(d + e*x)**n))**4/(f + g*x), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^4/(g*x+f),x, algorithm="giac")
```

```
[Out] integrate((b*log((x*e + d)^n*c) + a)^4/(g*x + f), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{{\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)}^4}{f+g\,x} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))^4/(f + g*x),x)
```

```
[Out] int((a + b*log(c*(d + e*x)^n))^4/(f + g*x), x)
```

3.63 $\int \frac{(a+b\log(c(d+ex)^n))^4}{(f+gx)^2}\,dx$

Optimal. Leaf size=248

$$\frac{(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^4}{(ef-dg)(f+gx)}-\frac{4ben\left(a+b\log\left(c(d+ex)^n\right)\right)^3\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g(ef-dg)}-\frac{12b^2en^2\left(a+b\log\left(c(d+ex\right.\right.}{g(ef-dg}$$

```
[Out] (e*x+d)*(a+b*ln(c*(e*x+d)^n))^4/(-d*g+e*f)/(g*x+f)-4*b*e*n*(a+b*ln(c*(e*x+d
)^n))^3*ln(e*(g*x+f)/(-d*g+e*f))/g/(-d*g+e*f)-12*b^2*e*n^2*(a+b*ln(c*(e*x+d
)^n))^2*polylog(2,-g*(e*x+d)/(-d*g+e*f))/g/(-d*g+e*f)+24*b^3*e*n^3*(a+b*ln(
c*(e*x+d)^n))*polylog(3,-g*(e*x+d)/(-d*g+e*f))/g/(-d*g+e*f)-24*b^4*e*n^4*po
lylog(4,-g*(e*x+d)/(-d*g+e*f))/g/(-d*g+e*f)
```

Rubi [A]

time = 0.16, antiderivative size = 248, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.250$, Rules used = {2444, 2443, 2481, 2421, 2430, 6724}

$$\frac{24b^3en^3\text{PolyLog}\left(3,-\frac{g(d+ex)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{g(ef-dg)}-\frac{12b^2en^2\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{g(ef-dg)}-\frac{24b^4en^4\text{PolyLog}\left(4,-\frac{g(d+ex)}{ef-dg}\right)}{g(ef-dg)}-\frac{4ben\log\left(\frac{e(f+gx)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)^3}{g(ef-dg)}+\frac{(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^4}{(f+gx)(ef-dg)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^4/(f + g*x)^2,x]
```

```
[Out] ((d + e*x)*(a + b*Log[c*(d + e*x)^n])^4)/((e*f - d*g)*(f + g*x)) - (4*b*e*n
*(a + b*Log[c*(d + e*x)^n])^3*Log[(e*(f + g*x))/(e*f - d*g)])/(g*(e*f - d*g
)) - (12*b^2*e*n^2*(a + b*Log[c*(d + e*x)^n])^2*PolyLog[2, -((g*(d + e*x))/
(e*f - d*g))])/(g*(e*f - d*g)) + (24*b^3*e*n^3*(a + b*Log[c*(d + e*x)^n])*P
olyLog[3, -((g*(d + e*x))/(e*f - d*g))])/(g*(e*f - d*g)) - (24*b^4*e*n^4*Po
lyLog[4, -((g*(d + e*x))/(e*f - d*g))])/(g*(e*f - d*g))
```

Rule 2421

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> Simp[(-PolyLog[2, (-d)*f*x^m])*((a + b*Log[c
*x^n])^p/m), x] + Dist[b*n*(p/m), Int[PolyLog[2, (-d)*f*x^m]*((a + b*Log[c*
x^n])^(p - 1)/x), x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0
] && EqQ[d*e, 1]
```

Rule 2430

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*PolyLog[k_, (e_.)*(x_)^(q_
.)])/(x_), x_Symbol] :> Simp[PolyLog[k + 1, e*x^q]*((a + b*Log[c*x^n])^p/q)
, x] - Dist[b*n*(p/q), Int[PolyLog[k + 1, e*x^q]*((a + b*Log[c*x^n])^(p - 1
)/x), x], x] /; FreeQ[{a, b, c, e, k, n, q}, x] && GtQ[p, 0]
```

Rule 2443

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d
+ e*x)^n])^p/g), x] - Dist[b*e*n*(p/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]*
((a + b*Log[c*(d + e*x)^n])^(p - 1)/(d + e*x)), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2444

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_))^2, x_Symbol] :> Simp[(d + e*x)*((a + b*Log[c*(d + e*x)^n])^p/((e*f
- d*g)*(f + g*x))), x] - Dist[b*e*n*(p/(e*f - d*g)), Int[(a + b*Log[c*(d +
e*x)^n])^(p - 1)/(f + g*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] &&
 NeQ[e*f - d*g, 0] && GtQ[p, 0]
```

Rule 2481

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[(k*(x/d))^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + j*(x/e))^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 6724

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(a+b\log(c(d+ex)^n))^4}{(f+gx)^2}\,dx = \frac{(d+ex)\,(a+b\log(c(d+ex)^n))^4}{(ef-dg)(f+gx)} - \frac{(4ben)\int \frac{(a+b\log(c(d+ex)^n))^3}{f+gx}\,dx}{ef-dg}$$

$$= \frac{(d+ex)\,(a+b\log(c(d+ex)^n))^4}{(ef-dg)(f+gx)} - \frac{4ben(a+b\log(c(d+ex)^n))^3 \log\left(\frac{e(f\cdots}{ef\cdots}\right.}{g(ef-dg)}$$

$$= \frac{(d+ex)\,(a+b\log(c(d+ex)^n))^4}{(ef-dg)(f+gx)} - \frac{4ben(a+b\log(c(d+ex)^n))^3 \log\left(\frac{e(f\cdots}{ef\cdots}\right.}{g(ef-dg)}$$

$$= \frac{(d+ex)\,(a+b\log(c(d+ex)^n))^4}{(ef-dg)(f+gx)} - \frac{4ben(a+b\log(c(d+ex)^n))^3 \log\left(\frac{e(f\cdots}{ef\cdots}\right.}{g(ef-dg)}$$

$$= \frac{(d+ex)\,(a+b\log(c(d+ex)^n))^4}{(ef-dg)(f+gx)} - \frac{4ben(a+b\log(c(d+ex)^n))^3 \log\left(\frac{e(f\cdots}{ef\cdots}\right.}{g(ef-dg)}$$

$$= \frac{(d+ex)\,(a+b\log(c(d+ex)^n))^4}{(ef-dg)(f+gx)} - \frac{4ben(a+b\log(c(d+ex)^n))^3 \log\left(\frac{e(f\cdots}{ef\cdots}\right.}{g(ef-dg)}$$

Mathematica [**B**] Leaf count is larger than twice the leaf count of optimal. 531 vs. $2(248) = 496$.
time = 0.47, size = 531, normalized size = 2.14

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^4/(f + g*x)^2,x]
```

```
[Out] (-((e*f - d*g)*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^4) + 4*b*n*(a
- b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^3*(g*(d + e*x)*Log[d + e*x] - e*
(f + g*x)*Log[(e*(f + g*x))/(e*f - d*g)]) + 6*b^2*n^2*(a - b*n*Log[d + e*x]
 + b*Log[c*(d + e*x)^n])^2*(Log[d + e*x]*(g*(d + e*x)*Log[d + e*x] - 2*e*(f
 + g*x)*Log[(e*(f + g*x))/(e*f - d*g)]) - 2*e*(f + g*x)*PolyLog[2, (g*(d +
e*x))/(-(e*f) + d*g)]) + 4*b^3*n^3*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x
)^n])*(Log[d + e*x]^2*(g*(d + e*x)*Log[d + e*x] - 3*e*(f + g*x)*Log[(e*(f +
 g*x))/(e*f - d*g)]) - 6*e*(f + g*x)*Log[d + e*x]*PolyLog[2, (g*(d + e*x))/
(-(e*f) + d*g)] + 6*e*(f + g*x)*PolyLog[3, (g*(d + e*x))/(-(e*f) + d*g)]) +
 b^4*n^4*(g*(d + e*x)*Log[d + e*x]^4 - 4*e*(f + g*x)*Log[d + e*x]^3*Log[(e*
(f + g*x))/(e*f - d*g)] - 12*e*(f + g*x)*Log[d + e*x]^2*PolyLog[2, (g*(d +
e*x))/(-(e*f) + d*g)] + 24*e*(f + g*x)*Log[d + e*x]*PolyLog[3, (g*(d + e*x)
```

```
)/(-(e*f) + d*g)] - 24*e*(f + g*x)*PolyLog[4, (g*(d + e*x))/(-(e*f) + d*g)]
))/(g*(e*f - d*g)*(f + g*x))
```

Maple [C] Result contains higher order function than in optimal. Order 9 vs. order 4.
time = 1.70, size = 21740, normalized size = 87.66

method	result	size
risch	Expression too large to display	21740

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))^4/(g*x+f)^2,x,method=_RETURNVERBOSE)
```

```
[Out] result too large to display
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^4/(g*x+f)^2,x, algorithm="maxima")
```

```
[Out] 4*a^3*b*n*(log(g*x + f)/(d*g^2 - f*g*e) - log(x*e + d)/(d*g^2 - f*g*e))*e -
 b^4*log((x*e + d)^n)^4/(g^2*x + f*g) - 4*a^3*b*log((x*e + d)^n*c)/(g^2*x +
 f*g) - a^4/(g^2*x + f*g) + integrate((b^4*d*g*log(c)^4 + 4*a*b^3*d*g*log(c
)^3 + 6*a^2*b^2*d*g*log(c)^2 + 4*(b^4*f*n*e + b^4*d*g*log(c) + a*b^3*d*g +
((g*n + g*log(c))*b^4 + a*b^3*g)*x*e)*log((x*e + d)^n)^3 + (b^4*g*log(c)^4
+ 4*a*b^3*g*log(c)^3 + 6*a^2*b^2*g*log(c)^2)*x*e + 6*(b^4*d*g*log(c)^2 + 2*
a*b^3*d*g*log(c) + a^2*b^2*d*g + (b^4*g*log(c)^2 + 2*a*b^3*g*log(c) + a^2*b
^2*g)*x*e)*log((x*e + d)^n)^2 + 4*(b^4*d*g*log(c)^3 + 3*a*b^3*d*g*log(c)^2
+ 3*a^2*b^2*d*g*log(c) + (b^4*g*log(c)^3 + 3*a*b^3*g*log(c)^2 + 3*a^2*b^2*g
*log(c))*x*e)*log((x*e + d)^n))/(g^3*x^3*e + d*f^2*g + (d*g^3 + 2*f*g^2*e)*
x^2 + (2*d*f*g^2 + f^2*g*e)*x), x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^4/(g*x+f)^2,x, algorithm="fricas")
```

```
[Out] integral((b^4*log((x*e + d)^n*c)^4 + 4*a*b^3*log((x*e + d)^n*c)^3 + 6*a^2*b
^2*log((x*e + d)^n*c)^2 + 4*a^3*b*log((x*e + d)^n*c) + a^4)/(g^2*x^2 + 2*f*
g*x + f^2), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(a+b\log\left(c(d+ex)^{n}\right)\right)^{4}}{\left(f+gx\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**4/(g*x+f)**2,x)
[Out] Integral((a + b*log(c*(d + e*x)**n))**4/(f + g*x)**2, x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^4/(g*x+f)^2,x, algorithm="giac")
[Out] integrate((b*log((x*e + d)^n*c) + a)^4/(g*x + f)^2, x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^{n}\right)\right)^{4}}{\left(f+g\,x\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))^4/(f + g*x)^2,x)
[Out] int((a + b*log(c*(d + e*x)^n))^4/(f + g*x)^2, x)
```

3.64 $\int \log(a+bx)\,dx$

Optimal. Leaf size=19

$$-x+\frac{(a+bx)\log(a+bx)}{b}$$

```
[Out] -x+(b*x+a)*ln(b*x+a)/b
```

Rubi [A]
time = 0.00, antiderivative size = 19, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 6, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.333, Rules used = {2436, 2332}

$$\frac{(a+bx)\log(a+bx)}{b}-x$$

Antiderivative was successfully verified.

```
[In] Int[Log[a + b*x],x]
```

```
[Out] -x + ((a + b*x)*Log[a + b*x])/b
```

Rule 2332

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2436

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rubi steps

$$\begin{aligned}\int \log(a+bx)\,dx &= \frac{\text{Subst}\left(\int \log(x)\,dx,x,a+bx\right)}{b}\\ &= -x+\frac{(a+bx)\log(a+bx)}{b}\end{aligned}$$

Mathematica [A]
time = 0.00, size = 19, normalized size = 1.00

$$-x+\frac{(a+bx)\log(a+bx)}{b}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[a + b*x],x]
```

```
[Out] -x + ((a + b*x)*Log[a + b*x])/b
```

Maple [A]
time = 0.10, size = 25, normalized size = 1.32

method	result	size
norman	$x \ln\left(bx+a\right)+\frac{a \ln(bx+a)}{b}-x$	24
risch	$x \ln\left(bx+a\right)+\frac{a \ln(bx+a)}{b}-x$	24
derivativedivides	$\frac{(bx+a) \ln(bx+a)-bx-a}{b}$	25
default	$\frac{(bx+a) \ln(bx+a)-bx-a}{b}$	25

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(b*x+a),x,method=_RETURNVERBOSE)
```

```
[Out] 1/b*((b*x+a)*ln(b*x+a)-b*x-a)
```

Maxima [A]
time = 0.27, size = 23, normalized size = 1.21

$$-\frac{bx-(bx+a)\log\left(bx+a\right)+a}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(b*x+a),x, algorithm="maxima")
```

```
[Out] -(b*x - (b*x + a)*log(b*x + a) + a)/b
```

Fricas [A]
time = 0.35, size = 22, normalized size = 1.16

$$-\frac{bx-(bx+a)\log\left(bx+a\right)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(b*x+a),x, algorithm="fricas")
```

```
[Out] -(b*x - (b*x + a)*log(b*x + a))/b
```

Sympy [A]
time = 0.05, size = 24, normalized size = 1.26

$$-b\left(-\frac{a\log\left(a+bx\right)}{b^2}+\frac{x}{b}\right)+x\log\left(a+bx\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(b*x+a),x)
```

```
[Out] -b*(-a*log(a + b*x)/b**2 + x/b) + x*log(a + b*x)
```

Giac [A]
time = 2.93, size = 23, normalized size = 1.21

$$-\frac{bx - (bx + a)\log(bx + a) + a}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(b*x+a),x, algorithm="giac")
```

```
[Out] -(b*x - (b*x + a)*log(b*x + a) + a)/b
```

Mupad [B]
time = 0.07, size = 23, normalized size = 1.21

$$x\,\ln(a + b\,x) - x + \frac{a\,\ln(a + b\,x)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(log(a + b*x),x)
```

```
[Out] x*log(a + b*x) - x + (a*log(a + b*x))/b
```

3.65 $\int \log^2(a+bx)\,dx$

Optimal. Leaf size=37

$$2x-\frac{2(a+bx)\log(a+bx)}{b}+\frac{(a+bx)\log^2(a+bx)}{b}$$

```
[Out] 2*x-2*(b*x+a)*ln(b*x+a)/b+(b*x+a)*ln(b*x+a)^2/b
```

Rubi [A]
time = 0.01, antiderivative size = 37, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 8, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.375, Rules used = {2436, 2333, 2332}

$$\frac{(a+bx)\log^2(a+bx)}{b}-\frac{2(a+bx)\log(a+bx)}{b}+2x$$

Antiderivative was successfully verified.

```
[In] Int[Log[a + b*x]^2,x]
```

```
[Out] 2*x - (2*(a + b*x)*Log[a + b*x])/b + ((a + b*x)*Log[a + b*x]^2)/b
```

Rule 2332

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2333

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2436

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rubi steps

$$\begin{aligned}
\int \log^2(a+bx)\,dx &= \frac{\text{Subst}\left(\int \log^2(x)\,dx,x,a+bx\right)}{b}\\
&= \frac{(a+bx)\log^2(a+bx)}{b}-\frac{2\text{Subst}\left(\int \log(x)\,dx,x,a+bx\right)}{b}\\
&= 2x-\frac{2(a+bx)\log(a+bx)}{b}+\frac{(a+bx)\log^2(a+bx)}{b}
\end{aligned}$$

Mathematica [A]
time = 0.00, size = 36, normalized size = 0.97

$$\frac{2bx-2(a+bx)\log(a+bx)+(a+bx)\log^2(a+bx)}{b}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[a + b*x]^2,x]
[Out] (2*b*x - 2*(a + b*x)*Log[a + b*x] + (a + b*x)*Log[a + b*x]^2)/b
```

Maple [A]
time = 0.10, size = 40, normalized size = 1.08

method	result	size
derivativedivides	$\frac{\ln(bx+a)^2(bx+a)-2(bx+a)\ln(bx+a)+2bx+2a}{b}$	40
default	$\frac{\ln(bx+a)^2(bx+a)-2(bx+a)\ln(bx+a)+2bx+2a}{b}$	40
risch	$\frac{(bx+a)\ln(bx+a)^2}{b}-2x\ln\left(bx+a\right)+2x-\frac{2a\ln(bx+a)}{b}$	43
norman	$x\ln\left(bx+a\right)^2+\frac{a\ln(bx+a)^2}{b}+2x-2x\ln\left(bx+a\right)-\frac{2a\ln(bx+a)}{b}$	49

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(b*x+a)^2,x,method=_RETURNVERBOSE)
[Out] 1/b*(ln(b*x+a)^2*(b*x+a)-2*(b*x+a)*ln(b*x+a)+2*b*x+2*a)
```

Maxima [A]
time = 0.28, size = 27, normalized size = 0.73

$$\frac{(bx+a)\left(\log\left(bx+a\right)^2-2\,\log\left(bx+a\right)+2\right)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(b*x+a)^2,x, algorithm="maxima")
[Out] (b*x + a)*(log(b*x + a)^2 - 2*log(b*x + a) + 2)/b
```

Fricas [A]
time = 0.35, size = 36, normalized size = 0.97

$$\frac{(bx+a)\log\left(bx+a\right)^2+2\,bx-2\,(bx+a)\log\left(bx+a\right)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(b*x+a)^2,x, algorithm="fricas")
```

```
[Out] ((b*x + a)*log(b*x + a)^2 + 2*b*x - 2*(b*x + a)*log(b*x + a))/b
```

Sympy [A]
time = 0.07, size = 42, normalized size = 1.14

$$2b\left(-\frac{a\log\left(a+bx\right)}{b^2}+\frac{x}{b}\right)-2x\log\left(a+bx\right)+\frac{\left(a+bx\right)\log\left(a+bx\right)^2}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(b*x+a)**2,x)
```

```
[Out] 2*b*(-a*log(a + b*x)/b**2 + x/b) - 2*x*log(a + b*x) + (a + b*x)*log(a + b*x
)**2/b
```

Giac [A]
time = 2.82, size = 44, normalized size = 1.19

$$\frac{\left(bx+a\right)\log\left(bx+a\right)^2}{b}-\frac{2\left(bx+a\right)\log\left(bx+a\right)}{b}+\frac{2\left(bx+a\right)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(b*x+a)^2,x, algorithm="giac")
```

```
[Out] (b*x + a)*log(b*x + a)^2/b - 2*(b*x + a)*log(b*x + a)/b + 2*(b*x + a)/b
```

Mupad [B]
time = 0.29, size = 48, normalized size = 1.30

$$2\,x-2\,x\,\ln\left(a+b\,x\right)+x\ln\left(a+b\,x\right)^2+\frac{a\ln\left(a+b\,x\right)^2}{b}-\frac{2\,a\,\ln\left(a+b\,x\right)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(log(a + b*x)^2,x)
```

```
[Out] 2*x - 2*x*log(a + b*x) + x*log(a + b*x)^2 + (a*log(a + b*x)^2)/b - (2*a*log
(a + b*x))/b
```

3.66 $\int \log^3(a+bx)\,dx$

Optimal. Leaf size=55

$$-6x+\frac{6(a+bx)\log(a+bx)}{b}-\frac{3(a+bx)\log^2(a+bx)}{b}+\frac{(a+bx)\log^3(a+bx)}{b}$$

```
[Out] -6*x+6*(b*x+a)*ln(b*x+a)/b-3*(b*x+a)*ln(b*x+a)^2/b+(b*x+a)*ln(b*x+a)^3/b
```

Rubi [A]
time = 0.01, antiderivative size = 55, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 8, $\frac{\text{number of rules}}{\text{integrand size}} = 0.375$, Rules used = {2436, 2333, 2332}

$$\frac{(a+bx)\log^3(a+bx)}{b}-\frac{3(a+bx)\log^2(a+bx)}{b}+\frac{6(a+bx)\log(a+bx)}{b}-6x$$

Antiderivative was successfully verified.

```
[In] Int[Log[a + b*x]^3,x]
```

```
[Out] -6*x + (6*(a + b*x)*Log[a + b*x])/b - (3*(a + b*x)*Log[a + b*x]^2)/b + ((a
+ b*x)*Log[a + b*x]^3)/b
```

Rule 2332

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2333

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2436

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rubi steps

$$
\begin{aligned}
\int \log^3(a+bx)\,dx &= \frac{\text{Subst}\left(\int \log^3(x)\,dx, x, a+bx\right)}{b}\\
&= \frac{(a+bx)\log^3(a+bx)}{b} - \frac{3\text{Subst}\left(\int \log^2(x)\,dx, x, a+bx\right)}{b}\\
&= -\frac{3(a+bx)\log^2(a+bx)}{b} + \frac{(a+bx)\log^3(a+bx)}{b} + \frac{6\text{Subst}\left(\int \log(x)\,dx, x, a+bx\right)}{b}\\
&= -6x + \frac{6(a+bx)\log(a+bx)}{b} - \frac{3(a+bx)\log^2(a+bx)}{b} + \frac{(a+bx)\log^3(a+bx)}{b}
\end{aligned}
$$

Mathematica [A]
time = 0.01, size = 51, normalized size = 0.93

$$
\frac{-6bx + 6(a+bx)\log(a+bx) - 3(a+bx)\log^2(a+bx) + (a+bx)\log^3(a+bx)}{b}
$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[a + b*x]^3,x]
[Out] (-6*b*x + 6*(a + b*x)*Log[a + b*x] - 3*(a + b*x)*Log[a + b*x]^2 + (a + b*x)
*Log[a + b*x]^3)/b
```

Maple [A]
time = 0.13, size = 55, normalized size = 1.00

method	result
derivativedivides	$\frac{\ln(bx+a)^3(bx+a)-3\ln(bx+a)^2(bx+a)+6(bx+a)\ln(bx+a)-6bx-6a}{b}$
default	$\frac{\ln(bx+a)^3(bx+a)-3\ln(bx+a)^2(bx+a)+6(bx+a)\ln(bx+a)-6bx-6a}{b}$
risch	$\frac{(bx+a)\ln(bx+a)^3}{b} - \frac{3(bx+a)\ln(bx+a)^2}{b} + 6x\ln(bx+a) - 6x + \frac{6a\ln(bx+a)}{b}$
norman	$x\ln(bx+a)^3 + \frac{a\ln(bx+a)^3}{b} - 6x + 6x\ln(bx+a) - 3x\ln(bx+a)^2 + \frac{6a\ln(bx+a)}{b} - \frac{3a\ln(bx\cdots}{b}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(b*x+a)^3,x,method=_RETURNVERBOSE)
[Out] 1/b*(ln(b*x+a)^3*(b*x+a)-3*ln(b*x+a)^2*(b*x+a)+6*(b*x+a)*ln(b*x+a)-6*b*x-6*
a)
```

Maxima [A]
time = 0.28, size = 37, normalized size = 0.67

$$
\frac{\left(\log(bx+a)^3 - 3\,\log(bx+a)^2 + 6\,\log(bx+a) - 6\right)(bx+a)}{b}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(b*x+a)^3,x, algorithm="maxima")
[Out] (log(b*x + a)^3 - 3*log(b*x + a)^2 + 6*log(b*x + a) - 6)*(b*x + a)/b
```

Fricas [A]
time = 0.36, size = 51, normalized size = 0.93

$$\frac{(bx+a)\log(bx+a)^3 - 3(bx+a)\log(bx+a)^2 - 6bx + 6(bx+a)\log(bx+a)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(b*x+a)^3,x, algorithm="fricas")
[Out] ((b*x + a)*log(b*x + a)^3 - 3*(b*x + a)*log(b*x + a)^2 - 6*b*x + 6*(b*x + a
)*log(b*x + a))/b
```

Sympy [A]
time = 0.10, size = 63, normalized size = 1.15

$$-6b\left(-\frac{a\log(a+bx)}{b^2} + \frac{x}{b}\right) + 6x\log(a+bx) + \frac{(-3a-3bx)\log(a+bx)^2}{b} + \frac{(a+bx)\log(a+bx)^3}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(b*x+a)**3,x)
[Out] -6*b*(-a*log(a + b*x)/b**2 + x/b) + 6*x*log(a + b*x) + (-3*a - 3*b*x)*log(a
 + b*x)**2/b + (a + b*x)*log(a + b*x)**3/b
```

Giac [A]
time = 5.49, size = 62, normalized size = 1.13

$$\frac{(bx+a)\log(bx+a)^3}{b} - \frac{3(bx+a)\log(bx+a)^2}{b} + \frac{6(bx+a)\log(bx+a)}{b} - \frac{6(bx+a)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(b*x+a)^3,x, algorithm="giac")
[Out] (b*x + a)*log(b*x + a)^3/b - 3*(b*x + a)*log(b*x + a)^2/b + 6*(b*x + a)*log
(b*x + a)/b - 6*(b*x + a)/b
```

Mupad [B]
time = 0.25, size = 73, normalized size = 1.33

$$6x\ln(a+bx) - 6x - 3x\ln(a+bx)^2 + x\ln(a+bx)^3 - \frac{3a\ln(a+bx)^2}{b} + \frac{a\ln(a+bx)^3}{b} + \frac{6a\ln(a+bx)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(log(a + b*x)^3,x)
[Out] 6*x*log(a + b*x) - 6*x - 3*x*log(a + b*x)^2 + x*log(a + b*x)^3 - (3*a*log(a
 + b*x)^2)/b + (a*log(a + b*x)^3)/b + (6*a*log(a + b*x))/b
```

3.67 $\int \log(a+bx+cx)\,dx$

Optimal. Leaf size=25

$$-x+\frac{(a+(b+c)x)\log(a+(b+c)x)}{b+c}$$

```
[Out] -x+(a+(b+c)*x)*ln(a+(b+c)*x)/(b+c)
```

Rubi [A]
time = 0.01, antiderivative size = 25, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 9, $\frac{\text{number of rules}}{\text{integrand size}} = 0.333$, Rules used = {2494, 2436, 2332}

$$\frac{(a+x(b+c))\log(a+x(b+c))}{b+c}-x$$

Antiderivative was successfully verified.

```
[In] Int[Log[a + b*x + c*x],x]
```

```
[Out] -x + ((a + (b + c)*x)*Log[a + (b + c)*x])/(b + c)
```

Rule 2332

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2436

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2494

```
Int[((a_.) + Log[(c_.)*(v_)^(n_.)]*(b_.))^(p_.)*(u_.), x_Symbol] :> Int[u*(
a + b*Log[c*ExpandToSum[v, x]^n])^p, x] /; FreeQ[{a, b, c, n, p}, x] && Lin
earQ[v, x] &&  !LinearMatchQ[v, x] &&  !(EqQ[n, 1] && MatchQ[c*v, (e_.)*((f
_) + (g_.)*x) /; FreeQ[{e, f, g}, x]])
```

Rubi steps

$$\int \log(a+bx+cx)\,dx = \int \log(a+(b+c)x)\,dx$$
$$= \frac{\text{Subst}(\int \log(x)\,dx, x, a+(b+c)x)}{b+c}$$
$$= -x + \frac{(a+(b+c)x)\log(a+(b+c)x)}{b+c}$$

Mathematica [A]
time = 0.01, size = 25, normalized size = 1.00

$$-x + \frac{(a+(b+c)x)\log(a+(b+c)x)}{b+c}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[a + b*x + c*x],x]
[Out] -x + ((a + (b + c)*x)*Log[a + (b + c)*x])/(b + c)
```

Maple [A]
time = 0.11, size = 33, normalized size = 1.32

method	result	size
norman	$x\ln(bx+cx+a)+\frac{a\ln(bx+cx+a)}{b+c}-x$	32
derivativedivides	$\frac{(a+(b+c)x)\ln(a+(b+c)x)-a-(b+c)x}{b+c}$	33
default	$\frac{(a+(b+c)x)\ln(a+(b+c)x)-a-(b+c)x}{b+c}$	33
risch	$x\ln(bx+cx+a)+\frac{a\ln(a+(b+c)x)}{b+c}-\frac{bx}{b+c}-\frac{cx}{b+c}$	46

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(b*x+c*x+a),x,method=_RETURNVERBOSE)
[Out] 1/(b+c)*((a+(b+c)*x)*ln(a+(b+c)*x)-a-(b+c)*x)
```

Maxima [A]
time = 0.28, size = 34, normalized size = 1.36

$$-\frac{bx+cx-(bx+cx+a)\log(bx+cx+a)+a}{b+c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(b*x+c*x+a),x, algorithm="maxima")
```

```
[Out] -(b*x + c*x - (b*x + c*x + a)*log(b*x + c*x + a) + a)/(b + c)
```

Fricas [**A**]
time = 0.32, size = 30, normalized size = 1.20

$$-\frac{(b+c)x-((b+c)x+a)\log((b+c)x+a)}{b+c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(b*x+c*x+a),x, algorithm="fricas")
[Out] -((b + c)*x - ((b + c)*x + a)*log((b + c)*x + a))/(b + c)
```

Sympy [**A**]
time = 0.09, size = 36, normalized size = 1.44

$$x\log(a+bx+cx)+(-b-c)\left(-\frac{a\log(a+x(b+c))}{(b+c)^2}+\frac{x}{b+c}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(b*x+c*x+a),x)
[Out] x*log(a + b*x + c*x) + (-b - c)*(-a*log(a + x*(b + c))/(b + c)**2 + x/(b +
c))
```

Giac [**A**]
time = 5.78, size = 34, normalized size = 1.36

$$-\frac{bx+cx-(bx+cx+a)\log(bx+cx+a)+a}{b+c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(b*x+c*x+a),x, algorithm="giac")
[Out] -(b*x + c*x - (b*x + c*x + a)*log(b*x + c*x + a) + a)/(b + c)
```

Mupad [**B**]
time = 0.08, size = 31, normalized size = 1.24

$$x\,\ln(a+b\,x+c\,x)-x+\frac{a\,\ln(a+b\,x+c\,x)}{b+c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(log(a + b*x + c*x),x)
[Out] x*log(a + b*x + c*x) - x + (a*log(a + b*x + c*x))/(b + c)
```

3.68 $\int \log^2(a+bx+cx)\,dx$

Optimal. Leaf size=49

$$2x-\frac{2(a+(b+c)x)\log(a+(b+c)x)}{b+c}+\frac{(a+(b+c)x)\log^2(a+(b+c)x)}{b+c}$$

```
[Out] 2*x-2*(a+(b+c)*x)*ln(a+(b+c)*x)/(b+c)+(a+(b+c)*x)*ln(a+(b+c)*x)^2/(b+c)
```

Rubi [A]
time = 0.02, antiderivative size = 49, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}} = 0.364$, Rules used = {2494, 2436, 2333, 2332}

$$\frac{(a+x(b+c))\log^2(a+x(b+c))}{b+c}-\frac{2(a+x(b+c))\log(a+x(b+c))}{b+c}+2x$$

Antiderivative was successfully verified.

```
[In] Int[Log[a + b*x + c*x]^2,x]
```

```
[Out] 2*x - (2*(a + (b + c)*x)*Log[a + (b + c)*x])/(b + c) + ((a + (b + c)*x)*Log
[a + (b + c)*x]^2)/(b + c)
```

Rule 2332

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2333

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2436

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2494

```
Int[((a_.) + Log[(c_.)*(v_)^(n_.)]*(b_.))^(p_.)*(u_.), x_Symbol] :> Int[u*(
a + b*Log[c*ExpandToSum[v, x]^n])^p, x] /; FreeQ[{a, b, c, n, p}, x] && Lin
earQ[v, x] &&  !LinearMatchQ[v, x] &&  !(EqQ[n, 1] && MatchQ[c*v, (e_.)*((f
_) + (g_.)*x) /; FreeQ[{e, f, g}, x]])
```

Rubi steps

$$\begin{aligned}\int \log^2(a+bx+cx)\,dx &= \int \log^2(a+(b+c)x)\,dx\\ &= \frac{\text{Subst}\left(\int \log^2(x)\,dx, x, a+(b+c)x\right)}{b+c}\\ &= \frac{(a+(b+c)x)\log^2(a+(b+c)x)}{b+c} - \frac{2\text{Subst}\left(\int \log(x)\,dx, x, a+(b+c)x\right)}{b+c}\\ &= 2x - \frac{2(a+(b+c)x)\log(a+(b+c)x)}{b+c} + \frac{(a+(b+c)x)\log^2(a+(b+c)x)}{b+c}\end{aligned}$$

Mathematica [A]
time = 0.01, size = 48, normalized size = 0.98

$$\frac{2(b+c)x - 2(a+(b+c)x)\log(a+(b+c)x) + (a+(b+c)x)\log^2(a+(b+c)x)}{b+c}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[a + b*x + c*x]^2,x]
[Out] (2*(b + c)*x - 2*(a + (b + c)*x)*Log[a + (b + c)*x] + (a + (b + c)*x)*Log[a
 + (b + c)*x]^2)/(b + c)
```

Maple [A]
time = 0.14, size = 52, normalized size = 1.06

method	result	size
derivativedivides	$\frac{\ln(a+(b+c)x)^2(a+(b+c)x)-2(a+(b+c)x)\ln(a+(b+c)x)+2a+2(b+c)x}{b+c}$	52
default	$\frac{\ln(a+(b+c)x)^2(a+(b+c)x)-2(a+(b+c)x)\ln(a+(b+c)x)+2a+2(b+c)x}{b+c}$	52
norman	$x\ln\left(bx+cx+a\right)^2+\frac{a\ln(bx+cx+a)^2}{b+c}+2x-2x\ln\left(bx+cx+a\right)-\frac{2a\ln(bx+cx+a)}{b+c}$	65
risch	$\frac{\ln(bx+cx+a)^2(bx+cx+a)}{b+c}-2x\ln\left(bx+cx+a\right)-\frac{2a\ln(a+(b+c)x)}{b+c}+\frac{2bx}{b+c}+\frac{2cx}{b+c}$	73

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(b*x+c*x+a)^2,x,method=_RETURNVERBOSE)
[Out] 1/(b+c)*(ln(a+(b+c)*x)^2*(a+(b+c)*x)-2*(a+(b+c)*x)*ln(a+(b+c)*x)+2*a+2*(b+c
)*x)
```

Maxima [A]
time = 0.29, size = 38, normalized size = 0.78

$$\frac{(bx+cx+a)\left(\log\left(bx+cx+a\right)^2 - 2\,\log\left(bx+cx+a\right)+2\right)}{b+c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(b*x+c*x+a)^2,x, algorithm="maxima")
```

```
[Out] (b*x + c*x + a)*(log(b*x + c*x + a)^2 - 2*log(b*x + c*x + a) + 2)/(b + c)
```

Fricas [A]
time = 0.36, size = 48, normalized size = 0.98

$$\frac{((b+c)x+a)\log\left((b+c)x+a\right)^2+2\,(b+c)x-2\,((b+c)x+a)\log\left((b+c)x+a\right)}{b+c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(b*x+c*x+a)^2,x, algorithm="fricas")
```

```
[Out] (((b + c)*x + a)*log((b + c)*x + a)^2 + 2*(b + c)*x - 2*((b + c)*x + a)*log
((b + c)*x + a))/(b + c)
```

Sympy [A]
time = 0.12, size = 63, normalized size = 1.29

$$-2x\log\left(a+bx+cx\right)+(2b+2c)\left(-\frac{a\log\left(a+x(b+c)\right)}{(b+c)^2}+\frac{x}{b+c}\right)+\frac{(a+bx+cx)\log\left(a+bx+cx\right)^2}{b+c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(b*x+c*x+a)**2,x)
```

```
[Out] -2*x*log(a + b*x + c*x) + (2*b + 2*c)*(-a*log(a + x*(b + c))/(b + c)**2 + x
/(b + c)) + (a + b*x + c*x)*log(a + b*x + c*x)**2/(b + c)
```

Giac [A]
time = 4.56, size = 65, normalized size = 1.33

$$\frac{(bx+cx+a)\log\left(bx+cx+a\right)^2}{b+c}-\frac{2\,(bx+cx+a)\log\left(bx+cx+a\right)}{b+c}+\frac{2\,(bx+cx+a)}{b+c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(b*x+c*x+a)^2,x, algorithm="giac")
```

```
[Out] (b*x + c*x + a)*log(b*x + c*x + a)^2/(b + c) - 2*(b*x + c*x + a)*log(b*x +
c*x + a)/(b + c) + 2*(b*x + c*x + a)/(b + c)
```

Mupad [B]
time = 0.36, size = 94, normalized size = 1.92

$$\frac{2\,b\,x+2\,c\,x-2\,a\,\ln\left(a+b\,x+c\,x\right)+a\ln\left(a+b\,x+c\,x\right)^2+b\,x\ln\left(a+b\,x+c\,x\right)^2+c\,x\ln\left(a+b\,x+c\,x\right)^2-2\,b\,x\,\ln\left(a+b\,x+c\,x\right)-2\,c\,x\,\ln\left(a+b\,x+c\,x\right)}{b+c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(log(a + b*x + c*x)^2,x)
```

```
[Out] (2*b*x + 2*c*x - 2*a*log(a + b*x + c*x) + a*log(a + b*x + c*x)^2 + b*x*log(
a + b*x + c*x)^2 + c*x*log(a + b*x + c*x)^2 - 2*b*x*log(a + b*x + c*x) - 2*
c*x*log(a + b*x + c*x))/(b + c)
```

3.69 $\int \log^3(a+bx+cx)\,dx$

Optimal. Leaf size=73

$$-6x+\frac{6(a+(b+c)x)\log(a+(b+c)x)}{b+c}-\frac{3(a+(b+c)x)\log^2(a+(b+c)x)}{b+c}+\frac{(a+(b+c)x)\log^3(a+(b+c)x)}{b+c}$$

```
[Out] -6*x+6*(a+(b+c)*x)*ln(a+(b+c)*x)/(b+c)-3*(a+(b+c)*x)*ln(a+(b+c)*x)^2/(b+c)+
(a+(b+c)*x)*ln(a+(b+c)*x)^3/(b+c)
```

Rubi [A]
time = 0.02, antiderivative size = 73, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}} = 0.364$, Rules used = {2494, 2436, 2333, 2332}

$$\frac{(a+x(b+c))\log^3(a+x(b+c))}{b+c}-\frac{3(a+x(b+c))\log^2(a+x(b+c))}{b+c}+\frac{6(a+x(b+c))\log(a+x(b+c))}{b+c}-6x$$

Antiderivative was successfully verified.

```
[In] Int[Log[a + b*x + c*x]^3,x]
```

```
[Out] -6*x + (6*(a + (b + c)*x)*Log[a + (b + c)*x])/(b + c) - (3*(a + (b + c)*x)*
Log[a + (b + c)*x]^2)/(b + c) + ((a + (b + c)*x)*Log[a + (b + c)*x]^3)/(b +
 c)
```

Rule 2332

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2333

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2436

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2494

```
Int[((a_.) + Log[(c_.)*(v_)^(n_.)]*(b_.))^(p_.)*(u_.), x_Symbol] :> Int[u*(
a + b*Log[c*ExpandToSum[v, x]^n])^p, x] /; FreeQ[{a, b, c, n, p}, x] && Lin
earQ[v, x] &&  !LinearMatchQ[v, x] &&  !(EqQ[n, 1] && MatchQ[c*v, (e_.)*((f
```

```
_) + (g_.)*x) /; FreeQ[{e, f, g}, x]])
```

Rubi steps

$$\begin{aligned}\int \log^3(a+bx+cx)\,dx &= \int \log^3(a+(b+c)x)\,dx\\ &= \frac{\text{Subst}\left(\int \log^3(x)\,dx, x, a+(b+c)x\right)}{b+c}\\ &= \frac{(a+(b+c)x)\log^3(a+(b+c)x)}{b+c} - \frac{3\text{Subst}\left(\int \log^2(x)\,dx, x, a+(b+c)x\right)}{b+c}\\ &= -\frac{3(a+(b+c)x)\log^2(a+(b+c)x)}{b+c} + \frac{(a+(b+c)x)\log^3(a+(b+c)x)}{b+c} + \frac{6\text{Subst}}{}\\ &= -6x + \frac{6(a+(b+c)x)\log(a+(b+c)x)}{b+c} - \frac{3(a+(b+c)x)\log^2(a+(b+c)x)}{b+c} + \frac{(a}{}\end{aligned}$$

Mathematica [A]
time = 0.01, size = 67, normalized size = 0.92

$$\frac{-6(b+c)x+6(a+(b+c)x)\log(a+(b+c)x)-3(a+(b+c)x)\log^2(a+(b+c)x)+(a+(b+c)x)\log^3(a+(b+c)x)}{b+c}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[a + b*x + c*x]^3,x]
```

```
[Out] (-6*(b + c)*x + 6*(a + (b + c)*x)*Log[a + (b + c)*x] - 3*(a + (b + c)*x)*Lo
g[a + (b + c)*x]^2 + (a + (b + c)*x)*Log[a + (b + c)*x]^3)/(b + c)
```

Maple [A]
time = 0.14, size = 71, normalized size = 0.97

method	result
derivativedivides	$\frac{\ln(a+(b+c)x)^3(a+(b+c)x)-3\ln(a+(b+c)x)^2(a+(b+c)x)+6(a+(b+c)x)\ln(a+(b+c)x)-6a-6(b+c)x}{b+c}$
default	$\frac{\ln(a+(b+c)x)^3(a+(b+c)x)-3\ln(a+(b+c)x)^2(a+(b+c)x)+6(a+(b+c)x)\ln(a+(b+c)x)-6a-6(b+c)x}{b+c}$
norman	$x\ln(bx+cx+a)^3+\frac{a\ln(bx+cx+a)^3}{b+c}-6x+6x\ln(bx+cx+a)-3x\ln(bx+cx+a)^2+6$
risch	$\frac{\ln(bx+cx+a)^3(bx+cx+a)}{b+c}-\frac{3\ln(bx+cx+a)^2(bx+cx+a)}{b+c}+6x\ln(bx+cx+a)+\frac{6a\ln(a+(b+c)x)}{b+c}-\frac{6bx}{b+c}-$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(b*x+c*x+a)^3,x,method=_RETURNVERBOSE)
```

```
[Out] 1/(b+c)*(ln(a+(b+c)*x)^3*(a+(b+c)*x)-3*ln(a+(b+c)*x)^2*(a+(b+c)*x)+6*(a+(b+
c)*x)*ln(a+(b+c)*x)-6*a-6*(b+c)*x)
```

Maxima [A]
time = 0.28, size = 51, normalized size = 0.70

$$\frac{\left(\log\left(bx+cx+a\right)^3-3\,\log\left(bx+cx+a\right)^2+6\,\log\left(bx+cx+a\right)-6\right)\left(bx+cx+a\right)}{b+c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(b*x+c*x+a)^3,x, algorithm="maxima")
```

```
[Out] (log(b*x + c*x + a)^3 - 3*log(b*x + c*x + a)^2 + 6*log(b*x + c*x + a) - 6)*
(b*x + c*x + a)/(b + c)
```

Fricas [A]
time = 0.38, size = 67, normalized size = 0.92

$$\frac{((b+c)x+a)\log\left((b+c)x+a\right)^3-3\left((b+c)x+a\right)\log\left((b+c)x+a\right)^2-6\,(b+c)x+6\left((b+c)x+a\right)\log\left((b+c)x+a\right)}{b+c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(b*x+c*x+a)^3,x, algorithm="fricas")
```

```
[Out] (((b + c)*x + a)*log((b + c)*x + a)^3 - 3*((b + c)*x + a)*log((b + c)*x + a
)^2 - 6*(b + c)*x + 6*((b + c)*x + a)*log((b + c)*x + a))/(b + c)
```

Sympy [A]
time = 0.15, size = 95, normalized size = 1.30

$$6x\log\left(a+bx+cx\right)+(-6b-6c)\left(-\frac{a\log\left(a+x(b+c)\right)}{\left(b+c\right)^2}+\frac{x}{b+c}\right)+\frac{(-3a-3bx-3cx)\log\left(a+bx+cx\right)^2}{b+c}+\frac{(a+bx+cx)\log\left(a+bx+cx\right)^3}{b+c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(b*x+c*x+a)**3,x)
```

```
[Out] 6*x*log(a + b*x + c*x) + (-6*b - 6*c)*(-a*log(a + x*(b + c))/(b + c)**2 + x
/(b + c)) + (-3*a - 3*b*x - 3*c*x)*log(a + b*x + c*x)**2/(b + c) + (a + b*x
 + c*x)*log(a + b*x + c*x)**3/(b + c)
```

Giac [A]
time = 4.80, size = 91, normalized size = 1.25

$$\frac{(bx+cx+a)\log\left(bx+cx+a\right)^3}{b+c}-\frac{3\,(bx+cx+a)\log\left(bx+cx+a\right)^2}{b+c}+\frac{6\,(bx+cx+a)\log\left(bx+cx+a\right)}{b+c}-\frac{6\,(bx+cx+a)}{b+c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(b*x+c*x+a)^3,x, algorithm="giac")
```

```
[Out] (b*x + c*x + a)*log(b*x + c*x + a)^3/(b + c) - 3*(b*x + c*x + a)*log(b*x +
c*x + a)^2/(b + c) + 6*(b*x + c*x + a)*log(b*x + c*x + a)/(b + c) - 6*(b*x
+ c*x + a)/(b + c)
```

Mupad [B]
time = 0.37, size = 138, normalized size = 1.89

$$\frac{6\,a\,\ln\left(a+b\,x+c\,x\right)-6\,c\,x-6\,b\,x-3\,a\ln\left(a+b\,x+c\,x\right)^2+a\ln\left(a+b\,x+c\,x\right)^3-3\,b\,x\ln\left(a+b\,x+c\,x\right)^2+b\,x\ln\left(a+b\,x+c\,x\right)^3-3\,c\,x\ln\left(a+b\,x+c\,x\right)^2+c\,x\ln\left(a+b\,x+c\,x\right)^3+6\,b\,x\,\ln\left(a+b\,x+c\,x\right)+6\,c\,x\,\ln\left(a+b\,x+c\,x\right)}{b+c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(log(a + b*x + c*x)^3,x)
```

```
[Out] (6*a*log(a + b*x + c*x) - 6*c*x - 6*b*x - 3*a*log(a + b*x + c*x)^2 + a*log(
a + b*x + c*x)^3 - 3*b*x*log(a + b*x + c*x)^2 + b*x*log(a + b*x + c*x)^3 -
3*c*x*log(a + b*x + c*x)^2 + c*x*log(a + b*x + c*x)^3 + 6*b*x*log(a + b*x +
 c*x) + 6*c*x*log(a + b*x + c*x))/(b + c)
```

3.70 $\int \log \left(c(d+ex)^n\right) \, dx$

Optimal. Leaf size=24

$$-nx+\frac{(d+ex)\log \left(c(d+ex)^n\right)}{e}$$

```
[Out] -n*x+(e*x+d)*ln(c*(e*x+d)^n)/e
```

Rubi [A]
time = 0.01, antiderivative size = 24, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}} = 0.200$, Rules used = {2436, 2332}

$$\frac{(d+ex)\log \left(c(d+ex)^n\right)}{e}-nx$$

Antiderivative was successfully verified.

```
[In] Int[Log[c*(d + e*x)^n],x]
```

```
[Out] -(n*x) + ((d + e*x)*Log[c*(d + e*x)^n])/e
```

Rule 2332

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2436

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rubi steps

$$\begin{aligned}\int \log \left(c(d+ex)^n\right) \, dx &= \frac{\text{Subst}\left(\int \log \left(cx^n\right) \, dx,x,d+ex\right)}{e}\\ &= -nx+\frac{(d+ex)\log \left(c(d+ex)^n\right)}{e}\end{aligned}$$

Mathematica [A]
time = 0.01, size = 24, normalized size = 1.00

$$-nx+\frac{(d+ex)\log \left(c(d+ex)^n\right)}{e}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[c*(d + e*x)^n],x]
[Out] -(n*x) + ((d + e*x)*Log[c*(d + e*x)^n])/e
```

Maple [A]
time = 0.18, size = 36, normalized size = 1.50

method	result
norman	$x\ln\left(c\,\mathrm{e}^{n\ln(ex+d)}\right)+\frac{nd\ln(ex+d)}{e}-nx$
default	$\ln\left(c(ex+d)^{n}\right)x-en\left(\frac{x}{e}-\frac{d\ln(ex+d)}{e^{2}}\right)$
risch	$x\ln\left((ex+d)^{n}\right)-\frac{i\pi x\,\mathrm{csgn}(ic)\mathrm{csgn}(i(ex+d)^{n})\mathrm{csgn}(ic(ex+d)^{n})}{2}+\frac{i\pi x\,\mathrm{csgn}(ic)\mathrm{csgn}(ic(ex+d)^{n})^{2}}{2}+\frac{i\pi x\,\mathrm{csgn}(i(ex+d)^{n})\mathrm{csgn}}{2}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(c*(e*x+d)^n),x,method=_RETURNVERBOSE)
[Out] ln(c*(e*x+d)^n)*x-e*n*(1/e*x-d/e^2*ln(e*x+d))
```

Maxima [A]
time = 0.28, size = 35, normalized size = 1.46

$$\left(de^{(-2)}\log\left(xe+d\right)-xe^{(-1)}\right)ne+x\log\left((xe+d)^{n}c\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(e*x+d)^n),x, algorithm="maxima")
[Out] (d*e^(-2)*log(x*e + d) - x*e^(-1))*n*e + x*log((x*e + d)^n*c)
```

Fricas [A]
time = 0.35, size = 35, normalized size = 1.46

$$-(nxe-xe\log\left(c\right)-(nxe+dn)\log\left(xe+d\right))e^{(-1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(e*x+d)^n),x, algorithm="fricas")
[Out] -(n*x*e - x*e*log(c) - (n*x*e + d*n)*log(x*e + d))*e^(-1)
```

Sympy [A]
time = 0.13, size = 36, normalized size = 1.50

$$\begin{cases}\frac{d\log\left(c(d+ex)^{n}\right)}{e}-nx+x\log\left(c(d+ex)^{n}\right) & \text{for}\ e\neq 0\\ x\log\left(cd^{n}\right) & \text{otherwise}\end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(c*(e*x+d)**n),x)
```

```
[Out] Piecewise((d*log(c*(d + e*x)**n)/e - n*x + x*log(c*(d + e*x)**n), Ne(e, 0))
, (x*log(c*d**n), True))
```

Giac [A]
time = 4.67, size = 40, normalized size = 1.67

$$(xe+d)ne^{(-1)}\log(xe+d)-(xe+d)ne^{(-1)}+(xe+d)e^{(-1)}\log(c)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(e*x+d)^n),x, algorithm="giac")
```

```
[Out] (x*e + d)*n*e^(-1)*log(x*e + d) - (x*e + d)*n*e^(-1) + (x*e + d)*e^(-1)*log
(c)
```

Mupad [B]
time = 0.06, size = 29, normalized size = 1.21

$$x\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)-n\,x+\frac{d\,n\,\ln\left(d+e\,x\right)}{e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(log(c*(d + e*x)^n),x)
```

```
[Out] x*log(c*(d + e*x)^n) - n*x + (d*n*log(d + e*x))/e
```

3.71 $\int \frac{\log\left(-\frac{g(d+ex)}{ef-dg}\right)}{f+gx}\,dx$

Optimal. Leaf size=24

$$-\frac{\text{Li}_2\left(\frac{e(f+gx)}{ef-dg}\right)}{g}$$

```
[Out] -polylog(2,e*(g*x+f)/(-d*g+e*f))/g
```

Rubi [A]
time = 0.02, antiderivative size = 24, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.074$, Rules used = {2440, 2438}

$$-\frac{\text{PolyLog}\left(2,\frac{e(f+gx)}{ef-dg}\right)}{g}$$

Antiderivative was successfully verified.

```
[In] Int[Log[-((g*(d + e*x))/(e*f - d*g))]/(f + g*x),x]
```

```
[Out] -(PolyLog[2, (e*(f + g*x))/(e*f - d*g)]/g)
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + c*e*(x/g)])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{\log\left(-\frac{g(d+ex)}{ef-dg}\right)}{f+gx}\,dx &= \frac{\text{Subst}\left(\int \frac{\log\left(1-\frac{ex}{ef-dg}\right)}{x}\,dx,x,f+gx\right)}{g}\\
&= -\frac{\text{Li}_2\left(\frac{e(f+gx)}{ef-dg}\right)}{g}
\end{aligned}$$

Mathematica [A]
time = 0.01, size = 24, normalized size = 1.00

$$-\frac{\text{Li}_2\left(\frac{e(f+gx)}{ef-dg}\right)}{g}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[-((g*(d + e*x))/(e*f - d*g))]/(f + g*x),x]
[Out] -(PolyLog[2, (e*(f + g*x))/(e*f - d*g)]/g)
```

Maple [A]
time = 0.37, size = 35, normalized size = 1.46

method	result	size
derivativedivides	$-\frac{\text{dilog}\left(\frac{egx}{dg-ef}+\frac{dg}{dg-ef}\right)}{g}$	35
default	$-\frac{\text{dilog}\left(\frac{egx}{dg-ef}+\frac{dg}{dg-ef}\right)}{g}$	35
risch	$-\frac{\text{dilog}\left(\frac{egx}{dg-ef}+\frac{dg}{dg-ef}\right)}{g}$	35

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(-g*(e*x+d)/(-d*g+e*f))/(g*x+f),x,method=_RETURNVERBOSE)
[Out] -1/g*dilog(e*g/(d*g-e*f)*x+d*g/(d*g-e*f))
```

Maxima [B] Leaf count of result is larger than twice the leaf count of optimal. 109 vs. $2(26) = 52$.
time = 0.29, size = 109, normalized size = 4.54

$$-\frac{\log(gx+f)\log(xe+d)}{g}+\frac{\log(gx+f)\log\left(\frac{(xe+d)g}{dg-fe}\right)}{g}+\frac{\log(xe+d)\log\left(-\frac{gxe+dg}{dg-fe}+1\right)+\text{Li}_2\left(\frac{gxe+dg}{dg-fe}\right)}{g}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(-g*(e*x+d)/(-d*g+e*f))/(g*x+f),x, algorithm="maxima")
[Out] -log(g*x + f)*log(x*e + d)/g + log(g*x + f)*log((x*e + d)*g/(d*g - f*e))/g
+ (log(x*e + d)*log(-(g*x*e + d*g)/(d*g - f*e) + 1) + dilog((g*x*e + d*g)/(
d*g - f*e)))/g
```

Fricas [A]
time = 0.35, size = 30, normalized size = 1.25

$$-\frac{\text{Li}_2\left(-\frac{gxe+dg}{dg-fe}+1\right)}{g}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(-g*(e*x+d)/(-d*g+e*f))/(g*x+f),x, algorithm="fricas")
```

```
[Out] -dilog(-(g*x*e + d*g)/(d*g - f*e) + 1)/g
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\log\left(-\frac{dg}{-dg+ef} - \frac{egx}{-dg+ef}\right)}{f+gx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(-g*(e*x+d)/(-d*g+e*f))/(g*x+f),x)
```

```
[Out] Integral(log(-d*g/(-d*g + e*f) - e*g*x/(-d*g + e*f))/(f + g*x), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(-g*(e*x+d)/(-d*g+e*f))/(g*x+f),x, algorithm="giac")
```

```
[Out] integrate(log((x*e + d)*g/(d*g - f*e))/(g*x + f), x)
```

Mupad [B]
time = 0.39, size = 23, normalized size = 0.96

$$-\frac{\mathrm{Li}_2\left(\frac{g\,(d+e\,x)}{d\,g-e\,f}\right)}{g}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(log((g*(d + e*x))/(d*g - e*f))/(f + g*x),x)
```

```
[Out] -dilog((g*(d + e*x))/(d*g - e*f))/g
```

3.72 $\int \frac{a+b\log\left(c\left(\frac{1}{c}+ex\right)\right)}{x}\,dx$

Optimal. Leaf size=15

$$a\log(x) - b\text{Li}_2(-cex)$$

```
[Out] a*ln(x)-b*polylog(2,-c*e*x)
```

Rubi [A]
time = 0.01, antiderivative size = 15, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}} = 0.111$, Rules used = {2439, 2438}

$$a\log(x) - b\text{PolyLog}(2, -cex)$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(c^(-1) + e*x)])/x,x]
```

```
[Out] a*Log[x] - b*PolyLog[2, -(c*e*x)]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2439

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/(x_), x_Symbol] :> Simp[
(a + b*Log[c*d])*Log[x], x] + Dist[b, Int[Log[1 + e*(x/d)]/x, x], x] /; Fre
eQ[{a, b, c, d, e}, x] && GtQ[c*d, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{a+b\log\left(c\left(\frac{1}{c}+ex\right)\right)}{x}\,dx &= a\log(x)+b\int \frac{\log(1+cex)}{x}\,dx\\ &= a\log(x)-b\text{Li}_2(-cex)\end{aligned}$$

Mathematica [A]
time = 0.00, size = 15, normalized size = 1.00

$$a\log(x) - b\text{Li}_2(-cex)$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(c^(-1) + e*x)])/x,x]
[Out] a*Log[x] - b*PolyLog[2, -(c*e*x)]
```

Maple [A]
time = 0.16, size = 19, normalized size = 1.27

method	result	size
risch	$\ln(x) a - b \operatorname{dilog}(cex + 1)$	16
derivativedivides	$a \ln(cex) - b \operatorname{dilog}(cex + 1)$	19
default	$a \ln(cex) - b \operatorname{dilog}(cex + 1)$	19

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(1/c+e*x)))/x,x,method=_RETURNVERBOSE)
[Out] a*ln(c*e*x)-b*dilog(c*e*x+1)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(1/c+e*x)))/x,x, algorithm="maxima")
[Out] b*integrate(log(c*x*e + 1)/x, x) + a*log(x)
```

Fricas [A]
time = 0.38, size = 15, normalized size = 1.00

$$-b\mathrm{Li}_2(-cxe) + a \log(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(1/c+e*x)))/x,x, algorithm="fricas")
[Out] -b*dilog(-c*x*e) + a*log(x)
```

Sympy [C] Result contains complex when optimal does not.
time = 3.24, size = 17, normalized size = 1.13

$$a \log(x) - b \operatorname{Li}_2\left(cexe^{i\pi}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(1/c+e*x)))/x,x)
[Out] a*log(x) - b*polylog(2, c*e*x*exp_polar(I*pi))
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(1/c+e*x)))/x,x, algorithm="giac")
[Out] integrate((b*log((x*e + 1/c)*c) + a)/x, x)
```

Mupad [B]
time = 0.08, size = 15, normalized size = 1.00

$$a\,\ln\left(x\right)-b\,\mathrm{polylog}(2,-c\,e\,x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(e*x + 1/c)))/x,x)
[Out] a*log(x) - b*polylog(2, -c*e*x)
```

3.73 $\int \frac{\log(3+ex)}{x} \, dx$

Optimal. Leaf size=16

$$\log(3)\log(x) - \text{Li}_2\left(-\frac{ex}{3}\right)$$

```
[Out] ln(3)*ln(x)-polylog(2,-1/3*e*x)
```

Rubi [A]
time = 0.01, antiderivative size = 16, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}} = 0.200$, Rules used = {2439, 2438}

$$\log(3)\log(x) - \text{PolyLog}\left(2, -\frac{ex}{3}\right)$$

Antiderivative was successfully verified.

```
[In] Int[Log[3 + e*x]/x,x]
```

```
[Out] Log[3]*Log[x] - PolyLog[2, -1/3*(e*x)]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2439

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/(x_), x_Symbol] :> Simp[
(a + b*Log[c*d])*Log[x], x] + Dist[b, Int[Log[1 + e*(x/d)]/x, x], x] /; Fre
eQ[{a, b, c, d, e}, x] && GtQ[c*d, 0]
```

Rubi steps

$$\begin{aligned} \int \frac{\log(3+ex)}{x} \, dx &= \log(3)\log(x) + \int \frac{\log\left(1+\frac{ex}{3}\right)}{x} \, dx \\ &= \log(3)\log(x) - \text{Li}_2\left(-\frac{ex}{3}\right) \end{aligned}$$

Mathematica [A]
time = 0.00, size = 16, normalized size = 1.00

$$\log(3)\log(x) - \text{Li}_2\left(-\frac{ex}{3}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[3 + e*x]/x,x]
```

```
[Out] Log[3]*Log[x] - PolyLog[2, -1/3*(e*x)]
```

Maple [B] Leaf count of result is larger than twice the leaf count of optimal. 32 vs. $2(14) = 28$.
time = 0.10, size = 33, normalized size = 2.06

method	result	size
derivativedivides	$\left(\ln\left(ex+3\right)-\ln\left(\frac{ex}{3}+1\right)\right)\ln\left(-\frac{ex}{3}\right)-\operatorname{dilog}\left(\frac{ex}{3}+1\right)$	33
default	$\left(\ln\left(ex+3\right)-\ln\left(\frac{ex}{3}+1\right)\right)\ln\left(-\frac{ex}{3}\right)-\operatorname{dilog}\left(\frac{ex}{3}+1\right)$	33
risch	$\left(\ln\left(ex+3\right)-\ln\left(\frac{ex}{3}+1\right)\right)\ln\left(-\frac{ex}{3}\right)-\operatorname{dilog}\left(\frac{ex}{3}+1\right)$	33

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(e*x+3)/x,x,method=_RETURNVERBOSE)
```

```
[Out] (ln(e*x+3)-ln(1/3*e*x+1))*ln(-1/3*e*x)-dilog(1/3*e*x+1)
```

Maxima [A]
time = 0.28, size = 23, normalized size = 1.44

$$\log\left(xe+3\right)\log\left(-\frac{1}{3}\,xe\right)+\mathrm{Li}_2\left(\frac{1}{3}\,xe+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(e*x+3)/x,x, algorithm="maxima")
```

```
[Out] log(x*e + 3)*log(-1/3*x*e) + dilog(1/3*x*e + 1)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(e*x+3)/x,x, algorithm="fricas")
```

```
[Out] integral(log(x*e + 3)/x, x)
```

Sympy [C] Result contains complex when optimal does not.

time = 1.45, size = 87, normalized size = 5.44

$$\begin{cases} -\operatorname{Li}_2\left(\frac{exe^{i\pi}}{3}\right) & \text{for } \frac{1}{|x|} < 1 \wedge |x| < 1 \\ \log(3)\log(x) - \operatorname{Li}_2\left(\frac{exe^{i\pi}}{3}\right) & \text{for } |x| < 1 \\ -\log(3)\log\left(\frac{1}{x}\right) - \operatorname{Li}_2\left(\frac{exe^{i\pi}}{3}\right) & \text{for } \frac{1}{|x|} < 1 \\ -G_{2,2}^{2,0}\left(\begin{matrix} & 1,1 \\ 0,0 & \end{matrix} \middle| x\right)\log(3) + G_{2,2}^{0,2}\left(\begin{matrix} 1,1 & \\ & 0,0 \end{matrix} \middle| x\right)\log(3) - \operatorname{Li}_2\left(\frac{exe^{i\pi}}{3}\right) & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(e*x+3)/x,x)
```

```
[Out] Piecewise((-polylog(2, e*x*exp_polar(I*pi)/3), (Abs(x) < 1) & (1/Abs(x) < 1
)), (log(3)*log(x) - polylog(2, e*x*exp_polar(I*pi)/3), Abs(x) < 1), (-log(
3)*log(1/x) - polylog(2, e*x*exp_polar(I*pi)/3), 1/Abs(x) < 1), (-meijerg((
(), (1, 1)), ((0, 0), ()), x)*log(3) + meijerg(((1, 1), ()), ((), (0, 0)),
x)*log(3) - polylog(2, e*x*exp_polar(I*pi)/3), True))
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(e*x+3)/x,x, algorithm="giac")
```

```
[Out] integrate(log(x*e + 3)/x, x)
```

Mupad [B]
time = 0.03, size = 18, normalized size = 1.12

$$\operatorname{Li}_2\left(-\frac{e\,x}{3}\right) + \ln(e\,x + 3)\,\ln\left(-\frac{e\,x}{3}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(log(e*x + 3)/x,x)
```

```
[Out] dilog(-(e*x)/3) + log(e*x + 3)*log(-(e*x)/3)
```

3.74 $\int \frac{\log(2+ex)}{x} dx$

Optimal. Leaf size=16

$$\log(2)\log(x) - \text{Li}_2\left(-\frac{ex}{2}\right)$$

```
[Out] ln(2)*ln(x)-polylog(2,-1/2*e*x)
```

Rubi [A]
time = 0.01, antiderivative size = 16, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}} = 0.200$, Rules used = {2439, 2438}

$$\log(2)\log(x) - \text{PolyLog}\left(2, -\frac{ex}{2}\right)$$

Antiderivative was successfully verified.

```
[In] Int[Log[2 + e*x]/x,x]
```

```
[Out] Log[2]*Log[x] - PolyLog[2, -1/2*(e*x)]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2439

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/(x_), x_Symbol] :> Simp[
(a + b*Log[c*d])*Log[x], x] + Dist[b, Int[Log[1 + e*(x/d)]/x, x], x] /; Fre
eQ[{a, b, c, d, e}, x] && GtQ[c*d, 0]
```

Rubi steps

$$\begin{aligned} \int \frac{\log(2+ex)}{x} dx &= \log(2)\log(x) + \int \frac{\log\left(1+\frac{ex}{2}\right)}{x} dx \\ &= \log(2)\log(x) - \text{Li}_2\left(-\frac{ex}{2}\right) \end{aligned}$$

Mathematica [A]
time = 0.00, size = 16, normalized size = 1.00

$$\log(2)\log(x) - \text{Li}_2\left(-\frac{ex}{2}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[2 + e*x]/x,x]
[Out] Log[2]*Log[x] - PolyLog[2, -1/2*(e*x)]
```

Maple [B] Leaf count of result is larger than twice the leaf count of optimal. 32 vs. $2(14) = 28$.
time = 0.11, size = 33, normalized size = 2.06

method	result	size
derivativedivides	$\left(\ln \left(ex+2\right)-\ln \left(\frac{ex}{2}+1\right)\right) \ln \left(-\frac{ex}{2}\right)-\operatorname{dilog}\left(\frac{ex}{2}+1\right)$	33
default	$\left(\ln \left(ex+2\right)-\ln \left(\frac{ex}{2}+1\right)\right) \ln \left(-\frac{ex}{2}\right)-\operatorname{dilog}\left(\frac{ex}{2}+1\right)$	33
risch	$\left(\ln \left(ex+2\right)-\ln \left(\frac{ex}{2}+1\right)\right) \ln \left(-\frac{ex}{2}\right)-\operatorname{dilog}\left(\frac{ex}{2}+1\right)$	33

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(e*x+2)/x,x,method=_RETURNVERBOSE)
[Out] (ln(e*x+2)-ln(1/2*e*x+1))*ln(-1/2*e*x)-dilog(1/2*e*x+1)
```

Maxima [A]
time = 0.29, size = 23, normalized size = 1.44

$$\log\left(xe+2\right)\log\left(-\frac{1}{2}\,xe\right)+\mathrm{Li}_2\left(\frac{1}{2}\,xe+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(e*x+2)/x,x, algorithm="maxima")
[Out] log(x*e + 2)*log(-1/2*x*e) + dilog(1/2*x*e + 1)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(e*x+2)/x,x, algorithm="fricas")
[Out] integral(log(x*e + 2)/x, x)
```

Sympy [C] Result contains complex when optimal does not.

time = 1.39, size = 87, normalized size = 5.44

$$\begin{cases} -\operatorname{Li}_2\left(\frac{exe^{i\pi}}{2}\right) & \text{for } \frac{1}{|x|} < 1 \wedge |x| < 1 \\ \log(2)\log(x) - \operatorname{Li}_2\left(\frac{exe^{i\pi}}{2}\right) & \text{for } |x| < 1 \\ -\log(2)\log\left(\frac{1}{x}\right) - \operatorname{Li}_2\left(\frac{exe^{i\pi}}{2}\right) & \text{for } \frac{1}{|x|} < 1 \\ -G_{2,2}^{2,0}\left(\begin{matrix} & 1,1 \\ 0,0 & \end{matrix}\middle| x\right)\log(2) + G_{2,2}^{0,2}\left(\begin{matrix} 1,1 & \\ & 0,0 \end{matrix}\middle| x\right)\log(2) - \operatorname{Li}_2\left(\frac{exe^{i\pi}}{2}\right) & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(e*x+2)/x,x)
```

```
[Out] Piecewise((-polylog(2, e*x*exp_polar(I*pi)/2), (Abs(x) < 1) & (1/Abs(x) < 1
)), (log(2)*log(x) - polylog(2, e*x*exp_polar(I*pi)/2), Abs(x) < 1), (-log(
2)*log(1/x) - polylog(2, e*x*exp_polar(I*pi)/2), 1/Abs(x) < 1), (-meijerg((
(), (1, 1)), ((0, 0), ()), x)*log(2) + meijerg(((1, 1), ()), ((), (0, 0)),
x)*log(2) - polylog(2, e*x*exp_polar(I*pi)/2), True))
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(e*x+2)/x,x, algorithm="giac")
```

```
[Out] integrate(log(x*e + 2)/x, x)
```

Mupad [B]
time = 0.03, size = 18, normalized size = 1.12

$$\operatorname{Li}_2\left(-\frac{e\,x}{2}\right) + \ln(e\,x+2)\,\ln\left(-\frac{e\,x}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(log(e*x + 2)/x,x)
```

```
[Out] dilog(-(e*x)/2) + log(e*x + 2)*log(-(e*x)/2)
```

3.75 $\int \frac{\log(1+ex)}{x}\,dx$

Optimal. Leaf size=8

$$-\text{Li}_2(-ex)$$

[Out] -polylog(2,-e*x)

Rubi [A]
time = 0.01, antiderivative size = 8, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}} = 0.100$, Rules used = {2438}

$$-\text{PolyLog}(2,-ex)$$

Antiderivative was successfully verified.

[In] Int[Log[1 + e*x]/x,x]

[Out] -PolyLog[2, -(e*x)]

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rubi steps

$$\int \frac{\log(1+ex)}{x}\,dx = -\text{Li}_2(-ex)$$

Mathematica [A]
time = 0.00, size = 8, normalized size = 1.00

$$-\text{Li}_2(-ex)$$

Antiderivative was successfully verified.

[In] Integrate[Log[1 + e*x]/x,x]

[Out] -PolyLog[2, -(e*x)]

Maple [A]
time = 0.09, size = 9, normalized size = 1.12

method	result	size

derivativedivides	$-\operatorname{dilog}(ex+1)$	9
default	$-\operatorname{dilog}(ex+1)$	9
meijerg	$-\operatorname{polylog}(2,-ex)$	9
risch	$-\operatorname{dilog}(ex+1)$	9

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(e*x+1)/x,x,method=_RETURNVERBOSE)
```

```
[Out] -dilog(e*x+1)
```

Maxima [B] Leaf count of result is larger than twice the leaf count of optimal. 22 vs. $2(8) = 16$.
time = 0.31, size = 22, normalized size = 2.75

$$\log(xe+1)\log(-xe) + \mathrm{Li}_2(xe+1)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(e*x+1)/x,x, algorithm="maxima")
```

```
[Out] log(x*e + 1)*log(-x*e) + dilog(x*e + 1)
```

Fricas [A]
time = 0.36, size = 8, normalized size = 1.00

$$-\mathrm{Li}_2(-xe)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(e*x+1)/x,x, algorithm="fricas")
```

```
[Out] -dilog(-x*e)
```

Sympy [C] Result contains complex when optimal does not.
time = 1.32, size = 10, normalized size = 1.25

$$-\mathrm{Li}_2\left(exe^{i\pi}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(e*x+1)/x,x)
```

```
[Out] -polylog(2, e*x*exp_polar(I*pi))
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(e*x+1)/x,x, algorithm="giac")
```

```
[Out] integrate(log(x*e + 1)/x, x)
```

Mupad [B]
time = 0.03, size = 18, normalized size = 2.25

$$\mathrm{Li}_2(-e\,x)+\ln\left(e\,x+1\right)\,\ln\left(-e\,x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(log(e*x + 1)/x,x)
```

```
[Out] dilog(-e*x) + log(e*x + 1)*log(-e*x)
```

3.76 $\int \frac{\log(ex)}{x} \, dx$

Optimal. Leaf size=10

$$\frac{1}{2}\log^2(ex)$$

[Out] 1/2*ln(e*x)^2

Rubi [A]
time = 0.00, antiderivative size = 10, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 8, $\frac{\text{number of rules}}{\text{integrand size}} = 0.125$, Rules used = {2338}

$$\frac{1}{2}\log^2(ex)$$

Antiderivative was successfully verified.

[In] Int[Log[e*x]/x,x]

[Out] Log[e*x]^2/2

Rule 2338

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rubi steps

$$\int \frac{\log(ex)}{x} \, dx = \frac{1}{2}\log^2(ex)$$

Mathematica [A]
time = 0.00, size = 10, normalized size = 1.00

$$\frac{1}{2}\log^2(ex)$$

Antiderivative was successfully verified.

[In] Integrate[Log[e*x]/x,x]

[Out] Log[e*x]^2/2

Maple [A]
time = 0.05, size = 9, normalized size = 0.90

method	result	size
derivativedivides	$\frac{\ln(ex)^2}{2}$	9
default	$\frac{\ln(ex)^2}{2}$	9
norman	$\frac{\ln(ex)^2}{2}$	9
risch	$\frac{\ln(ex)^2}{2}$	9

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(e*x)/x,x,method=_RETURNVERBOSE)
[Out] 1/2*ln(e*x)^2
```

Maxima [A]
time = 0.29, size = 9, normalized size = 0.90

$$\frac{1}{2}\log(xe)^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(e*x)/x,x, algorithm="maxima")
[Out] 1/2*log(x*e)^2
```

Fricas [A]
time = 0.36, size = 9, normalized size = 0.90

$$\frac{1}{2}\log(xe)^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(e*x)/x,x, algorithm="fricas")
[Out] 1/2*log(x*e)^2
```

Sympy [A]
time = 0.02, size = 7, normalized size = 0.70

$$\frac{\log(ex)^2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(e*x)/x,x)
[Out] log(e*x)**2/2
```

Giac [A]
time = 4.15, size = 9, normalized size = 0.90

$$\frac{1}{2}\log{(x)}^2+\log{(x)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(e*x)/x,x, algorithm="giac")
```

```
[Out] 1/2*log(x)^2 + log(x)
```

Mupad [B]
time = 0.17, size = 8, normalized size = 0.80

$$\frac{\ln{(e\,x)}^2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(log(e*x)/x,x)
```

```
[Out] log(e*x)^2/2
```

3.77 $\int \frac{\log(-1+ex)}{x}\,dx$

Optimal. Leaf size=20

$$\log(ex)\log(-1+ex)+\mathrm{Li}_2(1-ex)$$

```
[Out] ln(e*x)*ln(e*x-1)+polylog(2,-e*x+1)
```

Rubi [A]
time = 0.01, antiderivative size = 20, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}} = 0.200$, Rules used = {2441, 2352}

$$\mathrm{PolyLog}(2,1-ex)+\log(ex)\log(ex-1)$$

Antiderivative was successfully verified.

```
[In] Int[Log[-1 + e*x]/x,x]
```

```
[Out] Log[e*x]*Log[-1 + e*x] + PolyLog[2, 1 - e*x]
```

Rule 2352

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> Simp[(-e^(-1))*PolyLo
g[2, 1 - c*x], x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2441

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d + e*x
)^n])/g), x] - Dist[b*e*(n/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{\log(-1+ex)}{x}\,dx &= \log(ex)\log(-1+ex)-e\int \frac{\log(ex)}{-1+ex}\,dx\\ &= \log(ex)\log(-1+ex)+\mathrm{Li}_2(1-ex)\end{aligned}$$

Mathematica [A]
time = 0.00, size = 20, normalized size = 1.00

$$\log(ex)\log(-1+ex)+\mathrm{Li}_2(1-ex)$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[-1 + e*x]/x,x]
```

```
[Out] Log[e*x]*Log[-1 + e*x] + PolyLog[2, 1 - e*x]
```

Maple [A]
time = 0.11, size = 17, normalized size = 0.85

method	result	size
derivativedivides	$\operatorname{dilog}(ex)+\ln(ex)\ln(ex-1)$	17
default	$\operatorname{dilog}(ex)+\ln(ex)\ln(ex-1)$	17
risch	$\operatorname{dilog}(ex)+\ln(ex)\ln(ex-1)$	17

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(e*x-1)/x,x,method=_RETURNVERBOSE)
```

```
[Out] dilog(e*x)+ln(e*x)*ln(e*x-1)
```

Maxima [A]
time = 0.30, size = 22, normalized size = 1.10

$$\log(xe-1)\log(xe)+\operatorname{Li}_2(-xe+1)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(e*x-1)/x,x, algorithm="maxima")
```

```
[Out] log(x*e - 1)*log(x*e) + dilog(-x*e + 1)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(e*x-1)/x,x, algorithm="fricas")
```

```
[Out] integral(log(x*e - 1)/x, x)
```

Sympy [C] Result contains complex when optimal does not.
time = 1.83, size = 60, normalized size = 3.00

$$\begin{cases} -\operatorname{Li}_2(ex) & \text{for}\ \frac{1}{|x|}<1 \wedge |x|<1 \\ i\pi\log(x)-\operatorname{Li}_2(ex) & \text{for}\ |x|<1 \\ -i\pi\log\left(\frac{1}{x}\right)-\operatorname{Li}_2(ex) & \text{for}\ \frac{1}{|x|}<1 \\ -i\pi G_{2,2}^{2,0}\left(\begin{matrix} & 1,1 \\ 0,0 & \end{matrix}\middle| x\right)+i\pi G_{2,2}^{0,2}\left(\begin{matrix} 1,1 & \\ & 0,0 \end{matrix}\middle| x\right)-\operatorname{Li}_2(ex) & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(e*x-1)/x,x)
```

```
[Out] Piecewise((-polylog(2, e*x), (Abs(x) < 1) & (1/Abs(x) < 1)), (I*pi*log(x) -
 polylog(2, e*x), Abs(x) < 1), (-I*pi*log(1/x) - polylog(2, e*x), 1/Abs(x)
< 1), (-I*pi*meijerg(((), (1, 1)), ((0, 0), ()), x) + I*pi*meijerg(((1, 1),
 ()), ((), (0, 0)), x) - polylog(2, e*x), True))
```

Giac [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(e*x-1)/x,x, algorithm="giac")
```

```
[Out] integrate(log(x*e - 1)/x, x)
```

Mupad [**B**]
time = 0.03, size = 16, normalized size = 0.80

$$\mathrm{Li}_2(e\,x) + \ln\left(e\,x - 1\right)\,\ln\left(e\,x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(log(e*x - 1)/x,x)
```

```
[Out] dilog(e*x) + log(e*x - 1)*log(e*x)
```

3.78 $\int \frac{\log(-2+ex)}{x} \, dx$

Optimal. Leaf size=25

$$\log\left(\frac{ex}{2}\right)\log(-2+ex)+\text{Li}_2\left(1-\frac{ex}{2}\right)$$

```
[Out] ln(1/2*e*x)*ln(e*x-2)+polylog(2,1-1/2*e*x)
```

Rubi [A]
time = 0.02, antiderivative size = 25, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}} = 0.200$, Rules used = {2441, 2352}

$$\text{PolyLog}\left(2,1-\frac{ex}{2}\right)+\log\left(\frac{ex}{2}\right)\log(ex-2)$$

Antiderivative was successfully verified.

```
[In] Int[Log[-2 + e*x]/x,x]
```

```
[Out] Log[(e*x)/2]*Log[-2 + e*x] + PolyLog[2, 1 - (e*x)/2]
```

Rule 2352

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> Simp[(-e^(-1))*PolyLo
g[2, 1 - c*x], x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2441

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d + e*x
)^n])/g), x] - Dist[b*e*(n/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{\log(-2+ex)}{x} \, dx &= \log\left(\frac{ex}{2}\right)\log(-2+ex)-e\int \frac{\log\left(\frac{ex}{2}\right)}{-2+ex} \, dx\\ &= \log\left(\frac{ex}{2}\right)\log(-2+ex)+\text{Li}_2\left(1-\frac{ex}{2}\right)\end{aligned}$$

Mathematica [A]
time = 0.00, size = 27, normalized size = 1.08

$$\log\left(\frac{ex}{2}\right)\log(-2+ex)+\text{Li}_2\left(\frac{1}{2}(2-ex)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[-2 + e*x]/x,x]
```

```
[Out] Log[(e*x)/2]*Log[-2 + e*x] + PolyLog[2, (2 - e*x)/2]
```

Maple [A]
time = 0.10, size = 19, normalized size = 0.76

method	result	size
derivativedivides	$\operatorname{dilog}\left(\frac{ex}{2}\right)+\ln\left(\frac{ex}{2}\right)\ln\left(ex-2\right)$	19
default	$\operatorname{dilog}\left(\frac{ex}{2}\right)+\ln\left(\frac{ex}{2}\right)\ln\left(ex-2\right)$	19
risch	$\operatorname{dilog}\left(\frac{ex}{2}\right)+\ln\left(\frac{ex}{2}\right)\ln\left(ex-2\right)$	19

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(e*x-2)/x,x,method=_RETURNVERBOSE)
```

```
[Out] dilog(1/2*e*x)+ln(1/2*e*x)*ln(e*x-2)
```

Maxima [A]
time = 0.28, size = 23, normalized size = 0.92

$$\log\left(xe-2\right)\log\left(\frac{1}{2}\,xe\right)+\operatorname{Li}_2\left(-\frac{1}{2}\,xe+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(e*x-2)/x,x, algorithm="maxima")
```

```
[Out] log(x*e - 2)*log(1/2*x*e) + dilog(-1/2*x*e + 1)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(e*x-2)/x,x, algorithm="fricas")
```

```
[Out] integral(log(x*e - 2)/x, x)
```

Sympy [C] Result contains complex when optimal does not.
time = 1.99, size = 102, normalized size = 4.08

$$\begin{cases} -\operatorname{Li}_2\left(\frac{ex}{2}\right) & \text{for}\ \frac{1}{|x|}<1\wedge |x|<1 \\ \log\left(2\right)\log\left(x\right)+3i\pi\log\left(x\right)-\operatorname{Li}_2\left(\frac{ex}{2}\right) & \text{for}\ |x|<1 \\ -\log\left(2\right)\log\left(\frac{1}{x}\right)-3i\pi\log\left(\frac{1}{x}\right)-\operatorname{Li}_2\left(\frac{ex}{2}\right) & \text{for}\ \frac{1}{|x|}<1 \\ -G_{2,2}^{2,0}\left(\begin{matrix} & 1,1 \\ 0,0 & \end{matrix}\middle|\,x\right)\log\left(2\right)-3i\pi G_{2,2}^{2,0}\left(\begin{matrix} & 1,1 \\ 0,0 & \end{matrix}\middle|\,x\right)+G_{2,2}^{0,2}\left(\begin{matrix} 1,1 & \\ & 0,0 \end{matrix}\middle|\,x\right)\log\left(2\right)+3i\pi G_{2,2}^{0,2}\left(\begin{matrix} 1,1 & \\ & 0,0 \end{matrix}\middle|\,x\right)-\operatorname{Li}_2\left(\frac{ex}{2}\right) & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(e*x-2)/x,x)
```

```
[Out] Piecewise((-polylog(2, e*x/2), (Abs(x) < 1) & (1/Abs(x) < 1)), (log(2)*log(
x) + 3*I*pi*log(x) - polylog(2, e*x/2), Abs(x) < 1), (-log(2)*log(1/x) - 3*
I*pi*log(1/x) - polylog(2, e*x/2), 1/Abs(x) < 1), (-meijerg(((), (1, 1)), (
(0, 0), ()), x)*log(2) - 3*I*pi*meijerg(((), (1, 1)), ((0, 0), ()), x) + me
ijerg(((1, 1), ()), ((), (0, 0)), x)*log(2) + 3*I*pi*meijerg(((1, 1), ()),
((), (0, 0)), x) - polylog(2, e*x/2), True))
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(e*x-2)/x,x, algorithm="giac")
```

```
[Out] integrate(log(x*e - 2)/x, x)
```

Mupad [B]
time = 0.03, size = 18, normalized size = 0.72

$$\mathrm{Li}_2\left(\frac{e\,x}{2}\right)+\ln\left(e\,x-2\right)\,\ln\left(\frac{e\,x}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(log(e*x - 2)/x,x)
```

```
[Out] dilog((e*x)/2) + log(e*x - 2)*log((e*x)/2)
```

3.79 $\int \frac{a+b\log(3+ex)}{x}\,dx$

Optimal. Leaf size=21

$$(a+b\log(3))\log(x)-b\text{Li}_2\left(-\frac{ex}{3}\right)$$

```
[Out] (a+b*ln(3))*ln(x)-b*polylog(2,-1/3*e*x)
```

Rubi [A]
time = 0.02, antiderivative size = 21, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}} = 0.143$, Rules used = {2439, 2438}

$$\log(x)(a+b\log(3))-b\text{PolyLog}\left(2,-\frac{ex}{3}\right)$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[3 + e*x])/x,x]
```

```
[Out] (a + b*Log[3])*Log[x] - b*PolyLog[2, -1/3*(e*x)]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2439

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/(x_), x_Symbol] :> Simp[
(a + b*Log[c*d])*Log[x], x] + Dist[b, Int[Log[1 + e*(x/d)]/x, x], x] /; Fre
eQ[{a, b, c, d, e}, x] && GtQ[c*d, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{a+b\log(3+ex)}{x}\,dx &= (a+b\log(3))\log(x)+b\int \frac{\log\left(1+\frac{ex}{3}\right)}{x}\,dx\\ &= (a+b\log(3))\log(x)-b\text{Li}_2\left(-\frac{ex}{3}\right)\end{aligned}$$

Mathematica [A]
time = 0.00, size = 22, normalized size = 1.05

$$a\log(x)+b\log(3)\log(x)-b\text{Li}_2\left(-\frac{ex}{3}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[3 + e*x])/x,x]
[Out] a*Log[x] + b*Log[3]*Log[x] - b*PolyLog[2, -1/3*(e*x)]
```

Maple [B] Leaf count of result is larger than twice the leaf count of optimal. 45 vs. $2(19) = 38$.

time = 0.18, size = 46, normalized size = 2.19

method	result	size
risch	$\ln(x)\, a - \ln\left(\frac{ex}{3}+1\right)\ln\left(-\frac{ex}{3}\right) b + \ln(ex+3)\ln\left(-\frac{ex}{3}\right) b - \operatorname{dilog}\left(\frac{ex}{3}+1\right) b$	44
derivativedivides	$a\ln(ex) + \ln(ex+3)\ln\left(-\frac{ex}{3}\right) b - \ln\left(\frac{ex}{3}+1\right)\ln\left(-\frac{ex}{3}\right) b - \operatorname{dilog}\left(\frac{ex}{3}+1\right) b$	46
default	$a\ln(ex) + \ln(ex+3)\ln\left(-\frac{ex}{3}\right) b - \ln\left(\frac{ex}{3}+1\right)\ln\left(-\frac{ex}{3}\right) b - \operatorname{dilog}\left(\frac{ex}{3}+1\right) b$	46

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(e*x+3))/x,x,method=_RETURNVERBOSE)
[Out] a*ln(e*x)+ln(e*x+3)*ln(-1/3*e*x)*b-ln(1/3*e*x+1)*ln(-1/3*e*x)*b-dilog(1/3*e
*x+1)*b
```

Maxima [A]

time = 0.32, size = 30, normalized size = 1.43

$$\left(\log(xe+3)\log\left(-\frac{1}{3}\,xe\right) + \mathrm{Li}_2\left(\frac{1}{3}\,xe+1\right)\right)b + a\log(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(e*x+3))/x,x, algorithm="maxima")
[Out] (log(x*e + 3)*log(-1/3*x*e) + dilog(1/3*x*e + 1))*b + a*log(x)
```

Fricas [F]

time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(e*x+3))/x,x, algorithm="fricas")
[Out] integral((b*log(x*e + 3) + a)/x, x)
```

Sympy [A]

time = 2.00, size = 94, normalized size = 4.48

$$a\log(x) + b\left(\begin{cases} -\mathrm{Li}_2\left(\frac{exe^{i\pi}}{3}\right) & \text{for}\ \frac{1}{|x|}<1 \wedge |x|<1 \\ \log(3)\log(x) - \mathrm{Li}_2\left(\frac{exe^{i\pi}}{3}\right) & \text{for}\ |x|<1 \\ -\log(3)\log\left(\frac{1}{x}\right) - \mathrm{Li}_2\left(\frac{exe^{i\pi}}{3}\right) & \text{for}\ \frac{1}{|x|}<1 \\ -G_{2,2}^{2,0}\left(\begin{matrix} & 1,1 \\ 0,0 & \end{matrix}\middle|\, x\right)\log(3) + G_{2,2}^{0,2}\left(\begin{matrix} 1,1 & \\ & 0,0 \end{matrix}\middle|\, x\right)\log(3) - \mathrm{Li}_2\left(\frac{exe^{i\pi}}{3}\right) & \text{otherwise} \end{cases}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(e*x+3))/x,x)
```

```
[Out] a*log(x) + b*Piecewise((-polylog(2, e*x*exp_polar(I*pi)/3), (Abs(x) < 1) &
(1/Abs(x) < 1)), (log(3)*log(x) - polylog(2, e*x*exp_polar(I*pi)/3), Abs(x)
 < 1), (-log(3)*log(1/x) - polylog(2, e*x*exp_polar(I*pi)/3), 1/Abs(x) < 1)
, (-meijerg(((), (1, 1)), ((0, 0), ()), x)*log(3) + meijerg(((1, 1), ()), (
(), (0, 0)), x)*log(3) - polylog(2, e*x*exp_polar(I*pi)/3), True))
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(e*x+3))/x,x, algorithm="giac")
```

```
[Out] integrate((b*log(x*e + 3) + a)/x, x)
```

Mupad [B]
time = 0.08, size = 25, normalized size = 1.19

$$b\,\mathrm{Li}_2\left(-\frac{e\,x}{3}\right)+a\,\ln\left(x\right)+b\,\ln\left(e\,x+3\right)\,\ln\left(-\frac{e\,x}{3}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(e*x + 3))/x,x)
```

```
[Out] b*dilog(-(e*x)/3) + a*log(x) + b*log(e*x + 3)*log(-(e*x)/3)
```

3.80 $\int \frac{a+b\log(2+ex)}{x}\,dx$

Optimal. Leaf size=21

$$(a+b\log(2))\log(x)-b\mathrm{Li}_2\left(-\frac{ex}{2}\right)$$

```
[Out] (a+b*ln(2))*ln(x)-b*polylog(2,-1/2*e*x)
```

Rubi [A]
time = 0.02, antiderivative size = 21, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}} = 0.143$, Rules used = {2439, 2438}

$$\log(x)(a+b\log(2))-b\mathrm{PolyLog}\left(2,-\frac{ex}{2}\right)$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[2 + e*x])/x,x]
```

```
[Out] (a + b*Log[2])*Log[x] - b*PolyLog[2, -1/2*(e*x)]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2439

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/(x_), x_Symbol] :> Simp[
(a + b*Log[c*d])*Log[x], x] + Dist[b, Int[Log[1 + e*(x/d)]/x, x], x] /; Fre
eQ[{a, b, c, d, e}, x] && GtQ[c*d, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{a+b\log(2+ex)}{x}\,dx &= (a+b\log(2))\log(x)+b\int \frac{\log\left(1+\frac{ex}{2}\right)}{x}\,dx\\ &= (a+b\log(2))\log(x)-b\mathrm{Li}_2\left(-\frac{ex}{2}\right)\end{aligned}$$

Mathematica [A]
time = 0.00, size = 22, normalized size = 1.05

$$a\log(x)+b\log(2)\log(x)-b\mathrm{Li}_2\left(-\frac{ex}{2}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[2 + e*x])/x,x]
[Out] a*Log[x] + b*Log[2]*Log[x] - b*PolyLog[2, -1/2*(e*x)]
```

Maple [B] Leaf count of result is larger than twice the leaf count of optimal. 45 vs. $2(19) = 38$.
time = 0.15, size = 46, normalized size = 2.19

method	result	size
risch	$\ln(x)a - \ln\left(\frac{ex}{2}+1\right)\ln\left(-\frac{ex}{2}\right)b + \ln(ex+2)\ln\left(-\frac{ex}{2}\right)b - \mathrm{dilog}\left(\frac{ex}{2}+1\right)b$	44
derivativedivides	$a\ln(ex) + \ln(ex+2)\ln\left(-\frac{ex}{2}\right)b - \ln\left(\frac{ex}{2}+1\right)\ln\left(-\frac{ex}{2}\right)b - \mathrm{dilog}\left(\frac{ex}{2}+1\right)b$	46
default	$a\ln(ex) + \ln(ex+2)\ln\left(-\frac{ex}{2}\right)b - \ln\left(\frac{ex}{2}+1\right)\ln\left(-\frac{ex}{2}\right)b - \mathrm{dilog}\left(\frac{ex}{2}+1\right)b$	46

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(e*x+2))/x,x,method=_RETURNVERBOSE)
[Out] a*ln(e*x)+ln(e*x+2)*ln(-1/2*e*x)*b-ln(1/2*e*x+1)*ln(-1/2*e*x)*b-dilog(1/2*e
*x+1)*b
```

Maxima [A]
time = 0.31, size = 30, normalized size = 1.43

$$\left(\log(xe+2)\log\left(-\frac{1}{2}xe\right) + \mathrm{Li}_2\left(\frac{1}{2}xe+1\right)\right)b + a\log(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(e*x+2))/x,x, algorithm="maxima")
[Out] (log(x*e + 2)*log(-1/2*x*e) + dilog(1/2*x*e + 1))*b + a*log(x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(e*x+2))/x,x, algorithm="fricas")
[Out] integral((b*log(x*e + 2) + a)/x, x)
```

Sympy [A]
time = 2.06, size = 94, normalized size = 4.48

$$a\log(x) + b\left(\begin{cases} -\mathrm{Li}_2\left(\frac{exe^{i\pi}}{2}\right) & \text{for } \frac{1}{|x|} < 1 \wedge |x| < 1 \\ \log(2)\log(x) - \mathrm{Li}_2\left(\frac{exe^{i\pi}}{2}\right) & \text{for } |x| < 1 \\ -\log(2)\log\left(\frac{1}{x}\right) - \mathrm{Li}_2\left(\frac{exe^{i\pi}}{2}\right) & \text{for } \frac{1}{|x|} < 1 \\ -G_{2,2}^{2,0}\left(\begin{matrix} & 1,1 \\ 0,0 & \end{matrix}\middle| x\right)\log(2) + G_{2,2}^{0,2}\left(\begin{matrix} 1,1 & \\ & 0,0 \end{matrix}\middle| x\right)\log(2) - \mathrm{Li}_2\left(\frac{exe^{i\pi}}{2}\right) & \text{otherwise} \end{cases}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(e*x+2))/x,x)
```

```
[Out] a*log(x) + b*Piecewise((-polylog(2, e*x*exp_polar(I*pi)/2), (Abs(x) < 1) &
(1/Abs(x) < 1)), (log(2)*log(x) - polylog(2, e*x*exp_polar(I*pi)/2), Abs(x)
 < 1), (-log(2)*log(1/x) - polylog(2, e*x*exp_polar(I*pi)/2), 1/Abs(x) < 1)
, (-meijerg(((), (1, 1)), ((0, 0), ()), x)*log(2) + meijerg(((1, 1), ()), (
(), (0, 0)), x)*log(2) - polylog(2, e*x*exp_polar(I*pi)/2), True))
```

Giac [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(e*x+2))/x,x, algorithm="giac")
```

```
[Out] integrate((b*log(x*e + 2) + a)/x, x)
```

Mupad [**B**]
time = 0.07, size = 25, normalized size = 1.19

$$b\,\mathrm{Li}_2\left(-\frac{e\,x}{2}\right)+a\,\ln\left(x\right)+b\,\ln\left(e\,x+2\right)\,\ln\left(-\frac{e\,x}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(e*x + 2))/x,x)
```

```
[Out] b*dilog(-(e*x)/2) + a*log(x) + b*log(e*x + 2)*log(-(e*x)/2)
```

3.81 $\int \frac{a+b\log(1+ex)}{x}\,dx$

Optimal. Leaf size=14

$$a\log(x) - b\mathrm{Li}_2(-ex)$$

[Out] a*ln(x)-b*polylog(2,-e*x)

Rubi [A]
time = 0.01, antiderivative size = 14, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}} = 0.143$, Rules used = {2439, 2438}

$$a\log(x) - b\mathrm{PolyLog}(2, -ex)$$

Antiderivative was successfully verified.

[In] Int[(a + b*Log[1 + e*x])/x,x]

[Out] a*Log[x] - b*PolyLog[2, -(e*x)]

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2439

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/(x_), x_Symbol] :> Simp[
(a + b*Log[c*d])*Log[x], x] + Dist[b, Int[Log[1 + e*(x/d)]/x, x], x] /; Fre
eQ[{a, b, c, d, e}, x] && GtQ[c*d, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{a+b\log(1+ex)}{x}\,dx &= a\log(x) + b\int \frac{\log(1+ex)}{x}\,dx\\ &= a\log(x) - b\mathrm{Li}_2(-ex)\end{aligned}$$

Mathematica [A]
time = 0.00, size = 14, normalized size = 1.00

$$a\log(x) - b\mathrm{Li}_2(-ex)$$

Antiderivative was successfully verified.

[In] Integrate[(a + b*Log[1 + e*x])/x,x]

```
[Out] a*Log[x] - b*PolyLog[2, -(e*x)]
```

Maple [A]
time = 0.18, size = 17, normalized size = 1.21

method	result	size
risch	$\ln(x)\, a - b \operatorname{dilog}(ex+1)$	15
derivativedivides	$a \ln(ex) - b \operatorname{dilog}(ex+1)$	17
default	$a \ln(ex) - b \operatorname{dilog}(ex+1)$	17

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(e*x+1))/x,x,method=_RETURNVERBOSE)
```

```
[Out] a*ln(e*x)-b*dilog(e*x+1)
```

Maxima [B] Leaf count of result is larger than twice the leaf count of optimal. 29 vs. $2(14) = 28$.
time = 0.30, size = 29, normalized size = 2.07

$$(\log(xe+1)\log(-xe) + \mathrm{Li}_2(xe+1))b + a\log(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(e*x+1))/x,x, algorithm="maxima")
```

```
[Out] (log(x*e + 1)*log(-x*e) + dilog(x*e + 1))*b + a*log(x)
```

Fricas [A]
time = 0.36, size = 14, normalized size = 1.00

$$-b\mathrm{Li}_2(-xe) + a\log(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(e*x+1))/x,x, algorithm="fricas")
```

```
[Out] -b*dilog(-x*e) + a*log(x)
```

Sympy [C] Result contains complex when optimal does not.
time = 1.95, size = 15, normalized size = 1.07

$$a\log(x) - b\,\mathrm{Li}_2\left(exe^{i\pi}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(e*x+1))/x,x)
```

```
[Out] a*log(x) - b*polylog(2, e*x*exp_polar(I*pi))
```

Giac [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(e*x+1))/x,x, algorithm="giac")
[Out] integrate((b*log(x*e + 1) + a)/x, x)
```

Mupad [**B**]
time = 0.06, size = 14, normalized size = 1.00

$$a\ln(x) - b\,\mathrm{polylog}(2, -e\,x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(e*x + 1))/x,x)
[Out] a*log(x) - b*polylog(2, -e*x)
```

3.82 $\int \frac{a+b\log(ex)}{x}\,dx$

Optimal. Leaf size=17

$$\frac{(a+b\log(ex))^2}{2b}$$

```
[Out] 1/2*(a+b*ln(e*x))^2/b
```

Rubi [A]
time = 0.01, antiderivative size = 17, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}} = 0.083$, Rules used = {2338}

$$\frac{(a+b\log(ex))^2}{2b}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[e*x])/x,x]
[Out] (a + b*Log[e*x])^2/(2*b)
```

Rule 2338

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rubi steps

$$\int \frac{a+b\log(ex)}{x}\,dx = \frac{(a+b\log(ex))^2}{2b}$$

Mathematica [A]
time = 0.00, size = 16, normalized size = 0.94

$$a\log(x)+\frac{1}{2}b\log^2(ex)$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[e*x])/x,x]
[Out] a*Log[x] + (b*Log[e*x]^2)/2
```

Maple [A]
time = 0.06, size = 17, normalized size = 1.00

method	result	size
risch	$\frac{b\ln(ex)^2}{2} + \ln(x)\,a$	15
derivativedivides	$\frac{b\ln(ex)^2}{2} + a\ln(ex)$	17
default	$\frac{b\ln(ex)^2}{2} + a\ln(ex)$	17
norman	$\frac{b\ln(ex)^2}{2} + a\ln(ex)$	17

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(e*x))/x,x,method=_RETURNVERBOSE)
```

```
[Out] 1/2*b*ln(e*x)^2+a*ln(e*x)
```

Maxima [A]
time = 0.29, size = 16, normalized size = 0.94

$$\frac{(b\log(xe) + a)^2}{2\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(e*x))/x,x, algorithm="maxima")
```

```
[Out] 1/2*(b*log(x*e) + a)^2/b
```

Fricas [A]
time = 0.36, size = 18, normalized size = 1.06

$$\frac{1}{2}\,b\log(xe)^2 + a\log(xe)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(e*x))/x,x, algorithm="fricas")
```

```
[Out] 1/2*b*log(x*e)^2 + a*log(x*e)
```

Sympy [A]
time = 0.04, size = 14, normalized size = 0.82

$$a\log(x) + \frac{b\log(ex)^2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(e*x))/x,x)
```

```
[Out] a*log(x) + b*log(e*x)**2/2
```

Giac [A]
time = 3.57, size = 14, normalized size = 0.82

$$\frac{1}{2}\,b\log\left(x\right)^{2} + \left(a + b\right)\log\left(x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(e*x))/x,x, algorithm="giac")
```

```
[Out] 1/2*b*log(x)^2 + (a + b)*log(x)
```

Mupad [B]
time = 0.15, size = 14, normalized size = 0.82

$$\frac{b\ln\left(e\,x\right)^{2}}{2} + a\,\ln\left(x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(e*x))/x,x)
```

```
[Out] a*log(x) + (b*log(e*x)^2)/2
```

3.83 $\int \frac{a+b\log(-1+ex)}{x}\,dx$

Optimal. Leaf size=26

$$\log(ex)(a+b\log(-1+ex))+b\text{Li}_2(1-ex)$$

```
[Out] ln(e*x)*(a+b*ln(e*x-1))+b*polylog(2,-e*x+1)
```

Rubi [A]
time = 0.02, antiderivative size = 26, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}} = 0.143$, Rules used = {2441, 2352}

$$b\text{PolyLog}(2,1-ex)+\log(ex)(a+b\log(ex-1))$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[-1 + e*x])/x,x]
```

```
[Out] Log[e*x]*(a + b*Log[-1 + e*x]) + b*PolyLog[2, 1 - e*x]
```

Rule 2352

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> Simp[(-e^(-1))*PolyLo
g[2, 1 - c*x], x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2441

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d + e*x
)^n])/g), x] - Dist[b*e*(n/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{a+b\log(-1+ex)}{x}\,dx &= \log(ex)(a+b\log(-1+ex))-(be)\int \frac{\log(ex)}{-1+ex}\,dx\\ &= \log(ex)(a+b\log(-1+ex))+b\text{Li}_2(1-ex)\end{aligned}$$

Mathematica [A]
time = 0.00, size = 27, normalized size = 1.04

$$a\log(x)+b\log(ex)\log(-1+ex)+b\text{Li}_2(1-ex)$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[-1 + e*x])/x,x]
[Out] a*Log[x] + b*Log[e*x]*Log[-1 + e*x] + b*PolyLog[2, 1 - e*x]
```

Maple [A]
time = 0.16, size = 26, normalized size = 1.00

method	result	size
risch	$\ln(x) a+\ln(ex) \ln(ex-1) b+\operatorname{dilog}(ex) b$	24
derivativedivides	$a \ln(ex)+\ln(ex) \ln(ex-1) b+\operatorname{dilog}(ex) b$	26
default	$a \ln(ex)+\ln(ex) \ln(ex-1) b+\operatorname{dilog}(ex) b$	26

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(e*x-1))/x,x,method=_RETURNVERBOSE)
[Out] a*ln(e*x)+ln(e*x)*ln(e*x-1)*b+dilog(e*x)*b
```

Maxima [A]
time = 0.33, size = 29, normalized size = 1.12

$$(\log(xe-1)\log(xe)+\mathrm{Li}_2(-xe+1))b+a\log(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(e*x-1))/x,x, algorithm="maxima")
[Out] (log(x*e - 1)*log(x*e) + dilog(-x*e + 1))*b + a*log(x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(e*x-1))/x,x, algorithm="fricas")
[Out] integral((b*log(x*e - 1) + a)/x, x)
```

Sympy [A]
time = 2.35, size = 66, normalized size = 2.54

$$a\log(x)+b\left(\begin{cases}-\mathrm{Li}_2(ex) & \text{for } \frac{1}{|x|}<1\wedge|x|<1\\ i\pi\log(x)-\mathrm{Li}_2(ex) & \text{for } |x|<1\\ -i\pi\log\left(\frac{1}{x}\right)-\mathrm{Li}_2(ex) & \text{for } \frac{1}{|x|}<1\\ -i\pi G_{2,2}^{2,0}\left(\begin{matrix} & 1,1\\ 0,0 & \end{matrix}\middle|x\right)+i\pi G_{2,2}^{0,2}\left(\begin{matrix}1,1 & \\ & 0,0\end{matrix}\middle|x\right)-\mathrm{Li}_2(ex) & \text{otherwise}\end{cases}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(e*x-1))/x,x)
```

```
[Out] a*log(x) + b*Piecewise((-polylog(2, e*x), (Abs(x) < 1) & (1/Abs(x) < 1)), (
I*pi*log(x) - polylog(2, e*x), Abs(x) < 1), (-I*pi*log(1/x) - polylog(2, e*
x), 1/Abs(x) < 1), (-I*pi*meijerg(((), (1, 1)), ((0, 0), ()), x) + I*pi*mei
jerg(((1, 1), ()), ((), (0, 0)), x) - polylog(2, e*x), True))
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(e*x-1))/x,x, algorithm="giac")
```

```
[Out] integrate((b*log(x*e - 1) + a)/x, x)
```

Mupad [B]
time = 0.16, size = 23, normalized size = 0.88

$$b\,\mathrm{Li}_2(e\,x)+a\,\ln\left(x\right)+b\,\ln\left(e\,x-1\right)\,\ln\left(e\,x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(e*x - 1))/x,x)
```

```
[Out] b*dilog(e*x) + a*log(x) + b*log(e*x - 1)*log(e*x)
```

3.84 $\int \frac{a+b\log(-2+ex)}{x}\,dx$

Optimal. Leaf size=31

$$\log\left(\frac{ex}{2}\right)(a+b\log(-2+ex))+b\text{Li}_2\left(1-\frac{ex}{2}\right)$$

```
[Out] ln(1/2*e*x)*(a+b*ln(e*x-2))+b*polylog(2,1-1/2*e*x)
```

Rubi [A]
time = 0.02, antiderivative size = 31, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {2441, 2352}

$$b\text{PolyLog}\left(2,1-\frac{ex}{2}\right)+\log\left(\frac{ex}{2}\right)(a+b\log(ex-2))$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[-2 + e*x])/x,x]
```

```
[Out] Log[(e*x)/2]*(a + b*Log[-2 + e*x]) + b*PolyLog[2, 1 - (e*x)/2]
```

Rule 2352

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> Simp[(-e^(-1))*PolyLo
g[2, 1 - c*x], x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2441

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d + e*x
)^n])/g), x] - Dist[b*e*(n/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{a+b\log(-2+ex)}{x}\,dx &= \log\left(\frac{ex}{2}\right)(a+b\log(-2+ex))-(be)\int \frac{\log\left(\frac{ex}{2}\right)}{-2+ex}\,dx\\ &= \log\left(\frac{ex}{2}\right)(a+b\log(-2+ex))+b\text{Li}_2\left(1-\frac{ex}{2}\right)\end{aligned}$$

Mathematica [A]
time = 0.00, size = 34, normalized size = 1.10

$$a\log(x)+b\log\left(\frac{ex}{2}\right)\log(-2+ex)+b\text{Li}_2\left(\frac{1}{2}(2-ex)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[-2 + e*x])/x,x]
```

```
[Out] a*Log[x] + b*Log[(e*x)/2]*Log[-2 + e*x] + b*PolyLog[2, (2 - e*x)/2]
```

Maple [A]
time = 0.19, size = 28, normalized size = 0.90

method	result	size
risch	$\ln(x) a+\ln(ex-2)\ln\left(\frac{ex}{2}\right) b+\operatorname{dilog}\left(\frac{ex}{2}\right) b$	26
derivativedivides	$a\ln(ex)+\ln(ex-2)\ln\left(\frac{ex}{2}\right) b+\operatorname{dilog}\left(\frac{ex}{2}\right) b$	28
default	$a\ln(ex)+\ln(ex-2)\ln\left(\frac{ex}{2}\right) b+\operatorname{dilog}\left(\frac{ex}{2}\right) b$	28

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(e*x-2))/x,x,method=_RETURNVERBOSE)
```

```
[Out] a*ln(e*x)+ln(e*x-2)*ln(1/2*e*x)*b+dilog(1/2*e*x)*b
```

Maxima [A]
time = 0.31, size = 30, normalized size = 0.97

$$\left(\log(xe-2)\log\left(\frac{1}{2}\,xe\right)+\mathrm{Li}_2\left(-\frac{1}{2}\,xe+1\right)\right)b+a\log(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(e*x-2))/x,x, algorithm="maxima")
```

```
[Out] (log(x*e - 2)*log(1/2*x*e) + dilog(-1/2*x*e + 1))*b + a*log(x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(e*x-2))/x,x, algorithm="fricas")
```

```
[Out] integral((b*log(x*e - 2) + a)/x, x)
```

Sympy [A]
time = 2.79, size = 109, normalized size = 3.52

$$a\log(x)+b\left(\begin{cases}-\mathrm{Li}_2\left(\frac{ex}{2}\right) & \text{for}\ \frac{1}{|x|}<1\wedge|x|<1\\ \log(2)\log(x)+3i\pi\log(x)-\mathrm{Li}_2\left(\frac{ex}{2}\right) & \text{for}\ |x|<1\\ -\log(2)\log\left(\frac{1}{x}\right)-3i\pi\log\left(\frac{1}{x}\right)-\mathrm{Li}_2\left(\frac{ex}{2}\right) & \text{for}\ \frac{1}{|x|}<1\\ -G_{2,2}^{2,0}\left(\begin{matrix} & 1,1\\ 0,0 & \end{matrix}\middle|x\right)\log(2)-3i\pi G_{2,2}^{2,0}\left(\begin{matrix} & 1,1\\ 0,0 & \end{matrix}\middle|x\right)+G_{2,2}^{0,2}\left(\begin{matrix}1,1 & \\ & 0,0\end{matrix}\middle|x\right)\log(2)+3i\pi G_{2,2}^{0,2}\left(\begin{matrix}1,1 & \\ & 0,0\end{matrix}\middle|x\right)-\mathrm{Li}_2\left(\frac{ex}{2}\right) & \text{otherwise}\end{cases}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(e*x-2))/x,x)
```

```
[Out] a*log(x) + b*Piecewise((-polylog(2, e*x/2), (Abs(x) < 1) & (1/Abs(x) < 1)),
 (log(2)*log(x) + 3*I*pi*log(x) - polylog(2, e*x/2), Abs(x) < 1), (-log(2)*
log(1/x) - 3*I*pi*log(1/x) - polylog(2, e*x/2), 1/Abs(x) < 1), (-meijerg(((
), (1, 1)), ((0, 0), ()), x)*log(2) - 3*I*pi*meijerg(((), (1, 1)), ((0, 0),
 ()), x) + meijerg(((1, 1), ()), ((), (0, 0)), x)*log(2) + 3*I*pi*meijerg((
(1, 1), ()), ((), (0, 0)), x) - polylog(2, e*x/2), True))
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(e*x-2))/x,x, algorithm="giac")
```

```
[Out] integrate((b*log(x*e - 2) + a)/x, x)
```

Mupad [B]
time = 0.16, size = 25, normalized size = 0.81

$$b\,\mathrm{Li_2}\left(\frac{e\,x}{2}\right)+a\,\ln\left(x\right)+b\,\ln\left(e\,x-2\right)\,\ln\left(\frac{e\,x}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(e*x - 2))/x,x)
```

```
[Out] b*dilog((e*x)/2) + a*log(x) + b*log(e*x - 2)*log((e*x)/2)
```

3.85 $\int x^2 \log^2\left(c(a+bx)^n\right)\,dx$

Optimal. Leaf size=187

$$\frac{2a^2n^2x}{b^2}-\frac{an^2(a+bx)^2}{2b^3}+\frac{2n^2(a+bx)^3}{27b^3}-\frac{a^3n^2\log^2(a+bx)}{3b^3}-\frac{2a^2n(a+bx)\log\left(c(a+bx)^n\right)}{b^3}+\frac{an(a+bx)^2\log\left(c\right.}{b^3}$$

```
[Out] 2*a^2*n^2*x/b^2-1/2*a*n^2*(b*x+a)^2/b^3+2/27*n^2*(b*x+a)^3/b^3-1/3*a^3*n^2*
ln(b*x+a)^2/b^3-2*a^2*n*(b*x+a)*ln(c*(b*x+a)^n)/b^3+a*n*(b*x+a)^2*ln(c*(b*x
+a)^n)/b^3-2/9*n*(b*x+a)^3*ln(c*(b*x+a)^n)/b^3+2/3*a^3*n*ln(b*x+a)*ln(c*(b*
x+a)^n)/b^3+1/3*x^3*ln(c*(b*x+a)^n)^2
```

Rubi [A]
time = 0.13, antiderivative size = 187, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 7, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}} = 0.438$, Rules used = {2445, 2458, 45, 2372, 12, 14, 2338}

$$\frac{2a^3n\log(a+bx)\log\left(c(a+bx)^n\right)}{3b^3}-\frac{a^3n^2\log^2(a+bx)}{3b^3}-\frac{2a^2n(a+bx)\log\left(c(a+bx)^n\right)}{b^3}+\frac{2a^2n^2x}{b^2}+\frac{an(a+bx)^2\log\left(c(a+bx)^n\right)}{b^3}-\frac{2n(a+bx)^3\log\left(c(a+bx)^n\right)}{9b^3}-\frac{an^2(a+bx)^2}{2b^3}+\frac{2n^2(a+bx)^3}{27b^3}+\frac{1}{3}x^3\log^2\left(c(a+bx)^n\right)$$

Antiderivative was successfully verified.

```
[In] Int[x^2*Log[c*(a + b*x)^n]^2,x]
```

```
[Out] (2*a^2*n^2*x)/b^2 - (a*n^2*(a + b*x)^2)/(2*b^3) + (2*n^2*(a + b*x)^3)/(27*b
^3) - (a^3*n^2*Log[a + b*x]^2)/(3*b^3) - (2*a^2*n*(a + b*x)*Log[c*(a + b*x)
^n])/b^3 + (a*n*(a + b*x)^2*Log[c*(a + b*x)^n])/b^3 - (2*n*(a + b*x)^3*Log[
c*(a + b*x)^n])/(9*b^3) + (2*a^3*n*Log[a + b*x]*Log[c*(a + b*x)^n])/(3*b^3)
 + (x^3*Log[c*(a + b*x)^n]^2)/3
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] &&  !LinearQ[u, x] &&  !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2338

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2372

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*(x_)^(m_.)*((d_) + (e_.)*(x_)^(r_
.))^(q_.), x_Symbol] :> With[{u = IntHide[x^m*(d + e*x^r)^q, x]}, Dist[a +
b*Log[c*x^n], u, x] - Dist[b*n, Int[SimplifyIntegrand[u/x, x], x], x]] /; F
reeQ[{a, b, c, d, e, n, r}, x] && IGtQ[q, 0] && IntegerQ[m] &&  !(EqQ[q, 1]
 && EqQ[m, -1])
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[(f + g*x)^(q + 1)*((a + b*Log[c*(d + e*x)^
n])^p/(g*(q + 1))), x] - Dist[b*e*n*(p/(g*(q + 1))), Int[(f + g*x)^(q + 1)*
((a + b*Log[c*(d + e*x)^n])^(p - 1)/(d + e*x)), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && GtQ[p, 0] && NeQ[q, -1] && Int
egersQ[2*p, 2*q] && ( !IGtQ[q, 0] || (EqQ[p, 2] && NeQ[q, 1]))
```

Rule 2458

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[(g*(x/e))^q*((e*h - d*i)/e + i*(x/e))^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rubi steps

$$
\begin{aligned}
\int x^2 \log^2\left(c(a+bx)^n\right) dx &= \frac{1}{3}x^3 \log^2\left(c(a+bx)^n\right) - \frac{1}{3}(2bn)\int \frac{x^3 \log\left(c(a+bx)^n\right)}{a+bx} dx \\
&= \frac{1}{3}x^3 \log^2\left(c(a+bx)^n\right) - \frac{1}{3}(2n)\text{Subst}\left(\int \frac{\left(-\frac{a}{b}+\frac{x}{b}\right)^3 \log\left(cx^n\right)}{x} dx, x, a+bx\right) \\
&= -\frac{1}{9}n\left(\frac{18a^2(a+bx)}{b^3} - \frac{9a(a+bx)^2}{b^3} + \frac{2(a+bx)^3}{b^3} - \frac{6a^3\log(a+bx)}{b^3}\right)\log\left(c(a+\right. \\
&= -\frac{1}{9}n\left(\frac{18a^2(a+bx)}{b^3} - \frac{9a(a+bx)^2}{b^3} + \frac{2(a+bx)^3}{b^3} - \frac{6a^3\log(a+bx)}{b^3}\right)\log\left(c(a+\right. \\
&= -\frac{1}{9}n\left(\frac{18a^2(a+bx)}{b^3} - \frac{9a(a+bx)^2}{b^3} + \frac{2(a+bx)^3}{b^3} - \frac{6a^3\log(a+bx)}{b^3}\right)\log\left(c(a+\right. \\
&= \frac{2a^2n^2x}{b^2} - \frac{an^2(a+bx)^2}{2b^3} + \frac{2n^2(a+bx)^3}{27b^3} - \frac{1}{9}n\left(\frac{18a^2(a+bx)}{b^3} - \frac{9a(a+bx)^2}{b^3} + \right. \\
&= \frac{2a^2n^2x}{b^2} - \frac{an^2(a+bx)^2}{2b^3} + \frac{2n^2(a+bx)^3}{27b^3} - \frac{a^3n^2\log^2(a+bx)}{3b^3} - \frac{1}{9}n\left(\frac{18a^2(a+b}{b^3}\right.
\end{aligned}
$$

Mathematica [A]
time = 0.07, size = 131, normalized size = 0.70

$$
\frac{-18a^3n^2\log^2(a+bx)+6a^3n\log(a+bx)\left(-11n+6\log\left(c(a+bx)^n\right)\right)+bx\left(n^2(66a^2-15abx+4b^2x^2)-6n(6a^2-3abx+2b^2x^2)\log\left(c(a+bx)^n\right)+18b^2x^2\log^2\left(c(a+bx)^n\right)\right)}{54b^3}
$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2*Log[c*(a + b*x)^n]^2,x]
```

```
[Out] (-18*a^3*n^2*Log[a + b*x]^2 + 6*a^3*n*Log[a + b*x]*(-11*n + 6*Log[c*(a + b*
x)^n]) + b*x*(n^2*(66*a^2 - 15*a*b*x + 4*b^2*x^2) - 6*n*(6*a^2 - 3*a*b*x +
2*b^2*x^2)*Log[c*(a + b*x)^n] + 18*b^2*x^2*Log[c*(a + b*x)^n]^2))/(54*b^3)
```

Maple [C] Result contains higher order function than in optimal. Order 9 vs. order 3.
time = 0.41, size = 1300, normalized size = 6.95

method	result	size
risch	Expression too large to display	1300

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*ln(c*(b*x+a)^n)^2,x,method=_RETURNVERBOSE)
```

```
[Out] -11/9*a^3*n^2/b^3*ln(b*x+a)-1/12*Pi^2*x^3*csgn(I*c*(b*x+a)^n)^6-2/9*n*ln(c)
*x^3+2/27*n^2*x^3-1/6*I/b*Pi*a*n*x^2*csgn(I*c*(b*x+a)^n)*csgn(I*c)*csgn(I*(
```

```
b*x+a)^n)-1/3*I/b^3*Pi*ln(b*x+a)*a^3*n*csgn(I*c*(b*x+a)^n)*csgn(I*c)*csgn(I
*(b*x+a)^n)+1/3*I/b^2*Pi*a^2*n*x*csgn(I*c*(b*x+a)^n)*csgn(I*c)*csgn(I*(b*x+
a)^n)+1/3*I*ln(c)*Pi*x^3*csgn(I*c*(b*x+a)^n)^2*csgn(I*c)-1/9*I*n*Pi*x^3*csg
n(I*c*(b*x+a)^n)^2*csgn(I*c)+1/3*I*ln(c)*Pi*x^3*csgn(I*c*(b*x+a)^n)^2*csgn(
I*(b*x+a)^n)-1/9*I*n*Pi*x^3*csgn(I*c*(b*x+a)^n)^2*csgn(I*(b*x+a)^n)+1/3*ln(
c)^2*x^3-1/6*I/b*Pi*a*n*x^2*csgn(I*c*(b*x+a)^n)^3-1/3*I/b^3*Pi*ln(b*x+a)*a^
3*n*csgn(I*c*(b*x+a)^n)^3+1/3*I/b^2*Pi*a^2*n*x*csgn(I*c*(b*x+a)^n)^3-1/3*I*
ln(c)*Pi*x^3*csgn(I*c*(b*x+a)^n)*csgn(I*c)*csgn(I*(b*x+a)^n)+1/9*I*n*Pi*x^3
*csgn(I*c*(b*x+a)^n)*csgn(I*c)*csgn(I*(b*x+a)^n)+1/9*(-3*I*Pi*b^3*x^3*csgn(
I*c*(b*x+a)^n)^3+3*I*Pi*b^3*x^3*csgn(I*c*(b*x+a)^n)^2*csgn(I*c)+3*I*Pi*b^3*
x^3*csgn(I*c*(b*x+a)^n)^2*csgn(I*(b*x+a)^n)-3*I*Pi*b^3*x^3*csgn(I*c*(b*x+a)
^n)*csgn(I*c)*csgn(I*(b*x+a)^n)+6*ln(c)*b^3*x^3-2*b^3*n*x^3+3*a*b^2*n*x^2+6
*a^3*n*ln(b*x+a)-6*b*a^2*n*x)/b^3*ln((b*x+a)^n)-5/18/b*a*n^2*x^2+1/6*Pi^2*x
^3*csgn(I*c*(b*x+a)^n)^5*csgn(I*c)+1/6*Pi^2*x^3*csgn(I*c*(b*x+a)^n)^5*csgn(
I*(b*x+a)^n)-1/12*Pi^2*x^3*csgn(I*c*(b*x+a)^n)^4*csgn(I*c)^2-1/12*Pi^2*x^3*
csgn(I*c*(b*x+a)^n)^4*csgn(I*(b*x+a)^n)^2+1/3/b*ln(c)*a*n*x^2+2/3/b^3*ln(c)
*ln(b*x+a)*a^3*n-2/3/b^2*ln(c)*a^2*n*x-1/3*I*ln(c)*Pi*x^3*csgn(I*c*(b*x+a)^
n)^3+1/9*I*n*Pi*x^3*csgn(I*c*(b*x+a)^n)^3+1/3*x^3*ln((b*x+a)^n)^2-1/3*Pi^2*
x^3*csgn(I*c*(b*x+a)^n)^4*csgn(I*c)*csgn(I*(b*x+a)^n)+1/6*Pi^2*x^3*csgn(I*c
*(b*x+a)^n)^3*csgn(I*c)^2*csgn(I*(b*x+a)^n)+1/6*Pi^2*x^3*csgn(I*c*(b*x+a)^n
)^3*csgn(I*c)*csgn(I*(b*x+a)^n)^2-1/12*Pi^2*x^3*csgn(I*c*(b*x+a)^n)^2*csgn(
I*c)^2*csgn(I*(b*x+a)^n)^2+1/6*I/b*Pi*a*n*x^2*csgn(I*c*(b*x+a)^n)^2*csgn(I*
c)+1/6*I/b*Pi*a*n*x^2*csgn(I*c*(b*x+a)^n)^2*csgn(I*(b*x+a)^n)+1/3*I/b^3*Pi*
ln(b*x+a)*a^3*n*csgn(I*c*(b*x+a)^n)^2*csgn(I*c)-1/3*I/b^2*Pi*a^2*n*x*csgn(I
*c*(b*x+a)^n)^2*csgn(I*c)+1/3*I/b^3*Pi*ln(b*x+a)*a^3*n*csgn(I*c*(b*x+a)^n)^
2*csgn(I*(b*x+a)^n)-1/3*I/b^2*Pi*a^2*n*x*csgn(I*c*(b*x+a)^n)^2*csgn(I*(b*x+
a)^n)+11/9*a^2*n^2*x/b^2-1/3*a^3*n^2*ln(b*x+a)^2/b^3
```

Maxima [A]
time = 0.29, size = 131, normalized size = 0.70

$$\frac{1}{3}\,x^{3}\log\left(\left(bx+a\right)^{n}c\right)^{2}+\frac{1}{9}\,bn\left(\frac{6\,a^{3}\log\left(bx+a\right)}{b^{4}}-\frac{2\,b^{2}x^{3}-3\,abx^{2}+6\,a^{2}x}{b^{3}}\right)\log\left(\left(bx+a\right)^{n}c\right)+\frac{\left(4\,b^{3}x^{3}-15\,ab^{2}x^{2}-18\,a^{3}\log\left(bx+a\right)^{2}+66\,a^{2}bx-66\,a^{3}\log\left(bx+a\right)\right)n^{2}}{54\,b^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*log(c*(b*x+a)^n)^2,x, algorithm="maxima")
```

```
[Out] 1/3*x^3*log((b*x + a)^n*c)^2 + 1/9*b*n*(6*a^3*log(b*x + a)/b^4 - (2*b^2*x^3
 - 3*a*b*x^2 + 6*a^2*x)/b^3)*log((b*x + a)^n*c) + 1/54*(4*b^3*x^3 - 15*a*b^
2*x^2 - 18*a^3*log(b*x + a)^2 + 66*a^2*b*x - 66*a^3*log(b*x + a))*n^2/b^3
```

Fricas [A]
time = 0.35, size = 179, normalized size = 0.96

$$\frac{4\,b^{3}n^{2}x^{3}+18\,b^{3}x^{3}\log\left(c\right)^{2}-15\,ab^{2}n^{2}x^{2}+66\,a^{2}bn^{2}x+18\,\left(b^{3}n^{2}x^{3}+a^{3}n^{2}\right)\log\left(bx+a\right)^{2}-6\,\left(2\,b^{3}n^{2}x^{3}-3\,ab^{2}n^{2}x^{2}+6\,a^{2}bn^{2}x+11\,a^{3}n^{2}-6\,\left(b^{3}nx^{3}+a^{3}n\right)\log\left(c\right)\right)\log\left(bx+a\right)-6\,\left(2\,b^{3}nx^{3}-3\,ab^{2}nx^{2}+6\,a^{2}bnx\right)\log\left(c\right)}{54\,b^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*log(c*(b*x+a)^n)^2,x, algorithm="fricas")
```

```
[Out] 1/54*(4*b^3*n^2*x^3 + 18*b^3*x^3*log(c)^2 - 15*a*b^2*n^2*x^2 + 66*a^2*b*n^2
*x + 18*(b^3*n^2*x^3 + a^3*n^2)*log(b*x + a)^2 - 6*(2*b^3*n^2*x^3 - 3*a*b^2
*n^2*x^2 + 6*a^2*b*n^2*x + 11*a^3*n^2 - 6*(b^3*n*x^3 + a^3*n)*log(c))*log(b
*x + a) - 6*(2*b^3*n*x^3 - 3*a*b^2*n*x^2 + 6*a^2*b*n*x)*log(c))/b^3
```

Sympy [A]
time = 0.92, size = 173, normalized size = 0.93

$$\begin{cases} -\frac{11a^3n\log{(c(a+bx)^n)}}{9b^3} + \frac{a^3\log{(c(a+bx)^n)}^2}{3b^3} + \frac{11a^2n^2x}{9b^2} - \frac{2a^2nx\log{(c(a+bx)^n)}}{3b^2} - \frac{5an^2x^2}{18b} + \frac{anx^2\log{(c(a+bx)^n)}}{3b} + \frac{2n^2x^3}{27} - \frac{2nx^3\log{(c(a+bx)^n)}}{9} + \frac{x^3\log{(c(a+bx)^n)}^2}{3} & \text{for}\: b \neq 0 \\ \frac{x^3\log{(a^nc)}^2}{3} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*ln(c*(b*x+a)**n)**2,x)
```

```
[Out] Piecewise((-11*a**3*n*log(c*(a + b*x)**n)/(9*b**3) + a**3*log(c*(a + b*x)**
n)**2/(3*b**3) + 11*a**2*n**2*x/(9*b**2) - 2*a**2*n*x*log(c*(a + b*x)**n)/(
3*b**2) - 5*a*n**2*x**2/(18*b) + a*n*x**2*log(c*(a + b*x)**n)/(3*b) + 2*n**
2*x**3/27 - 2*n*x**3*log(c*(a + b*x)**n)/9 + x**3*log(c*(a + b*x)**n)**2/3,
 Ne(b, 0)), (x**3*log(a**n*c)**2/3, True))
```

Giac [A]
time = 6.19, size = 342, normalized size = 1.83

$$\frac{(bx+a)^3n^2\log{(bx+a)}^2}{3b^3} - \frac{(bx+a)^2an^2\log{(bx+a)}^2}{b^3} + \frac{(bx+a)a^2n^2\log{(bx+a)}^2}{b^3} - \frac{2(bx+a)^3n^2\log{(bx+a)}}{9b^3} + \frac{(bx+a)^2an^2\log{(bx+a)}}{b^3} - \frac{2(bx+a)a^2n^2\log{(bx+a)}}{b^3} + \frac{2(bx+a)^3n\log{(bx+a)}\log{(c)}}{3b^3} - \frac{2(bx+a)^2an\log{(bx+a)}\log{(c)}}{b^3} + \frac{2(bx+a)a^2n\log{(bx+a)}\log{(c)}}{b^3} + \frac{2(bx+a)^3n^2}{27b^3} - \frac{(bx+a)^2an^2}{2b^3} + \frac{2(bx+a)a^2n^2}{b^3} - \frac{2(bx+a)^3n\log{(c)}}{9b^3} + \frac{(bx+a)^2an\log{(c)}}{b^3} - \frac{2(bx+a)a^2n\log{(c)}}{b^3} + \frac{(bx+a)^3\log{(c)}^2}{3b^3} - \frac{(bx+a)^2a\log{(c)}^2}{b^3} + \frac{(bx+a)a^2\log{(c)}^2}{b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*log(c*(b*x+a)^n)^2,x, algorithm="giac")
```

```
[Out] 1/3*(b*x + a)^3*n^2*log(b*x + a)^2/b^3 - (b*x + a)^2*a*n^2*log(b*x + a)^2/b
^3 + (b*x + a)*a^2*n^2*log(b*x + a)^2/b^3 - 2/9*(b*x + a)^3*n^2*log(b*x + a
)/b^3 + (b*x + a)^2*a*n^2*log(b*x + a)/b^3 - 2*(b*x + a)*a^2*n^2*log(b*x +
a)/b^3 + 2/3*(b*x + a)^3*n*log(b*x + a)*log(c)/b^3 - 2*(b*x + a)^2*a*n*log(
b*x + a)*log(c)/b^3 + 2*(b*x + a)*a^2*n*log(b*x + a)*log(c)/b^3 + 2/27*(b*x
 + a)^3*n^2/b^3 - 1/2*(b*x + a)^2*a*n^2/b^3 + 2*(b*x + a)*a^2*n^2/b^3 - 2/9
*(b*x + a)^3*n*log(c)/b^3 + (b*x + a)^2*a*n*log(c)/b^3 - 2*(b*x + a)*a^2*n*
log(c)/b^3 + 1/3*(b*x + a)^3*log(c)^2/b^3 - (b*x + a)^2*a*log(c)^2/b^3 + (b
*x + a)*a^2*log(c)^2/b^3
```

Mupad [B]
time = 0.24, size = 116, normalized size = 0.62

$$\frac{2\,n^2\,x^3}{27}+\ln\left(c\,{\left(a+b\,x\right)}^n\right)^2\,\left(\frac{x^3}{3}+\frac{a^3}{3\,b^3}\right)-\ln\left(c\,{\left(a+b\,x\right)}^n\right)\,\left(\frac{2\,n\,x^3}{9}-\frac{a\,n\,x^2}{3\,b}+\frac{2\,a^2\,n\,x}{3\,b^2}\right)-\frac{11\,a^3\,n^2\,\ln\left(a+b\,x\right)}{9\,b^3}-\frac{5\,a\,n^2\,x^2}{18\,b}+\frac{11\,a^2\,n^2\,x}{9\,b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*log(c*(a + b*x)^n)^2,x)
```

```
[Out] (2*n^2*x^3)/27 + log(c*(a + b*x)^n)^2*(x^3/3 + a^3/(3*b^3)) - log(c*(a + b*
x)^n)*((2*n*x^3)/9 - (a*n*x^2)/(3*b) + (2*a^2*n*x)/(3*b^2)) - (11*a^3*n^2*l
og(a + b*x))/(9*b^3) - (5*a*n^2*x^2)/(18*b) + (11*a^2*n^2*x)/(9*b^2)
```

3.86 $\int \frac{\log^2(c(a+bx)^n)}{x^4}\,dx$

Optimal. Leaf size=177

$$-\frac{b^2n^2}{3a^2x}-\frac{b^3n^2\log(x)}{a^3}+\frac{b^3n^2\log(a+bx)}{3a^3}-\frac{bn\log\left(c(a+bx)^n\right)}{3ax^2}+\frac{2b^2n(a+bx)\log\left(c(a+bx)^n\right)}{3a^3x}-\frac{\log^2\left(c(a+bx)^n\right)}{3x^3}$$

```
[Out] -1/3*b^2*n^2/a^2/x-b^3*n^2*ln(x)/a^3+1/3*b^3*n^2*ln(b*x+a)/a^3-1/3*b*n*ln(c
*(b*x+a)^n)/a/x^2+2/3*b^2*n*(b*x+a)*ln(c*(b*x+a)^n)/a^3/x-1/3*ln(c*(b*x+a)^
n)^2/x^3+2/3*b^3*n*ln(c*(b*x+a)^n)*ln(1-a/(b*x+a))/a^3-2/3*b^3*n^2*polylog(
2,a/(b*x+a))/a^3
```

Rubi [A]
time = 0.20, antiderivative size = 177, normalized size of antiderivative = 1.00, number of steps used = 11, number of rules used = 9, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}} = 0.562$, Rules used = {2445, 2458, 2389, 2379, 2438, 2351, 31, 2356, 46}

$$-\frac{2b^3n^2\text{PolyLog}\left(2,\frac{a}{a+bx}\right)}{3a^3}+\frac{2b^3n\log\left(1-\frac{a}{a+bx}\right)\log\left(c(a+bx)^n\right)}{3a^3}-\frac{b^3n^2\log(x)}{a^3}+\frac{b^3n^2\log(a+bx)}{3a^3}+\frac{2b^2n(a+bx)\log\left(c(a+bx)^n\right)}{3a^3x}-\frac{b^2n^2}{3a^2x}-\frac{\log^2\left(c(a+bx)^n\right)}{3x^3}-\frac{bn\log\left(c(a+bx)^n\right)}{3ax^2}$$

Antiderivative was successfully verified.

```
[In] Int[Log[c*(a + b*x)^n]^2/x^4,x]
```

```
[Out] -1/3*(b^2*n^2)/(a^2*x) - (b^3*n^2*Log[x])/a^3 + (b^3*n^2*Log[a + b*x])/(3*a
^3) - (b*n*Log[c*(a + b*x)^n])/(3*a*x^2) + (2*b^2*n*(a + b*x)*Log[c*(a + b*
x)^n])/(3*a^3*x) - Log[c*(a + b*x)^n]^2/(3*x^3) + (2*b^3*n*Log[c*(a + b*x)^
n]*Log[1 - a/(a + b*x)])/(3*a^3) - (2*b^3*n^2*PolyLog[2, a/(a + b*x)])/(3*a
^3)
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 46

```
Int[((a_) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[E
xpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m +
 n + 2, 0])
```

Rule 2351

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_) + (e_.)*(x_)^(r_.))^(q_), x
_Symbol] :> Simp[x*(d + e*x^r)^(q + 1)*((a + b*Log[c*x^n])/d), x] - Dist[b*
(n/d), Int[(d + e*x^r)^(q + 1), x], x] /; FreeQ[{a, b, c, d, e, n, q, r}, x
] && EqQ[r*(q + 1) + 1, 0]
```

Rule 2356

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.),
x_Symbol] :> Simp[(d + e*x)^(q + 1)*((a + b*Log[c*x^n])^p/(e*(q + 1))), x]
- Dist[b*n*(p/(e*(q + 1))), Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^(p -
1))/x, x], x] /; FreeQ[{a, b, c, d, e, n, p, q}, x] && GtQ[p, 0] && NeQ[q,
-1] && (EqQ[p, 1] || (IntegersQ[2*p, 2*q] &&  !IGtQ[q, 0]) || (EqQ[p, 2] &&
 NeQ[q, 1]))
```

Rule 2379

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((x_)*((d_) + (e_.)*(x_)^(r
_.))), x_Symbol] :> Simp[(-Log[1 + d/(e*x^r)])*((a + b*Log[c*x^n])^p/(d*r))
, x] + Dist[b*n*(p/(d*r)), Int[Log[1 + d/(e*x^r)]*((a + b*Log[c*x^n])^(p -
1)/x), x], x] /; FreeQ[{a, b, c, d, e, n, r}, x] && IGtQ[p, 0]
```

Rule 2389

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_))/
(x_), x_Symbol] :> Dist[1/d, Int[(d + e*x)^(q + 1)*((a + b*Log[c*x^n])^p/x)
, x], x] - Dist[e/d, Int[(d + e*x)^q*(a + b*Log[c*x^n])^p, x], x] /; FreeQ[
{a, b, c, d, e, n}, x] && IGtQ[p, 0] && LtQ[q, -1] && IntegerQ[2*q]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[(f + g*x)^(q + 1)*((a + b*Log[c*(d + e*x)^
n])^p/(g*(q + 1))), x] - Dist[b*e*n*(p/(g*(q + 1))), Int[(f + g*x)^(q + 1)*
((a + b*Log[c*(d + e*x)^n])^(p - 1)/(d + e*x)), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && GtQ[p, 0] && NeQ[q, -1] && Int
egersQ[2*p, 2*q] && ( !IGtQ[q, 0] || (EqQ[p, 2] && NeQ[q, 1]))
```

Rule 2458

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[(g*(x/e))^q*((e*h - d*i)/e + i*(x/e))^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rubi steps

$$
\begin{aligned}
\int \frac{\log^2\left(c(a+bx)^n\right)}{x^4}\,dx &= -\frac{\log^2\left(c(a+bx)^n\right)}{3x^3}+\frac{1}{3}(2bn)\int \frac{\log\left(c(a+bx)^n\right)}{x^3(a+bx)}\,dx \\
&= -\frac{\log^2\left(c(a+bx)^n\right)}{3x^3}+\frac{1}{3}(2n)\text{Subst}\left(\int \frac{\log\left(cx^n\right)}{x\left(-\frac{a}{b}+\frac{x}{b}\right)^3}\,dx,x,a+bx\right) \\
&= -\frac{\log^2\left(c(a+bx)^n\right)}{3x^3}+\frac{(2n)\text{Subst}\left(\int \frac{\log(cx^n)}{\left(-\frac{a}{b}+\frac{x}{b}\right)^3}\,dx,x,a+bx\right)}{3a}-\frac{(2bn)\text{Subst}\left(\int \frac{\log(c}{x(-\frac{a}{b}+}\right.}{3a} \\
&= -\frac{bn\log\left(c(a+bx)^n\right)}{3ax^2}-\frac{\log^2\left(c(a+bx)^n\right)}{3x^3}-\frac{(2bn)\text{Subst}\left(\int \frac{\log(cx^n)}{\left(-\frac{a}{b}+\frac{x}{b}\right)^2}\,dx,x,a+bx\right)}{3a^2} \\
&= -\frac{bn\log\left(c(a+bx)^n\right)}{3ax^2}+\frac{2b^2n(a+bx)\log\left(c(a+bx)^n\right)}{3a^3x}-\frac{\log^2\left(c(a+bx)^n\right)}{3x^3}+\frac{(2b^2n)}{} \\
&= -\frac{b^2n^2}{3a^2x}-\frac{b^3n^2\log(x)}{a^3}+\frac{b^3n^2\log(a+bx)}{3a^3}-\frac{bn\log\left(c(a+bx)^n\right)}{3ax^2}+\frac{2b^2n(a+bx)\log}{3a^3x} \\
&= -\frac{b^2n^2}{3a^2x}-\frac{b^3n^2\log(x)}{a^3}+\frac{b^3n^2\log(a+bx)}{3a^3}-\frac{bn\log\left(c(a+bx)^n\right)}{3ax^2}+\frac{2b^2n(a+bx)\log}{3a^3x}
\end{aligned}
$$

Mathematica [A]
time = 0.04, size = 186, normalized size = 1.05

$$
-\frac{b^2n^2}{3a^2x}-\frac{b^3n^2\log(x)}{a^3}+\frac{b^3n^2\log(a+bx)}{a^3}-\frac{bn\log\left(c(a+bx)^n\right)}{3ax^2}+\frac{2b^2n\log\left(c(a+bx)^n\right)}{3a^2x}+\frac{2b^3n\log\left(-\frac{bx}{a}\right)\log\left(c(a+bx)^n\right)}{3a^3}-\frac{b^3\log^2\left(c(a+bx)^n\right)}{3a^3}-\frac{\log^2\left(c(a+bx)^n\right)}{3x^3}+\frac{2b^3n^2\text{Li}_2\left(\frac{a+bx}{a}\right)}{3a^3}
$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[c*(a + b*x)^n]^2/x^4,x]
```

```
[Out] -1/3*(b^2*n^2)/(a^2*x) - (b^3*n^2*Log[x])/a^3 + (b^3*n^2*Log[a + b*x])/a^3
- (b*n*Log[c*(a + b*x)^n])/(3*a*x^2) + (2*b^2*n*Log[c*(a + b*x)^n])/(3*a^2*
x) + (2*b^3*n*Log[-((b*x)/a)]*Log[c*(a + b*x)^n])/(3*a^3) - (b^3*Log[c*(a +
 b*x)^n]^2)/(3*a^3) - Log[c*(a + b*x)^n]^2/(3*x^3) + (2*b^3*n^2*PolyLog[2,
(a + b*x)/a])/(3*a^3)
```

Maple [C] Result contains higher order function than in optimal. Order 9 vs. order 4.
time = 0.28, size = 1102, normalized size = 6.23

method	result	size
risch	Expression too large to display	1102

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(c*(b*x+a)^n)^2/x^4,x,method=_RETURNVERBOSE)
```

```
[Out] -1/3*I*b^2*n/a^2/x*Pi*csgn(I*c*(b*x+a)^n)*csgn(I*c)*csgn(I*(b*x+a)^n)+2/3*b
^2*n*ln((b*x+a)^n)/a^2/x-2/3*b^3*n*ln((b*x+a)^n)/a^3*ln(b*x+a)-2/3*b^3*n^2/
a^3*ln(x)*ln(1/a*(b*x+a))-1/3/x^3*ln((b*x+a)^n)^2-1/6*I*b*n/a/x^2*Pi*csgn(I
*c*(b*x+a)^n)^2*csgn(I*c)+1/3*I*b^3*n/a^3*ln(x)*Pi*csgn(I*c*(b*x+a)^n)^2*cs
gn(I*(b*x+a)^n)-1/6*I*b*n/a/x^2*Pi*csgn(I*c*(b*x+a)^n)^2*csgn(I*(b*x+a)^n)+
1/3*I*b^2*n/a^2/x*Pi*csgn(I*c*(b*x+a)^n)^2*csgn(I*c)+1/3*I*b^2*n/a^2/x*Pi*c
sgn(I*c*(b*x+a)^n)^2*csgn(I*(b*x+a)^n)-1/3*I*b^3*n/a^3*ln(b*x+a)*Pi*csgn(I*
c*(b*x+a)^n)^2*csgn(I*c)-2/3*b^3*n^2/a^3*dilog(1/a*(b*x+a))+1/3*b^3*n^2/a^3
*ln(b*x+a)^2+1/3*I*b^3*n/a^3*ln(x)*Pi*csgn(I*c*(b*x+a)^n)^2*csgn(I*c)-1/3*I
*b^3*n/a^3*ln(b*x+a)*Pi*csgn(I*c*(b*x+a)^n)^2*csgn(I*(b*x+a)^n)-1/3*I/x^3*l
n((b*x+a)^n)*Pi*csgn(I*c*(b*x+a)^n)^2*csgn(I*c)+1/3*I*b^3*n/a^3*ln(b*x+a)*P
i*csgn(I*c*(b*x+a)^n)*csgn(I*c)*csgn(I*(b*x+a)^n)-2/3/x^3*ln((b*x+a)^n)*ln(
c)-1/3*b*n/a/x^2*ln(c)+1/6*I*b*n/a/x^2*Pi*csgn(I*c*(b*x+a)^n)^3+1/3*I*b^3*n
/a^3*ln(b*x+a)*Pi*csgn(I*c*(b*x+a)^n)^3+1/6*I*b*n/a/x^2*Pi*csgn(I*c*(b*x+a)
^n)*csgn(I*c)*csgn(I*(b*x+a)^n)-1/3*b*n*ln((b*x+a)^n)/a/x^2+2/3*b^3*n*ln((b
*x+a)^n)/a^3*ln(x)+1/3*I/x^3*ln((b*x+a)^n)*Pi*csgn(I*c*(b*x+a)^n)^3-1/3*I*b
^2*n/a^2/x*Pi*csgn(I*c*(b*x+a)^n)^3+2/3*b^2*n/a^2/x*ln(c)+2/3*b^3*n/a^3*ln(
x)*ln(c)-2/3*b^3*n/a^3*ln(b*x+a)*ln(c)+1/3*I/x^3*ln((b*x+a)^n)*Pi*csgn(I*c*
(b*x+a)^n)*csgn(I*c)*csgn(I*(b*x+a)^n)-1/3*I*b^3*n/a^3*ln(x)*Pi*csgn(I*c*(b
*x+a)^n)^3-1/12*(-I*Pi*csgn(I*c*(b*x+a)^n)^3+I*Pi*csgn(I*c*(b*x+a)^n)^2*csg
n(I*c)+I*Pi*csgn(I*c*(b*x+a)^n)^2*csgn(I*(b*x+a)^n)-I*Pi*csgn(I*c*(b*x+a)^n
)*csgn(I*c)*csgn(I*(b*x+a)^n)+2*ln(c))^2/x^3-1/3*I/x^3*ln((b*x+a)^n)*Pi*csg
n(I*c*(b*x+a)^n)^2*csgn(I*(b*x+a)^n)-1/3*I*b^3*n/a^3*ln(x)*Pi*csgn(I*c*(b*x
+a)^n)*csgn(I*c)*csgn(I*(b*x+a)^n)-1/3*b^2*n^2/a^2/x-b^3*n^2*ln(x)/a^3+b^3*
n^2*ln(b*x+a)/a^3
```

Maxima [A]
time = 0.27, size = 150, normalized size = 0.85

$$-\frac{1}{3}\,b^{2}n^{2}\left(\frac{2\,\left(\log\left(\frac{bx}{a}+1\right)\log\left(x\right)+\mathrm{Li}_{2}\left(-\frac{bx}{a}\right)\right)b}{a^{3}}-\frac{3\,b\log\left(bx+a\right)}{a^{3}}-\frac{bx\log\left(bx+a\right)^{2}-3\,bx\log\left(x\right)-a}{a^{3}x}\right)-\frac{1}{3}\,bn\left(\frac{2\,b^{2}\log\left(bx+a\right)}{a^{3}}-\frac{2\,b^{2}\log\left(x\right)}{a^{3}}-\frac{2\,bx-a}{a^{2}x^{2}}\right)\log\left(\left(bx+a\right)^{n}c\right)-\frac{\log\left(\left(bx+a\right)^{n}c\right)^{2}}{3\,x^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(b*x+a)^n)^2/x^4,x, algorithm="maxima")
```

```
[Out] -1/3*b^2*n^2*(2*(log(b*x/a + 1)*log(x) + dilog(-b*x/a))*b/a^3 - 3*b*log(b*x
 + a)/a^3 - (b*x*log(b*x + a)^2 - 3*b*x*log(x) - a)/(a^3*x)) - 1/3*b*n*(2*b
^2*log(b*x + a)/a^3 - 2*b^2*log(x)/a^3 - (2*b*x - a)/(a^2*x^2))*log((b*x +
a)^n*c) - 1/3*log((b*x + a)^n*c)^2/x^3
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(b*x+a)^n)^2/x^4,x, algorithm="fricas")
```

```
[Out] integral(log((b*x + a)^n*c)^2/x^4, x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\log\left(c(a+bx)^n\right)^2}{x^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(c*(b*x+a)**n)**2/x**4,x)
```

```
[Out] Integral(log(c*(a + b*x)**n)**2/x**4, x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(b*x+a)^n)^2/x^4,x, algorithm="giac")
```

```
[Out] integrate(log((b*x + a)^n*c)^2/x^4, x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\ln\left(c\,{\left(a+b\,x\right)}^n\right)^2}{x^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(log(c*(a + b*x)^n)^2/x^4,x)
```

```
[Out] int(log(c*(a + b*x)^n)^2/x^4, x)
```

3.87 $\int x^2 \log^3 \left(c(a+bx)^n\right) \, dx$

Optimal. Leaf size=285

$$-\frac{6a^2n^3x}{b^2}+\frac{3an^3(a+bx)^2}{4b^3}-\frac{2n^3(a+bx)^3}{27b^3}+\frac{6a^2n^2(a+bx)\log\left(c(a+bx)^n\right)}{b^3}-\frac{3an^2(a+bx)^2\log\left(c(a+bx)^n\right)}{2b^3}+$$

```
[Out] -6*a^2*n^3*x/b^2+3/4*a*n^3*(b*x+a)^2/b^3-2/27*n^3*(b*x+a)^3/b^3+6*a^2*n^2*(
b*x+a)*ln(c*(b*x+a)^n)/b^3-3/2*a*n^2*(b*x+a)^2*ln(c*(b*x+a)^n)/b^3+2/9*n^2*
(b*x+a)^3*ln(c*(b*x+a)^n)/b^3-3*a^2*n*(b*x+a)*ln(c*(b*x+a)^n)^2/b^3+3/2*a*n
*(b*x+a)^2*ln(c*(b*x+a)^n)^2/b^3-1/3*n*(b*x+a)^3*ln(c*(b*x+a)^n)^2/b^3+a^2*
(b*x+a)*ln(c*(b*x+a)^n)^3/b^3-a*(b*x+a)^2*ln(c*(b*x+a)^n)^3/b^3+1/3*(b*x+a)
^3*ln(c*(b*x+a)^n)^3/b^3
```

Rubi [A]
time = 0.15, antiderivative size = 285, normalized size of antiderivative = 1.00, number of steps used = 14, number of rules used = 7, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}} = 0.438$, Rules used = {2448, 2436, 2333, 2332, 2437, 2342, 2341}

$$\frac{6a^2n^2(a+bx)\log\left(c(a+bx)^n\right)}{b^3}+\frac{a^2(a+bx)\log^3\left(c(a+bx)^n\right)}{b^3}-\frac{3a^2n(a+bx)\log^2\left(c(a+bx)^n\right)}{b^3}-\frac{6a^2n^3x}{b^2}+\frac{2n^2(a+bx)^3\log\left(c(a+bx)^n\right)}{9b^3}-\frac{3an^2(a+bx)^2\log\left(c(a+bx)^n\right)}{2b^3}+\frac{(a+bx)^3\log^3\left(c(a+bx)^n\right)}{3b^3}-\frac{a(a+bx)^2\log^3\left(c(a+bx)^n\right)}{b^3}-\frac{n(a+bx)^3\log^2\left(c(a+bx)^n\right)}{3b^3}+\frac{3an(a+bx)^2\log^2\left(c(a+bx)^n\right)}{2b^3}-\frac{2n^3(a+bx)^3}{27b^3}+\frac{3an^3(a+bx)^2}{4b^3}$$

Antiderivative was successfully verified.

```
[In] Int[x^2*Log[c*(a + b*x)^n]^3,x]
```

```
[Out] (-6*a^2*n^3*x)/b^2 + (3*a*n^3*(a + b*x)^2)/(4*b^3) - (2*n^3*(a + b*x)^3)/(2
7*b^3) + (6*a^2*n^2*(a + b*x)*Log[c*(a + b*x)^n])/b^3 - (3*a*n^2*(a + b*x)^
2*Log[c*(a + b*x)^n])/(2*b^3) + (2*n^2*(a + b*x)^3*Log[c*(a + b*x)^n])/(9*b
^3) - (3*a^2*n*(a + b*x)*Log[c*(a + b*x)^n]^2)/b^3 + (3*a*n*(a + b*x)^2*Log
[c*(a + b*x)^n]^2)/(2*b^3) - (n*(a + b*x)^3*Log[c*(a + b*x)^n]^2)/(3*b^3) +
 (a^2*(a + b*x)*Log[c*(a + b*x)^n]^3)/b^3 - (a*(a + b*x)^2*Log[c*(a + b*x)^
n]^3)/b^3 + ((a + b*x)^3*Log[c*(a + b*x)^n]^3)/(3*b^3)
```

Rule 2332

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2333

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2341

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_.)*(x_))^(m_.), x_Symbol] :>
Simp[(d*x)^(m + 1)*((a + b*Log[c*x^n])/(d*(m + 1))), x] - Simp[b*n*((d*x)^(
```

```
m + 1)/(d*(m + 1)^2)), x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[m, -1]
```

Rule 2342

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_.)*(x_))^(m_.), x_Symbo
l] :> Simp[(d*x)^(m + 1)*((a + b*Log[c*x^n])^p/(d*(m + 1))), x] - Dist[b*n*
(p/(m + 1)), Int[(d*x)^m*(a + b*Log[c*x^n])^(p - 1), x], x] /; FreeQ[{a, b,
 c, d, m, n}, x] && NeQ[m, -1] && GtQ[p, 0]
```

Rule 2436

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2437

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[(f*(x/d))^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2448

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q*(a + b*Log[c*(d
 + e*x)^n])^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f -
 d*g, 0] && IGtQ[q, 0]
```

Rubi steps

$$
\begin{aligned}
\int x^2 \log^3\left(c(a+bx)^n\right)\,dx &= \int \left(\frac{a^2\log^3\left(c(a+bx)^n\right)}{b^2} - \frac{2a(a+bx)\log^3\left(c(a+bx)^n\right)}{b^2} + \frac{(a+bx)^2\log^3\left(c(a+\right.}{b^2}\right.\\
&= \frac{\int (a+bx)^2\log^3\left(c(a+bx)^n\right)\,dx}{b^2} - \frac{(2a)\int (a+bx)\log^3\left(c(a+bx)^n\right)\,dx}{b^2} + \frac{a^2\int \log}{}\\
&= \frac{\mathrm{Subst}\left(\int x^2\log^3\left(cx^n\right)\,dx, x, a+bx\right)}{b^3} - \frac{(2a)\mathrm{Subst}\left(\int x\log^3\left(cx^n\right)\,dx, x, a+bx\right)}{b^3}\\
&= \frac{a^2(a+bx)\log^3\left(c(a+bx)^n\right)}{b^3} - \frac{a(a+bx)^2\log^3\left(c(a+bx)^n\right)}{b^3} + \frac{(a+bx)^3\log^3\left(c(a\right.}{3b^3}\\
&= -\frac{3a^2n(a+bx)\log^2\left(c(a+bx)^n\right)}{b^3} + \frac{3an(a+bx)^2\log^2\left(c(a+bx)^n\right)}{2b^3} - \frac{n(a+bx)^3}{}\\
&= -\frac{6a^2n^3x}{b^2} + \frac{3an^3(a+bx)^2}{4b^3} - \frac{2n^3(a+bx)^3}{27b^3} + \frac{6a^2n^2(a+bx)\log\left(c(a+bx)^n\right)}{b^3} -
\end{aligned}
$$

Mathematica [A]
time = 0.10, size = 216, normalized size = 0.76

$$\frac{36a^3n^3\log^3(a+bx)+18a^3n^2\log^2(a+bx)\left(11n-6\log\left(c(a+bx)^n\right)\right)+6a^3n\log(a+bx)\left(85n^2-66n\log\left(c(a+bx)^n\right)+18\log^2\left(c(a+bx)^n\right)\right)+bx\left(n^3(-510a^2+57abx-8b^2x^2)+6n^2(66a^2-15abx+4b^2x^2)\log\left(c(a+bx)^n\right)-18n(6a^2-3abx+2b^2x^2)\log^2\left(c(a+bx)^n\right)+36b^2x^2\log^3\left(c(a+bx)^n\right)\right)}{108b^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2*Log[c*(a + b*x)^n]^3,x]
```

```
[Out] (36*a^3*n^3*Log[a + b*x]^3 + 18*a^3*n^2*Log[a + b*x]^2*(11*n - 6*Log[c*(a +
 b*x)^n]) + 6*a^3*n*Log[a + b*x]*(85*n^2 - 66*n*Log[c*(a + b*x)^n] + 18*Log
[c*(a + b*x)^n]^2) + b*x*(n^3*(-510*a^2 + 57*a*b*x - 8*b^2*x^2) + 6*n^2*(66
*a^2 - 15*a*b*x + 4*b^2*x^2)*Log[c*(a + b*x)^n] - 18*n*(6*a^2 - 3*a*b*x + 2
*b^2*x^2)*Log[c*(a + b*x)^n]^2 + 36*b^2*x^2*Log[c*(a + b*x)^n]^3))/(108*b^3
)
```

Maple [C] Result contains higher order function than in optimal. Order 9 vs. order 3.
time = 0.91, size = 5345, normalized size = 18.75

method	result	size
risch	Expression too large to display	5345

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*ln(c*(b*x+a)^n)^3,x,method=_RETURNVERBOSE)
```

```
[Out] result too large to display
```

Maxima [A]
time = 0.28, size = 215, normalized size = 0.75

$$\frac{1}{3}x^3\log\left((bx+a)^nc\right)^3+\frac{1}{6}bn\left(\frac{6a^3\log(bx+a)}{b^4}-\frac{2b^2x^3-3abx^2+6a^2x}{b^3}\right)\log\left((bx+a)^nc\right)^2-\frac{1}{108}bn\left(\frac{\left(8b^3x^3-36a^3\log(bx+a)^3-57ab^2x^2-198a^3\log(bx+a)^2+510a^2bx-510a^3\log(bx+a)\right)n^2}{b^4}-\frac{6\left(4b^3x^3-15ab^2x^2-18a^3\log(bx+a)^2+66a^2bx-66a^3\log(bx+a)\right)n\log\left((bx+a)^nc\right)}{b^4}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*log(c*(b*x+a)^n)^3,x, algorithm="maxima")
```

```
[Out] 1/3*x^3*log((b*x + a)^n*c)^3 + 1/6*b*n*(6*a^3*log(b*x + a)/b^4 - (2*b^2*x^3
 - 3*a*b*x^2 + 6*a^2*x)/b^3)*log((b*x + a)^n*c)^2 - 1/108*b*n*((8*b^3*x^3 -
 36*a^3*log(b*x + a)^3 - 57*a*b^2*x^2 - 198*a^3*log(b*x + a)^2 + 510*a^2*b*
x - 510*a^3*log(b*x + a))*n^2/b^4 - 6*(4*b^3*x^3 - 15*a*b^2*x^2 - 18*a^3*lo
g(b*x + a)^2 + 66*a^2*b*x - 66*a^3*log(b*x + a))*n*log((b*x + a)^n*c)/b^4)
```

Fricas [A]
time = 0.36, size = 341, normalized size = 1.20

$$-\frac{8\,b^3n^3x^3-36\,b^3x^3\log(c)^3-57\,ab^2n^3x^2+510\,a^2bn^3x-36\,(b^3n^3x^3+a^3n^3)\log(bx+a)^3+18\,(2\,b^3n^3x^3-3\,ab^2n^3x^2+6\,a^2bn^3x+11\,a^3n^3-6\,(b^3n^2x^3+a^3n^2)\log(c))\log(bx+a)^2+18\,(2\,b^3nx^3-3\,ab^2nx^2+6\,a^2bnx)\log(c)^2-6\,(4\,b^3n^3x^3-15\,ab^2n^3x^2+66\,a^2bn^3x+85\,a^3n^3+18\,(b^3nx^3+a^3n)\log(c)^2-6\,(2\,b^3n^2x^3-3\,ab^2n^2x^2+6\,a^2bn^2x+11\,a^3n^2)\log(c))\log(bx+a)-6\,(4\,b^3n^2x^3-15\,ab^2n^2x^2+66\,a^2bn^2x)\log(c)}{108\,b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*log(c*(b*x+a)^n)^3,x, algorithm="fricas")
```

```
[Out] -1/108*(8*b^3*n^3*x^3 - 36*b^3*x^3*log(c)^3 - 57*a*b^2*n^3*x^2 + 510*a^2*b*
n^3*x - 36*(b^3*n^3*x^3 + a^3*n^3)*log(b*x + a)^3 + 18*(2*b^3*n^3*x^3 - 3*a
*b^2*n^3*x^2 + 6*a^2*b*n^3*x + 11*a^3*n^3 - 6*(b^3*n^2*x^3 + a^3*n^2)*log(c
))*log(b*x + a)^2 + 18*(2*b^3*n*x^3 - 3*a*b^2*n*x^2 + 6*a^2*b*n*x)*log(c)^2
 - 6*(4*b^3*n^3*x^3 - 15*a*b^2*n^3*x^2 + 66*a^2*b*n^3*x + 85*a^3*n^3 + 18*(
b^3*n*x^3 + a^3*n)*log(c)^2 - 6*(2*b^3*n^2*x^3 - 3*a*b^2*n^2*x^2 + 6*a^2*b*
n^2*x + 11*a^3*n^2)*log(c))*log(b*x + a) - 6*(4*b^3*n^2*x^3 - 15*a*b^2*n^2*
x^2 + 66*a^2*b*n^2*x)*log(c))/b^3
```

Sympy [A]
time = 1.57, size = 269, normalized size = 0.94

$$\begin{cases} \frac{85a^3n^2\log(c(a+bx)^n)}{18b^3} - \frac{11a^3n\log(c(a+bx)^n)^2}{6b^3} + \frac{a^3\log(c(a+bx)^n)^3}{3b^3} - \frac{85a^2n^3x}{18b^2} + \frac{11a^2n^2x\log(c(a+bx)^n)}{3b^2} - \frac{a^2nx\log(c(a+bx)^n)^2}{b^2} + \frac{19an^3x^2}{36b} - \frac{5an^2x^2\log(c(a+bx)^n)}{6b} + \frac{anx^2\log(c(a+bx)^n)^2}{2b} - \frac{2n^3x^3}{27} + \frac{2n^2x^3\log(c(a+bx)^n)}{9} - \frac{nx^3\log(c(a+bx)^n)^2}{3} + \frac{x^3\log(c(a+bx)^n)^3}{3} & \text{for } b \neq 0 \\ \frac{x^3\log(a^nc)^3}{3} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*ln(c*(b*x+a)**n)**3,x)
```

```
[Out] Piecewise((85*a**3*n**2*log(c*(a + b*x)**n)/(18*b**3) - 11*a**3*n*log(c*(a
+ b*x)**n)**2/(6*b**3) + a**3*log(c*(a + b*x)**n)**3/(3*b**3) - 85*a**2*n**
3*x/(18*b**2) + 11*a**2*n**2*x*log(c*(a + b*x)**n)/(3*b**2) - a**2*n*x*log(
c*(a + b*x)**n)**2/b**2 + 19*a*n**3*x**2/(36*b) - 5*a*n**2*x**2*log(c*(a +
b*x)**n)/(6*b) + a*n*x**2*log(c*(a + b*x)**n)**2/(2*b) - 2*n**3*x**3/27 + 2
*n**2*x**3*log(c*(a + b*x)**n)/9 - n*x**3*log(c*(a + b*x)**n)**2/3 + x**3*l
og(c*(a + b*x)**n)**3/3, Ne(b, 0)), (x**3*log(a**n*c)**3/3, True))
```

Giac [B] Leaf count of result is larger than twice the leaf count of optimal. 626 vs. 2(271) = 542.
time = 3.05, size = 626, normalized size = 2.20

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*log(c*(b*x+a)^n)^3,x, algorithm="giac")
```

```
[Out] 1/3*(b*x + a)^3*n^3*log(b*x + a)^3/b^3 - (b*x + a)^2*a*n^3*log(b*x + a)^3/b
^3 + (b*x + a)*a^2*n^3*log(b*x + a)^3/b^3 - 1/3*(b*x + a)^3*n^3*log(b*x + a
)^2/b^3 + 3/2*(b*x + a)^2*a*n^3*log(b*x + a)^2/b^3 - 3*(b*x + a)*a^2*n^3*lo
g(b*x + a)^2/b^3 + (b*x + a)^3*n^2*log(b*x + a)^2*log(c)/b^3 - 3*(b*x + a)^
2*a*n^2*log(b*x + a)^2*log(c)/b^3 + 3*(b*x + a)*a^2*n^2*log(b*x + a)^2*log(
c)/b^3 + 2/9*(b*x + a)^3*n^3*log(b*x + a)/b^3 - 3/2*(b*x + a)^2*a*n^3*log(b
*x + a)/b^3 + 6*(b*x + a)*a^2*n^3*log(b*x + a)/b^3 - 2/3*(b*x + a)^3*n^2*lo
g(b*x + a)*log(c)/b^3 + 3*(b*x + a)^2*a*n^2*log(b*x + a)*log(c)/b^3 - 6*(b*
x + a)*a^2*n^2*log(b*x + a)*log(c)/b^3 + (b*x + a)^3*n*log(b*x + a)*log(c)^
2/b^3 - 3*(b*x + a)^2*a*n*log(b*x + a)*log(c)^2/b^3 + 3*(b*x + a)*a^2*n*log
```

```
(b*x + a)*log(c)^2/b^3 - 2/27*(b*x + a)^3*n^3/b^3 + 3/4*(b*x + a)^2*a*n^3/b
^3 - 6*(b*x + a)*a^2*n^3/b^3 + 2/9*(b*x + a)^3*n^2*log(c)/b^3 - 3/2*(b*x +
a)^2*a*n^2*log(c)/b^3 + 6*(b*x + a)*a^2*n^2*log(c)/b^3 - 1/3*(b*x + a)^3*n*
log(c)^2/b^3 + 3/2*(b*x + a)^2*a*n*log(c)^2/b^3 - 3*(b*x + a)*a^2*n*log(c)^
2/b^3 + 1/3*(b*x + a)^3*log(c)^3/b^3 - (b*x + a)^2*a*log(c)^3/b^3 + (b*x +
a)*a^2*log(c)^3/b^3
```

Mupad [B]
time = 0.26, size = 172, normalized size = 0.60

$$\ln\left(c\,(a+b\,x)^n\right)^3\,\left(\frac{x^3}{3}+\frac{a^3}{3\,b^3}\right)-\frac{2\,n^3\,x^3}{27}-\ln\left(c\,(a+b\,x)^n\right)^2\,\left(\frac{n\,x^3}{3}+\frac{11\,a^3\,n}{6\,b^3}-\frac{a\,n\,x^2}{2\,b}+\frac{a^2\,n\,x}{b^2}\right)+\frac{\ln\left(c\,(a+b\,x)^n\right)\,\left(\frac{2\,b\,n^2\,x^3}{3}-\frac{5\,a\,n^2\,x^2}{2}+\frac{11\,a^2\,n^2\,x}{b}\right)}{3\,b}+\frac{85\,a^3\,n^3\,\ln\left(a+b\,x\right)}{18\,b^3}+\frac{19\,a\,n^3\,x^2}{36\,b}-\frac{85\,a^2\,n^3\,x}{18\,b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*log(c*(a + b*x)^n)^3,x)
```

```
[Out] log(c*(a + b*x)^n)^3*(x^3/3 + a^3/(3*b^3)) - (2*n^3*x^3)/27 - log(c*(a + b*
x)^n)^2*((n*x^3)/3 + (11*a^3*n)/(6*b^3) - (a*n*x^2)/(2*b) + (a^2*n*x)/b^2)
+ (log(c*(a + b*x)^n)*((2*b*n^2*x^3)/3 - (5*a*n^2*x^2)/2 + (11*a^2*n^2*x)/b
))/(3*b) + (85*a^3*n^3*log(a + b*x))/(18*b^3) + (19*a*n^3*x^2)/(36*b) - (85
*a^2*n^3*x)/(18*b^2)
```

3.88 $\int \frac{(f+gx)^3}{a+b\log(c(d+ex)^n)}\,dx$

Optimal. Leaf size=299

$$\frac{e^{-\frac{a}{bn}}(ef-dg)^3(d+ex)\left(c(d+ex)^n\right)^{-1/n}\mathrm{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{be^4n}+\frac{3e^{-\frac{2a}{bn}}g(ef-dg)^2(d+ex)^2\left(c(d+ex)^n\right)^{-2/n}\mathrm{E}}{be^4n}$$

```
[Out] (-d*g+e*f)^3*(e*x+d)*Ei((a+b*ln(c*(e*x+d)^n))/b/n)/b/e^4/exp(a/b/n)/n/((c*(
e*x+d)^n)^(1/n))+3*g*(-d*g+e*f)^2*(e*x+d)^2*Ei(2*(a+b*ln(c*(e*x+d)^n))/b/n)
/b/e^4/exp(2*a/b/n)/n/((c*(e*x+d)^n)^(2/n))+3*g^2*(-d*g+e*f)*(e*x+d)^3*Ei(3
*(a+b*ln(c*(e*x+d)^n))/b/n)/b/e^4/exp(3*a/b/n)/n/((c*(e*x+d)^n)^(3/n))+g^3*
(e*x+d)^4*Ei(4*(a+b*ln(c*(e*x+d)^n))/b/n)/b/e^4/exp(4*a/b/n)/n/((c*(e*x+d)^
n)^(4/n))
```

Rubi [A]

time = 0.33, antiderivative size = 299, normalized size of antiderivative = 1.00, number of steps used = 14, number of rules used = 6, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.250$, Rules used = {2446, 2436, 2337, 2209, 2437, 2347}

$$\frac{3g^2e^{-\frac{3a}{bn}}(d+ex)^3(ef-dg)\left(c(d+ex)^n\right)^{-3/n}\mathrm{Ei}\left(\frac{3(a+b\log(c(d+ex)^n))}{bn}\right)}{be^4n}+\frac{3ge^{-\frac{2a}{bn}}(d+ex)^2(ef-dg)^2\left(c(d+ex)^n\right)^{-2/n}\mathrm{Ei}\left(\frac{2(a+b\log(c(d+ex)^n))}{bn}\right)}{be^4n}+\frac{e^{-\frac{a}{bn}}(d+ex)(ef-dg)^3\left(c(d+ex)^n\right)^{-1/n}\mathrm{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{be^4n}+\frac{g^3e^{-\frac{4a}{bn}}(d+ex)^4\left(c(d+ex)^n\right)^{-4/n}\mathrm{Ei}\left(\frac{4(a+b\log(c(d+ex)^n))}{bn}\right)}{be^4n}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)^3/(a + b*Log[c*(d + e*x)^n]),x]
```

```
[Out] ((e*f - d*g)^3*(d + e*x)*ExpIntegralEi[(a + b*Log[c*(d + e*x)^n])/(b*n)])/(
b*e^4*E^(a/(b*n))*n*(c*(d + e*x)^n)^n^(-1)) + (3*g*(e*f - d*g)^2*(d + e*x)^
2*ExpIntegralEi[(2*(a + b*Log[c*(d + e*x)^n]))/(b*n)])/(b*e^4*E^((2*a)/(b*n
))*n*(c*(d + e*x)^n)^(2/n)) + (3*g^2*(e*f - d*g)*(d + e*x)^3*ExpIntegralEi[
(3*(a + b*Log[c*(d + e*x)^n]))/(b*n)])/(b*e^4*E^((3*a)/(b*n))*n*(c*(d + e*x
)^n)^(3/n)) + (g^3*(d + e*x)^4*ExpIntegralEi[(4*(a + b*Log[c*(d + e*x)^n]))
/(b*n)])/(b*e^4*E^((4*a)/(b*n))*n*(c*(d + e*x)^n)^(4/n))
```

Rule 2209

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/((c_.) + (d_.)*(x_)), x_Symbol] :> Si
mp[(F^(g*(e - c*(f/d)))/d)*ExpIntegralEi[f*g*(c + d*x)*(Log[F]/d)], x] /; F
reeQ[{F, c, d, e, f, g}, x] &&  !TrueQ[$UseGamma]
```

Rule 2337

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2347

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_)*((d_.)*(x_))^(m_.), x_Symbol
] :> Dist[(d*x)^(m + 1)/(d*n*(c*x^n)^((m + 1)/n)), Subst[Int[E^(((m + 1)/n)
*x)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b, c, d, m, n, p}, x]
```

Rule 2436

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2437

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[(f*(x/d))^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2446

```
Int[((f_.) + (g_.)*(x_))^(q_.)/((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)
]*(b_.)), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q/(a + b*Log[c*(d + e*
x)^n]), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0] &
& IGtQ[q, 0]
```

Rubi steps

$$\int \frac{(f+gx)^3}{a+b\log\left(c(d+ex)^n\right)}\,dx = \int \left(\frac{(ef-dg)^3}{e^3\left(a+b\log\left(c(d+ex)^n\right)\right)}+\frac{3g(ef-dg)^2(d+ex)}{e^3\left(a+b\log\left(c(d+ex)^n\right)\right)}+\frac{3g^2(ef-dg\cdots}{e^3\left(a+b\log\left(\cdots\right.\right.}\right.$$

$$=\frac{g^3\int\frac{(d+ex)^3}{a+b\log(c(d+ex)^n)}\,dx}{e^3}+\frac{\left(3g^2(ef-dg)\right)\int\frac{(d+ex)^2}{a+b\log(c(d+ex)^n)}\,dx}{e^3}+\frac{(3g(ef-dg)\cdots}{\cdots}$$

$$=\frac{g^3\text{Subst}\left(\int\frac{x^3}{a+b\log(cx^n)}\,dx,x,d+ex\right)}{e^4}+\frac{\left(3g^2(ef-dg)\right)\text{Subst}\left(\int\frac{x^2}{a+b\log(cx^n)}\,dx\cdots\right.}{e^4}$$

$$=\frac{\left(g^3(d+ex)^4\left(c(d+ex)^n\right)^{-4/n}\right)\text{Subst}\left(\int\frac{e^{\frac{4x}{n}}}{a+bx}\,dx,x,\log\left(c(d+ex)^n\right)\right)}{e^4n}+\frac{\left(3g\cdots\right.}{\cdots}$$

$$=\frac{e^{-\frac{a}{bn}}(ef-dg)^3(d+ex)\left(c(d+ex)^n\right)^{-1/n}\text{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{be^4n}+\frac{3e^{-\frac{2a}{bn}}g(ef-\cdots}{\cdots}$$

Mathematica [A]

time = 0.56, size = 266, normalized size = 0.89

$$\frac{e^{-\frac{4a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-4/n}\left(e^{\frac{3a}{bn}}(ef-dg)^3\left(c(d+ex)^n\right)^{3/n}\text{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)+g(d+ex)\left(3e^{\frac{2a}{bn}}(ef-dg)^2\left(c(d+ex)^n\right)^{2/n}\text{Ei}\left(\frac{2(a+b\log(c(d+ex)^n))}{bn}\right)-g(d+ex)\left(-3e^{\frac{a}{bn}}(ef-dg)\left(c(d+ex)^n\right)^{\frac{1}{n}}\text{Ei}\left(\frac{3(a+b\log(c(d+ex)^n))}{bn}\right)-g(d+ex)\text{Ei}\left(\frac{4(a+b\log(c(d+ex)^n))}{bn}\right)\right)\right)\right)}{be^4n}$$

Antiderivative was successfully verified.

[In] Integrate[(f + g*x)^3/(a + b*Log[c*(d + e*x)^n]),x]

[Out] ((d + e*x)*(E^((3*a)/(b*n))*(e*f - d*g)^3*(c*(d + e*x)^n)^(3/n)*ExpIntegral Ei[(a + b*Log[c*(d + e*x)^n])/(b*n)] + g*(d + e*x)*(3*E^((2*a)/(b*n))*(e*f - d*g)^2*(c*(d + e*x)^n)^(2/n)*ExpIntegralEi[(2*(a + b*Log[c*(d + e*x)^n]))/(b*n)] - g*(d + e*x)*(-3*E^(a/(b*n))*(e*f - d*g)*(c*(d + e*x)^n)^n^(-1)*ExpIntegralEi[(3*(a + b*Log[c*(d + e*x)^n]))/(b*n)] - g*(d + e*x)*ExpIntegral Ei[(4*(a + b*Log[c*(d + e*x)^n]))/(b*n)]))))/(b*e^4*E^((4*a)/(b*n))*n*(c*(d + e*x)^n)^(4/n))

Maple [C] Result contains higher order function than in optimal. Order 9 vs. order 4.
time = 1.12, size = 3160, normalized size = 10.57

method	result	size
risch	Expression too large to display	3160

Verification of antiderivative is not currently implemented for this CAS.

[In] int((g*x+f)^3/(a+b*ln(c*(e*x+d)^n)),x,method=_RETURNVERBOSE)

[Out] -1/e^4*g^3/b/n*(e*x+d)^4*((e*x+d)^n)^(-4/n)*c^(-4/n)*exp(-2*(-I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-I*b*Pi*csgn(I*c*(e*x+d)^n)^3+2*a)/b/n)*Ei(1,-4*ln(e*x+d)-2*(-I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-I*b*Pi*csgn(I*c*(e*x+d)^n)^3+2*b*ln(c)+2*b*(ln((e*x+d)^n)-n*ln(e*x+d))+2*a)/b/n)-1/e*f^3/b/n*(e*x+d)*((e*x+d)^n)^(-1/n)*c^(-1/n)*exp(-1/2*(-I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-I*b*Pi*csgn(I*c*(e*x+d)^n)^3+2*a)/b/n)*Ei(1,-ln(e*x+d)-1/2*(-I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-I*b*Pi*csgn(I*c*(e*x+d)^n)^3+2*b*ln(c)+2*b*(ln((e*x+d)^n)-n*ln(e*x+d))+2*a)/b/n)+1/e^4*d^3*g^3/b/n*(e*x+d)*((e*x+d)^n)^(-1/n)*c^(-1/n)*exp(-1/2*(-I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-I*b*Pi*csgn(I*c*(e*x+d)^n)^3+2*a)/b/n)*Ei(1,-ln(e*x+d)-1/2*(-I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-I*b*Pi*csgn(I*c*(e*x+d)^n)^3+2*b*ln(c)+2*b*(ln((e*x+d)^n)-n*ln(e*x+d))+2*a)/b/n)-3/e^4*d^2*g^3/b/n*(e*x+d)^2*((e*x+d)^n)^(-2/n)*c^(-2/n)*exp(-(-I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-I*b*Pi*csgn(I*c*(e*x+d)^n)^3+2*a)/b/n)*Ei(1,-2*ln(e*x+d)-(-I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-I*b*Pi*csgn(I

```
*c*(e*x+d)^n)^3+2*b*ln(c)+2*b*(ln((e*x+d)^n)-n*ln(e*x+d))+2*a)/b/n)+3/e^4*d
*g^3/b/n*(e*x+d)^3*((e*x+d)^n)^(-3/n)*c^(-3/n)*exp(-3/2*(-I*b*Pi*csgn(I*c)*
csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^
2+I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-I*b*Pi*csgn(I*c*(e*x+d)^n)
^3+2*a)/b/n)*Ei(1,-3*ln(e*x+d)-3/2*(-I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csg
n(I*c*(e*x+d)^n)+I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I*b*Pi*csgn(I*(e*x+
d)^n)*csgn(I*c*(e*x+d)^n)^2-I*b*Pi*csgn(I*c*(e*x+d)^n)^3+2*b*ln(c)+2*b*(ln(
(e*x+d)^n)-n*ln(e*x+d))+2*a)/b/n)-3/e^2*f^2*g/b/n*(e*x+d)^2*((e*x+d)^n)^(-2
/n)*c^(-2/n)*exp(-(-I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+
I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e
*x+d)^n)^2-I*b*Pi*csgn(I*c*(e*x+d)^n)^3+2*a)/b/n)*Ei(1,-2*ln(e*x+d)-(-I*b*P
i*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+I*b*Pi*csgn(I*c)*csgn(I*c
*(e*x+d)^n)^2+I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-I*b*Pi*csgn(I*
c*(e*x+d)^n)^3+2*b*ln(c)+2*b*(ln((e*x+d)^n)-n*ln(e*x+d))+2*a)/b/n)-3/e^3*f*
g^2/b/n*(e*x+d)^3*((e*x+d)^n)^(-3/n)*c^(-3/n)*exp(-3/2*(-I*b*Pi*csgn(I*c)*c
sgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2
+I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-I*b*Pi*csgn(I*c*(e*x+d)^n)^
3+2*a)/b/n)*Ei(1,-3*ln(e*x+d)-3/2*(-I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn
(I*c*(e*x+d)^n)+I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I*b*Pi*csgn(I*(e*x+d
)^n)*csgn(I*c*(e*x+d)^n)^2-I*b*Pi*csgn(I*c*(e*x+d)^n)^3+2*b*ln(c)+2*b*(ln((
e*x+d)^n)-n*ln(e*x+d))+2*a)/b/n)-3/e^3*d^2*f*g^2/b/n*(e*x+d)*((e*x+d)^n)^(-
1/n)*c^(-1/n)*exp(-1/2*(-I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d
)^n)+I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I
*c*(e*x+d)^n)^2-I*b*Pi*csgn(I*c*(e*x+d)^n)^3+2*a)/b/n)*Ei(1,-ln(e*x+d)-1/2*
(-I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+I*b*Pi*csgn(I*c)*c
sgn(I*c*(e*x+d)^n)^2+I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-I*b*Pi*
csgn(I*c*(e*x+d)^n)^3+2*b*ln(c)+2*b*(ln((e*x+d)^n)-n*ln(e*x+d))+2*a)/b/n)+3
/e^2*f^2*g*d/b/n*(e*x+d)*((e*x+d)^n)^(-1/n)*c^(-1/n)*exp(-1/2*(-I*b*Pi*csgn
(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+
d)^n)^2+I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-I*b*Pi*csgn(I*c*(e*x
+d)^n)^3+2*a)/b/n)*Ei(1,-ln(e*x+d)-1/2*(-I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)
*csgn(I*c*(e*x+d)^n)+I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I*b*Pi*csgn(I*(
e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-I*b*Pi*csgn(I*c*(e*x+d)^n)^3+2*b*ln(c)+2*b*
(ln((e*x+d)^n)-n*ln(e*x+d))+2*a)/b/n)+6/e^3*d*f*g^2/b/n*(e*x+d)^2*((e*x+d)^
n)^(-2/n)*c^(-2/n)*exp(-(-I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+
d)^n)+I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I*b*Pi*csgn(I*(e*x+d)^n)*csgn(
I*c*(e*x+d)^n)^2-I*b*Pi*csgn(I*c*(e*x+d)^n)^3+2*a)/b/n)*Ei(1,-2*ln(e*x+d)-(
-I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+I*b*Pi*csgn(I*c)*cs
gn(I*c*(e*x+d)^n)^2+I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-I*b*Pi*c
sgn(I*c*(e*x+d)^n)^3+2*b*ln(c)+2*b*(ln((e*x+d)^n)-n*ln(e*x+d))+2*a)/b/n)
```

Maxima [F]

time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^3/(a+b*log(c*(e*x+d)^n)),x, algorithm="maxima")
```

```
[Out] integrate((g*x + f)^3/(b*log((x*e + d)^n*c) + a), x)
```

Fricas [A]
time = 0.36, size = 303, normalized size = 1.01

$$\frac{\left(g^{3} \operatorname{log\_integral}\left((x^{4} e^{4} + 4 d x^{3} e^{3} + 6 d^{2} x^{2} e^{2} + 4 d^{3} x e + d^{4}) e^{\left(\frac{4 (b \log(c) + a)}{b n}\right)}\right) - 3 (d g^{3} - f g^{2} e) e^{\left(\frac{b \log(c) + a}{b n}\right)} \operatorname{log\_integral}\left((x^{3} e^{3} + 3 d x^{2} e^{2} + 3 d^{2} x e + d^{3}) e^{\left(\frac{3 (b \log(c) + a)}{b n}\right)}\right) + 3 (d^{2} g^{3} - 2 d f g^{2} e + f^{2} g e^{2}) e^{\left(\frac{2 (b \log(c) + a)}{b n}\right)} \operatorname{log\_integral}\left((x^{2} e^{2} + 2 d x e + d^{2}) e^{\left(\frac{2 (b \log(c) + a)}{b n}\right)}\right) - (d^{3} g^{3} - 3 d^{2} f g^{2} e + 3 d f^{2} g e^{2} - f^{3} e^{3}) e^{\left(\frac{3 (b \log(c) + a)}{b n}\right)} \operatorname{log\_integral}\left((x e + d) e^{\left(\frac{b \log(c) + a}{b n}\right)}\right)\right) e^{\left(-\frac{4 (b \log(c) + a)}{b n} - 4\right)}}{b n}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^3/(a+b*log(c*(e*x+d)^n)),x, algorithm="fricas")
```

```
[Out] (g^3*log_integral((x^4*e^4 + 4*d*x^3*e^3 + 6*d^2*x^2*e^2 + 4*d^3*x*e + d^4)
*e^(4*(b*log(c) + a)/(b*n))) - 3*(d*g^3 - f*g^2*e)*e^((b*log(c) + a)/(b*n))
*log_integral((x^3*e^3 + 3*d*x^2*e^2 + 3*d^2*x*e + d^3)*e^(3*(b*log(c) + a)
/(b*n))) + 3*(d^2*g^3 - 2*d*f*g^2*e + f^2*g*e^2)*e^(2*(b*log(c) + a)/(b*n))
*log_integral((x^2*e^2 + 2*d*x*e + d^2)*e^(2*(b*log(c) + a)/(b*n))) - (d^3*
g^3 - 3*d^2*f*g^2*e + 3*d*f^2*g*e^2 - f^3*e^3)*e^(3*(b*log(c) + a)/(b*n))*l
og_integral((x*e + d)*e^((b*log(c) + a)/(b*n))))*e^(-4*(b*log(c) + a)/(b*n)
 - 4)/(b*n)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(f + g x)^{3}}{a + b \log{\left(c (d + e x)^{n} \right)}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**3/(a+b*ln(c*(e*x+d)**n)),x)
```

```
[Out] Integral((f + g*x)**3/(a + b*log(c*(d + e*x)**n)), x)
```

Giac [A]
time = 5.13, size = 582, normalized size = 1.95

$$-\frac{d^{3} g^{3} \operatorname{Ei}\left(\frac{\log(c)}{n} + \frac{a}{b n} + \log(x e + d)\right) e^{\left(-\frac{a}{b n} - 4\right)}}{b c^{\left(\frac{1}{n}\right)} n} + \frac{3 d^{2} f g^{2} \operatorname{Ei}\left(\frac{\log(c)}{n} + \frac{a}{b n} + \log(x e + d)\right) e^{\left(-\frac{a}{b n} - 3\right)}}{b c^{\left(\frac{1}{n}\right)} n} + \frac{3 d^{2} g^{3} \operatorname{Ei}\left(\frac{2 \log(c)}{n} + \frac{2 a}{b n} + 2 \log(x e + d)\right) e^{\left(-\frac{2 a}{b n} - 4\right)}}{b c^{\frac{2}{n}} n} - \frac{3 d f^{2} g \operatorname{Ei}\left(\frac{\log(c)}{n} + \frac{a}{b n} + \log(x e + d)\right) e^{\left(-\frac{a}{b n} - 2\right)}}{b c^{\left(\frac{1}{n}\right)} n} - \frac{6 d f g^{2} \operatorname{Ei}\left(\frac{2 \log(c)}{n} + \frac{2 a}{b n} + 2 \log(x e + d)\right) e^{\left(-\frac{2 a}{b n} - 3\right)}}{b c^{\frac{2}{n}} n} - \frac{3 d g^{3} \operatorname{Ei}\left(\frac{3 \log(c)}{n} + \frac{3 a}{b n} + 3 \log(x e + d)\right) e^{\left(-\frac{3 a}{b n} - 4\right)}}{b c^{\frac{3}{n}} n} + \frac{f^{3} \operatorname{Ei}\left(\frac{\log(c)}{n} + \frac{a}{b n} + \log(x e + d)\right) e^{\left(-\frac{a}{b n} - 1\right)}}{b c^{\left(\frac{1}{n}\right)} n} + \frac{3 f^{2} g \operatorname{Ei}\left(\frac{2 \log(c)}{n} + \frac{2 a}{b n} + 2 \log(x e + d)\right) e^{\left(-\frac{2 a}{b n} - 2\right)}}{b c^{\frac{2}{n}} n} + \frac{3 f g^{2} \operatorname{Ei}\left(\frac{3 \log(c)}{n} + \frac{3 a}{b n} + 3 \log(x e + d)\right) e^{\left(-\frac{3 a}{b n} - 3\right)}}{b c^{\frac{3}{n}} n} + \frac{g^{3} \operatorname{Ei}\left(\frac{4 \log(c)}{n} + \frac{4 a}{b n} + 4 \log(x e + d)\right) e^{\left(-\frac{4 a}{b n} - 4\right)}}{b c^{\frac{4}{n}} n}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^3/(a+b*log(c*(e*x+d)^n)),x, algorithm="giac")
```

```
[Out] -d^3*g^3*Ei(log(c)/n + a/(b*n) + log(x*e + d))*e^(-a/(b*n) - 4)/(b*c^(1/n)*
n) + 3*d^2*f*g^2*Ei(log(c)/n + a/(b*n) + log(x*e + d))*e^(-a/(b*n) - 3)/(b*
c^(1/n)*n) + 3*d^2*g^3*Ei(2*log(c)/n + 2*a/(b*n) + 2*log(x*e + d))*e^(-2*a/
(b*n) - 4)/(b*c^(2/n)*n) - 3*d*f^2*g*Ei(log(c)/n + a/(b*n) + log(x*e + d))*
e^(-a/(b*n) - 2)/(b*c^(1/n)*n) - 6*d*f*g^2*Ei(2*log(c)/n + 2*a/(b*n) + 2*lo
```

```
g(x*e + d))*e^(-2*a/(b*n) - 3)/(b*c^(2/n)*n) - 3*d*g^3*Ei(3*log(c)/n + 3*a/
(b*n) + 3*log(x*e + d))*e^(-3*a/(b*n) - 4)/(b*c^(3/n)*n) + f^3*Ei(log(c)/n
+ a/(b*n) + log(x*e + d))*e^(-a/(b*n) - 1)/(b*c^(1/n)*n) + 3*f^2*g*Ei(2*log
(c)/n + 2*a/(b*n) + 2*log(x*e + d))*e^(-2*a/(b*n) - 2)/(b*c^(2/n)*n) + 3*f*
g^2*Ei(3*log(c)/n + 3*a/(b*n) + 3*log(x*e + d))*e^(-3*a/(b*n) - 3)/(b*c^(3/
n)*n) + g^3*Ei(4*log(c)/n + 4*a/(b*n) + 4*log(x*e + d))*e^(-4*a/(b*n) - 4)/
(b*c^(4/n)*n)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(f+g\,x)^3}{a+b\,\ln\left(c\,(d+e\,x)^n\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)^3/(a + b*log(c*(d + e*x)^n)),x)
[Out] int((f + g*x)^3/(a + b*log(c*(d + e*x)^n)), x)
```

3.89 $\int \frac{(f+gx)^2}{a+b\log(c(d+ex)^n)}\,dx$

Optimal. Leaf size=219

$$\frac{e^{-\frac{a}{bn}}(ef-dg)^2(d+ex)\left(c(d+ex)^n\right)^{-1/n}\operatorname{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{be^3n}+\frac{2e^{-\frac{2a}{bn}}g(ef-dg)(d+ex)^2\left(c(d+ex)^n\right)^{-2/n}\operatorname{Ei}}{be^3n}$$

```
[Out] (-d*g+e*f)^2*(e*x+d)*Ei((a+b*ln(c*(e*x+d)^n))/b/n)/b/e^3/exp(a/b/n)/n/((c*(
e*x+d)^n)^(1/n))+2*g*(-d*g+e*f)*(e*x+d)^2*Ei(2*(a+b*ln(c*(e*x+d)^n))/b/n)/b
/e^3/exp(2*a/b/n)/n/((c*(e*x+d)^n)^(2/n))+g^2*(e*x+d)^3*Ei(3*(a+b*ln(c*(e*x
+d)^n))/b/n)/b/e^3/exp(3*a/b/n)/n/((c*(e*x+d)^n)^(3/n))
```

Rubi [A]

time = 0.21, antiderivative size = 219, normalized size of antiderivative = 1.00, number of steps used = 11, number of rules used = 6, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.250$, Rules used = {2446, 2436, 2337, 2209, 2437, 2347}

$$\frac{2ge^{-\frac{2a}{bn}}(d+ex)^2(ef-dg)\left(c(d+ex)^n\right)^{-2/n}\operatorname{Ei}\left(\frac{2(a+b\log(c(d+ex)^n))}{bn}\right)}{be^3n}+\frac{e^{-\frac{a}{bn}}(d+ex)(ef-dg)^2\left(c(d+ex)^n\right)^{-1/n}\operatorname{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{be^3n}+\frac{g^2e^{-\frac{3a}{bn}}(d+ex)^3\left(c(d+ex)^n\right)^{-3/n}\operatorname{Ei}\left(\frac{3(a+b\log(c(d+ex)^n))}{bn}\right)}{be^3n}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)^2/(a + b*Log[c*(d + e*x)^n]),x]
```

```
[Out] ((e*f - d*g)^2*(d + e*x)*ExpIntegralEi[(a + b*Log[c*(d + e*x)^n])/(b*n)])/(
b*e^3*E^(a/(b*n))*n*(c*(d + e*x)^n)^n^(-1)) + (2*g*(e*f - d*g)*(d + e*x)^2*
ExpIntegralEi[(2*(a + b*Log[c*(d + e*x)^n]))/(b*n)])/(b*e^3*E^((2*a)/(b*n))
*n*(c*(d + e*x)^n)^(2/n)) + (g^2*(d + e*x)^3*ExpIntegralEi[(3*(a + b*Log[c*
(d + e*x)^n]))/(b*n)])/(b*e^3*E^((3*a)/(b*n))*n*(c*(d + e*x)^n)^(3/n))
```

Rule 2209

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/((c_.) + (d_.)*(x_)), x_Symbol] :> Si
mp[(F^(g*(e - c*(f/d)))/d)*ExpIntegralEi[f*g*(c + d*x)*(Log[F]/d)], x] /; F
reeQ[{F, c, d, e, f, g}, x] &&  !TrueQ[$UseGamma]
```

Rule 2337

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2347

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_)*((d_.)*(x_))^(m_.), x_Symbol
] :> Dist[(d*x)^(m + 1)/(d*n*(c*x^n)^((m + 1)/n)), Subst[Int[E^(((m + 1)/n)
*x)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b, c, d, m, n, p}, x]
```

Rule 2436

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2437

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[(f*(x/d))^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2446

```
Int[((f_.) + (g_.)*(x_))^(q_.)/((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)
]*(b_.)), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q/(a + b*Log[c*(d + e*
x)^n]), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0] &
& IGtQ[q, 0]
```

Rubi steps

$$\int \frac{(f+gx)^2}{a+b\log\left(c(d+ex)^n\right)}\,dx = \int \left(\frac{(ef-dg)^2}{e^2\left(a+b\log\left(c(d+ex)^n\right)\right)} + \frac{2g(ef-dg)(d+ex)}{e^2\left(a+b\log\left(c(d+ex)^n\right)\right)} + \frac{g^2(d+}{e^2\left(a+b\log\left(c\right.\right.}\right.$$

$$= \frac{g^2\int \frac{(d+ex)^2}{a+b\log(c(d+ex)^n)}\,dx}{e^2} + \frac{(2g(ef-dg))\int \frac{d+ex}{a+b\log(c(d+ex)^n)}\,dx}{e^2} + \frac{(ef-dg)^2\int}{}$$

$$= \frac{g^2\mathrm{Subst}\left(\int \frac{x^2}{a+b\log(cx^n)}\,dx, x, d+ex\right)}{e^3} + \frac{(2g(ef-dg))\mathrm{Subst}\left(\int \frac{x}{a+b\log(cx^n)}\,dx,\right.}{e^3}$$

$$= \frac{\left(g^2(d+ex)^3\left(c(d+ex)^n\right)^{-3/n}\right)\mathrm{Subst}\left(\int \frac{e^{\frac{3x}{n}}}{a+bx}\,dx, x, \log\left(c(d+ex)^n\right)\right)}{e^3n} + \frac{(2g}{}$$

$$= \frac{e^{-\frac{a}{bn}}(ef-dg)^2(d+ex)\left(c(d+ex)^n\right)^{-1/n}\mathrm{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{be^3n} + \frac{2e^{-\frac{2a}{bn}}g(ef-}{}$$

Mathematica [A]
time = 0.25, size = 197, normalized size = 0.90

$$\frac{e^{-\frac{3a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-3/n}\left(e^{\frac{2a}{bn}}(ef-dg)^2\left(c(d+ex)^n\right)^{2/n}\mathrm{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)-g(d+ex)\left(-2e^{\frac{a}{bn}}(ef-dg)\left(c(d+ex)^n\right)^{\frac{1}{n}}\mathrm{Ei}\left(\frac{2(a+b\log(c(d+ex)^n))}{bn}\right)-g(d+ex)\mathrm{Ei}\left(\frac{3(a+b\log(c(d+ex)^n))}{bn}\right)\right)\right)}{be^3n}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)^2/(a + b*Log[c*(d + e*x)^n]),x]
```

```
[Out] ((d + e*x)*(E^((2*a)/(b*n))*(e*f - d*g)^2*(c*(d + e*x)^n)^(2/n)*ExpIntegral
Ei[(a + b*Log[c*(d + e*x)^n])/(b*n)] - g*(d + e*x)*(-2*E^(a/(b*n))*(e*f - d
*g)*(c*(d + e*x)^n)^n^(-1)*ExpIntegralEi[(2*(a + b*Log[c*(d + e*x)^n]))/(b*
n)] - g*(d + e*x)*ExpIntegralEi[(3*(a + b*Log[c*(d + e*x)^n]))/(b*n)])))/(b
*e^3*E^((3*a)/(b*n))*n*(c*(d + e*x)^n)^(3/n))
```

Maple [C] Result contains higher order function than in optimal. Order 9 vs. order 4.
time = 0.93, size = 1889, normalized size = 8.63

method	result	size
risch	Expression too large to display	1889

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^2/(a+b*ln(c*(e*x+d)^n)),x,method=_RETURNVERBOSE)
```

```
[Out] -1/e^3*g^2/b/n*(e*x+d)^3*((e*x+d)^n)^(-3/n)*c^(-3/n)*exp(-3/2*(-I*b*Pi*csgn
(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+
d)^n)^2+I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-I*b*Pi*csgn(I*c*(e*x
+d)^n)^3+2*a)/b/n)*Ei(1,-3*ln(e*x+d)-3/2*(-I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^
n)*csgn(I*c*(e*x+d)^n)+I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I*b*Pi*csgn(I
*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-I*b*Pi*csgn(I*c*(e*x+d)^n)^3+2*b*ln(c)+2*
b*(ln((e*x+d)^n)-n*ln(e*x+d))+2*a)/b/n)-1/e^3*d^2*g^2/b/n*(e*x+d)*((e*x+d)^
n)^(-1/n)*c^(-1/n)*exp(-1/2*(-I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(
e*x+d)^n)+I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I*b*Pi*csgn(I*(e*x+d)^n)*c
sgn(I*c*(e*x+d)^n)^2-I*b*Pi*csgn(I*c*(e*x+d)^n)^3+2*a)/b/n)*Ei(1,-ln(e*x+d)
-1/2*(-I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+I*b*Pi*csgn(I
*c)*csgn(I*c*(e*x+d)^n)^2+I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-I*
b*Pi*csgn(I*c*(e*x+d)^n)^3+2*b*ln(c)+2*b*(ln((e*x+d)^n)-n*ln(e*x+d))+2*a)/b
/n)-1/e*f^2/b/n*(e*x+d)*((e*x+d)^n)^(-1/n)*c^(-1/n)*exp(-1/2*(-I*b*Pi*csgn(
I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d
)^n)^2+I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-I*b*Pi*csgn(I*c*(e*x+
d)^n)^3+2*a)/b/n)*Ei(1,-ln(e*x+d)-1/2*(-I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*
csgn(I*c*(e*x+d)^n)+I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I*b*Pi*csgn(I*(e
*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-I*b*Pi*csgn(I*c*(e*x+d)^n)^3+2*b*ln(c)+2*b*(
ln((e*x+d)^n)-n*ln(e*x+d))+2*a)/b/n)+2/e^3*d*g^2/b/n*(e*x+d)^2*((e*x+d)^n)^
(-2/n)*c^(-2/n)*exp(-(-I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^
n)+I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c
*(e*x+d)^n)^2-I*b*Pi*csgn(I*c*(e*x+d)^n)^3+2*a)/b/n)*Ei(1,-2*ln(e*x+d)-(-I*
b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+I*b*Pi*csgn(I*c)*csgn(
I*c*(e*x+d)^n)^2+I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-I*b*Pi*csgn
(I*c*(e*x+d)^n)^3+2*b*ln(c)+2*b*(ln((e*x+d)^n)-n*ln(e*x+d))+2*a)/b/n)-2/e^2
*f*g/b/n*(e*x+d)^2*((e*x+d)^n)^(-2/n)*c^(-2/n)*exp(-(-I*b*Pi*csgn(I*c)*csgn
(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I*
b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-I*b*Pi*csgn(I*c*(e*x+d)^n)^3+2
*a)/b/n)*Ei(1,-2*ln(e*x+d)-(-I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e
```

```
*x+d)^n)+I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I*b*Pi*csgn(I*(e*x+d)^n)*cs
gn(I*c*(e*x+d)^n)^2-I*b*Pi*csgn(I*c*(e*x+d)^n)^3+2*b*ln(c)+2*b*(ln((e*x+d)^
n)-n*ln(e*x+d))+2*a)/b/n)+2/e^2*f*g*d/b/n*(e*x+d)*((e*x+d)^n)^(-1/n)*c^(-1/
n)*exp(-1/2*(-I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+I*b*Pi
*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^
n)^2-I*b*Pi*csgn(I*c*(e*x+d)^n)^3+2*a)/b/n)*Ei(1,-ln(e*x+d)-1/2*(-I*b*Pi*cs
gn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+I*b*Pi*csgn(I*c)*csgn(I*c*(e*
x+d)^n)^2+I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-I*b*Pi*csgn(I*c*(e
*x+d)^n)^3+2*b*ln(c)+2*b*(ln((e*x+d)^n)-n*ln(e*x+d))+2*a)/b/n)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2/(a+b*log(c*(e*x+d)^n)),x, algorithm="maxima")
[Out] integrate((g*x + f)^2/(b*log((x*e + d)^n*c) + a), x)
```

Fricas [A]
time = 0.35, size = 192, normalized size = 0.88

$$\frac{\left(g^2\,\mathrm{log\_integral}\left((x^3e^3+3\,dx^2e^2+3\,d^2xe+d^3)e^{\left(\frac{3\,(b\log(c)+a)}{bn}\right)}\right)-2\,(dg^2-fge)e^{\left(\frac{b\log(c)+a}{bn}\right)}\,\mathrm{log\_integral}\left((x^2e^2+2\,dxe+d^2)e^{\left(\frac{2\,(b\log(c)+a)}{bn}\right)}\right)+(d^2g^2-2\,dfge+f^2e^2)e^{\left(\frac{2\,(b\log(c)+a)}{bn}\right)}\,\mathrm{log\_integral}\left((xe+d)e^{\left(\frac{b\log(c)+a}{bn}\right)}\right)\right)e^{\left(-\frac{3\,(b\log(c)+a)}{bn}-3\right)}}{bn}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2/(a+b*log(c*(e*x+d)^n)),x, algorithm="fricas")
[Out] (g^2*log_integral((x^3*e^3 + 3*d*x^2*e^2 + 3*d^2*x*e + d^3)*e^(3*(b*log(c)
+ a)/(b*n))) - 2*(d*g^2 - f*g*e)*e^((b*log(c) + a)/(b*n))*log_integral((x^2
*e^2 + 2*d*x*e + d^2)*e^(2*(b*log(c) + a)/(b*n))) + (d^2*g^2 - 2*d*f*g*e +
f^2*e^2)*e^(2*(b*log(c) + a)/(b*n))*log_integral((x*e + d)*e^((b*log(c) + a
)/(b*n))))*e^(-3*(b*log(c) + a)/(b*n) - 3)/(b*n)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(f+gx)^2}{a+b\log\left(c\,(d+ex)^n\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**2/(a+b*ln(c*(e*x+d)**n)),x)
[Out] Integral((f + g*x)**2/(a + b*log(c*(d + e*x)**n)), x)
```

Giac [A]
time = 3.66, size = 337, normalized size = 1.54

$$\frac{d^2g^2\text{Ei}\left(\frac{\log(c)}{n}+\frac{a}{bn}+\log\left(xe+d\right)\right)e^{\left(-\frac{a}{bn}-3\right)}}{bc^{\left(\frac{1}{n}\right)}n}-\frac{2\,dfg\text{Ei}\left(\frac{\log(c)}{n}+\frac{a}{bn}+\log\left(xe+d\right)\right)e^{\left(-\frac{a}{bn}-2\right)}}{bc^{\left(\frac{1}{n}\right)}n}-\frac{2\,dg^2\text{Ei}\left(\frac{2\,\log(c)}{n}+\frac{2\,a}{bn}+2\,\log\left(xe+d\right)\right)e^{\left(-\frac{2\,a}{bn}-3\right)}}{bc^{\frac{2}{n}}n}+\frac{f^2\text{Ei}\left(\frac{\log(c)}{n}+\frac{a}{bn}+\log\left(xe+d\right)\right)e^{\left(-\frac{a}{bn}-1\right)}}{bc^{\left(\frac{1}{n}\right)}n}+\frac{2\,fg\text{Ei}\left(\frac{2\,\log(c)}{n}+\frac{2\,a}{bn}+2\,\log\left(xe+d\right)\right)e^{\left(-\frac{2\,a}{bn}-2\right)}}{bc^{\frac{2}{n}}n}+\frac{g^2\text{Ei}\left(\frac{3\,\log(c)}{n}+\frac{3\,a}{bn}+3\,\log\left(xe+d\right)\right)e^{\left(-\frac{3\,a}{bn}-3\right)}}{bc^{\frac{3}{n}}n}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2/(a+b*log(c*(e*x+d)^n)),x, algorithm="giac")
```

```
[Out] d^2*g^2*Ei(log(c)/n + a/(b*n) + log(x*e + d))*e^(-a/(b*n) - 3)/(b*c^(1/n)*n
) - 2*d*f*g*Ei(log(c)/n + a/(b*n) + log(x*e + d))*e^(-a/(b*n) - 2)/(b*c^(1/
n)*n) - 2*d*g^2*Ei(2*log(c)/n + 2*a/(b*n) + 2*log(x*e + d))*e^(-2*a/(b*n) -
 3)/(b*c^(2/n)*n) + f^2*Ei(log(c)/n + a/(b*n) + log(x*e + d))*e^(-a/(b*n) -
 1)/(b*c^(1/n)*n) + 2*f*g*Ei(2*log(c)/n + 2*a/(b*n) + 2*log(x*e + d))*e^(-2
*a/(b*n) - 2)/(b*c^(2/n)*n) + g^2*Ei(3*log(c)/n + 3*a/(b*n) + 3*log(x*e + d
))*e^(-3*a/(b*n) - 3)/(b*c^(3/n)*n)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{{\left(f+g\,x\right)}^2}{a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)^2/(a + b*log(c*(d + e*x)^n)),x)
```

```
[Out] int((f + g*x)^2/(a + b*log(c*(d + e*x)^n)), x)
```

3.90 $\int \frac{f+gx}{a+b\log(c(d+ex)^n)}\,dx$

Optimal. Leaf size=139

$$\frac{e^{-\frac{a}{bn}}(ef-dg)(d+ex)\left(c(d+ex)^n\right)^{-1/n}\operatorname{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{be^2n}+\frac{e^{-\frac{2a}{bn}}g(d+ex)^2\left(c(d+ex)^n\right)^{-2/n}\operatorname{Ei}\left(\frac{2(a+b\log(c(d+ex)^n))}{bn}\right)}{be^2n}$$

```
[Out] (-d*g+e*f)*(e*x+d)*Ei((a+b*ln(c*(e*x+d)^n))/b/n)/b/e^2/exp(a/b/n)/n/((c*(e*
x+d)^n)^(1/n))+g*(e*x+d)^2*Ei(2*(a+b*ln(c*(e*x+d)^n))/b/n)/b/e^2/exp(2*a/b/
n)/n/((c*(e*x+d)^n)^(2/n))
```

Rubi [A]

time = 0.12, antiderivative size = 139, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.273$, Rules used = {2446, 2436, 2337, 2209, 2437, 2347}

$$\frac{e^{-\frac{a}{bn}}(d+ex)(ef-dg)\left(c(d+ex)^n\right)^{-1/n}\operatorname{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{be^2n}+\frac{ge^{-\frac{2a}{bn}}(d+ex)^2\left(c(d+ex)^n\right)^{-2/n}\operatorname{Ei}\left(\frac{2(a+b\log(c(d+ex)^n))}{bn}\right)}{be^2n}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)/(a + b*Log[c*(d + e*x)^n]),x]
```

```
[Out] ((e*f - d*g)*(d + e*x)*ExpIntegralEi[(a + b*Log[c*(d + e*x)^n])/(b*n)])/(b*
e^2*E^(a/(b*n))*n*(c*(d + e*x)^n)^n^(-1)) + (g*(d + e*x)^2*ExpIntegralEi[(2
*(a + b*Log[c*(d + e*x)^n]))/(b*n)])/(b*e^2*E^((2*a)/(b*n))*n*(c*(d + e*x)^
n)^(2/n))
```

Rule 2209

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/((c_.) + (d_.)*(x_)), x_Symbol] :> Si
mp[(F^(g*(e - c*(f/d)))/d)*ExpIntegralEi[f*g*(c + d*x)*(Log[F]/d)], x] /; F
reeQ[{F, c, d, e, f, g}, x] &&  !TrueQ[$UseGamma]
```

Rule 2337

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2347

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_)*((d_.)*(x_))^(m_.), x_Symbol
] :> Dist[(d*x)^(m + 1)/(d*n*(c*x^n)^((m + 1)/n)), Subst[Int[E^(((m + 1)/n)
*x)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b, c, d, m, n, p}, x]
```

Rule 2436

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2437

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[(f*(x/d))^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2446

```
Int[((f_.) + (g_.)*(x_))^(q_.)/((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)
]*(b_.)), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q/(a + b*Log[c*(d + e*
x)^n]), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0] &
& IGtQ[q, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{f+gx}{a+b\log\left(c(d+ex)^n\right)}\,dx &= \int \left(\frac{ef-dg}{e\left(a+b\log\left(c(d+ex)^n\right)\right)}+\frac{g(d+ex)}{e\left(a+b\log\left(c(d+ex)^n\right)\right)}\right)dx\\
&= \frac{g\int \frac{d+ex}{a+b\log(c(d+ex)^n)}\,dx}{e}+\frac{(ef-dg)\int \frac{1}{a+b\log(c(d+ex)^n)}\,dx}{e}\\
&= \frac{g\text{Subst}\left(\int \frac{x}{a+b\log(cx^n)}\,dx,x,d+ex\right)}{e^2}+\frac{(ef-dg)\text{Subst}\left(\int \frac{1}{a+b\log(cx^n)}\,dx,x,d+\right.}{e^2}\\
&= \frac{\left(g(d+ex)^2\left(c(d+ex)^n\right)^{-2/n}\right)\text{Subst}\left(\int \frac{e^{\frac{2x}{n}}}{a+bx}\,dx,x,\log\left(c(d+ex)^n\right)\right)}{e^2n}+\frac{\left((ef-\right.}{}\\
&= \frac{e^{-\frac{a}{bn}}(ef-dg)(d+ex)\left(c(d+ex)^n\right)^{-1/n}\text{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{be^2n}+\frac{e^{-\frac{2a}{bn}}g(d+ex)^2}{}
\end{aligned}
$$

Mathematica [A]
time = 0.11, size = 126, normalized size = 0.91

$$
\frac{e^{-\frac{2a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-2/n}\left(e^{\frac{a}{bn}}(ef-dg)\left(c(d+ex)^n\right)^{\frac{1}{n}}\text{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)+g(d+ex)\text{Ei}\left(\frac{2(a+b\log(c(d+ex)^n))}{bn}\right)\right)}{be^2n}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)/(a + b*Log[c*(d + e*x)^n]),x]
```

```
[Out] ((d + e*x)*(E^(a/(b*n))*(e*f - d*g)*(c*(d + e*x)^n)^n^(-1)*ExpIntegralEi[(a
 + b*Log[c*(d + e*x)^n])/(b*n)] + g*(d + e*x)*ExpIntegralEi[(2*(a + b*Log[c
*(d + e*x)^n]))/(b*n)]))/(b*e^2*E^((2*a)/(b*n))*n*(c*(d + e*x)^n)^(2/n))
```

Maple [C] Result contains higher order function than in optimal. Order 9 vs. order 4.
time = 0.82, size = 937, normalized size = 6.74

method	result	size
risch	Expression too large to display	937

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)/(a+b*ln(c*(e*x+d)^n)),x,method=_RETURNVERBOSE)
```

```
[Out] -1/e^2*g/b/n*(e*x+d)^2*c^(-2/n)*((e*x+d)^n)^(-2/n)*exp(-(-I*b*Pi*csgn(I*c)*
csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^
2+I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-I*b*Pi*csgn(I*c*(e*x+d)^n)
^3+2*a)/b/n)*Ei(1,-2*ln(e*x+d)-(-I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*
c*(e*x+d)^n)+I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I*b*Pi*csgn(I*(e*x+d)^n
)*csgn(I*c*(e*x+d)^n)^2-I*b*Pi*csgn(I*c*(e*x+d)^n)^3+2*b*ln(c)+2*b*(ln((e*x
+d)^n)-n*ln(e*x+d))+2*a)/b/n)-1/e*f/b/n*(e*x+d)*c^(-1/n)*((e*x+d)^n)^(-1/n)
*exp(-1/2*(-I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+I*b*Pi*c
sgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)
^2-I*b*Pi*csgn(I*c*(e*x+d)^n)^3+2*a)/b/n)*Ei(1,-ln(e*x+d)-1/2*(-I*b*Pi*csgn
(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+
d)^n)^2+I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-I*b*Pi*csgn(I*c*(e*x
+d)^n)^3+2*b*ln(c)+2*b*(ln((e*x+d)^n)-n*ln(e*x+d))+2*a)/b/n)+1/e^2*d*g/b/n*
(e*x+d)*c^(-1/n)*((e*x+d)^n)^(-1/n)*exp(-1/2*(-I*b*Pi*csgn(I*c)*csgn(I*(e*x
+d)^n)*csgn(I*c*(e*x+d)^n)+I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I*b*Pi*cs
gn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-I*b*Pi*csgn(I*c*(e*x+d)^n)^3+2*a)/b/n
)*Ei(1,-ln(e*x+d)-1/2*(-I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)
^n)+I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*
c*(e*x+d)^n)^2-I*b*Pi*csgn(I*c*(e*x+d)^n)^3+2*b*ln(c)+2*b*(ln((e*x+d)^n)-n*
ln(e*x+d))+2*a)/b/n)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(a+b*log(c*(e*x+d)^n)),x, algorithm="maxima")
```

```
[Out] integrate((g*x + f)/(b*log((x*e + d)^n*c) + a), x)
```

Fricas [A]
time = 0.38, size = 108, normalized size = 0.78

$$-\frac{\left((dg-fe)e^{\left(\frac{b\log(c)+a}{bn}\right)}\text{log\_integral}\left((xe+d)e^{\left(\frac{b\log(c)+a}{bn}\right)}\right)-g\,\text{log\_integral}\left((x^2e^2+2\,dxe+d^2)e^{\left(\frac{2\,(b\log(c)+a)}{bn}\right)}\right)\right)e^{\left(-\frac{2\,(b\log(c)+a)}{bn}-2\right)}}{bn}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(a+b*log(c*(e*x+d)^n)),x, algorithm="fricas")
```

```
[Out] -((d*g - f*e)*e^((b*log(c) + a)/(b*n))*log_integral((x*e + d)*e^((b*log(c)
+ a)/(b*n))) - g*log_integral((x^2*e^2 + 2*d*x*e + d^2)*e^(2*(b*log(c) + a)
/(b*n))))*e^(-2*(b*log(c) + a)/(b*n) - 2)/(b*n)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{f+gx}{a+b\log\left(c\left(d+ex\right)^n\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(a+b*ln(c*(e*x+d)**n)),x)
```

```
[Out] Integral((f + g*x)/(a + b*log(c*(d + e*x)**n)), x)
```

Giac [A]
time = 5.46, size = 159, normalized size = 1.14

$$-\frac{dg\text{Ei}\left(\frac{\log(c)}{n}+\frac{a}{bn}+\log\left(xe+d\right)\right)e^{\left(-\frac{a}{bn}-2\right)}}{bc^{\left(\frac{1}{n}\right)}n}+\frac{f\text{Ei}\left(\frac{\log(c)}{n}+\frac{a}{bn}+\log\left(xe+d\right)\right)e^{\left(-\frac{a}{bn}-1\right)}}{bc^{\left(\frac{1}{n}\right)}n}+\frac{g\text{Ei}\left(\frac{2\log(c)}{n}+\frac{2a}{bn}+2\log\left(xe+d\right)\right)e^{\left(-\frac{2a}{bn}-2\right)}}{bc^{\frac{2}{n}}n}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(a+b*log(c*(e*x+d)^n)),x, algorithm="giac")
```

```
[Out] -d*g*Ei(log(c)/n + a/(b*n) + log(x*e + d))*e^(-a/(b*n) - 2)/(b*c^(1/n)*n) +
 f*Ei(log(c)/n + a/(b*n) + log(x*e + d))*e^(-a/(b*n) - 1)/(b*c^(1/n)*n) + g
*Ei(2*log(c)/n + 2*a/(b*n) + 2*log(x*e + d))*e^(-2*a/(b*n) - 2)/(b*c^(2/n)*
n)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{f+g\,x}{a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)/(a + b*log(c*(d + e*x)^n)),x)
```

```
[Out] int((f + g*x)/(a + b*log(c*(d + e*x)^n)), x)
```

3.91 $\int \frac{1}{a+b\log(c(d+ex)^n)}\,dx$

Optimal. Leaf size=63

$$\frac{e^{-\frac{a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\operatorname{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{ben}$$

```
[Out] (e*x+d)*Ei((a+b*ln(c*(e*x+d)^n))/b/n)/b/e/exp(a/b/n)/n/((c*(e*x+d)^n)^(1/n)
)
```

Rubi [A]
time = 0.03, antiderivative size = 63, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}} = 0.188$, Rules used = {2436, 2337, 2209}

$$\frac{e^{-\frac{a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\operatorname{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{ben}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^(-1),x]
```

```
[Out] ((d + e*x)*ExpIntegralEi[(a + b*Log[c*(d + e*x)^n])/(b*n)])/(b*e*E^(a/(b*n)
)*n*(c*(d + e*x)^n)^n^(-1))
```

Rule 2209

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/((c_.) + (d_.)*(x_)), x_Symbol] :> Si
mp[(F^(g*(e - c*(f/d)))/d)*ExpIntegralEi[f*g*(c + d*x)*(Log[F]/d)], x] /; F
reeQ[{F, c, d, e, f, g}, x] &&  !TrueQ[$UseGamma]
```

Rule 2337

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2436

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rubi steps

$$\int \frac{1}{a+b\log\left(c(d+ex)^n\right)}\,dx = \frac{\text{Subst}\left(\int \frac{1}{a+b\log(cx^n)}\,dx, x, d+ex\right)}{e}$$
$$= \frac{\left((d+ex)\left(c(d+ex)^n\right)^{-1/n}\right)\text{Subst}\left(\int \frac{e^{\frac{x}{n}}}{a+bx}\,dx, x, \log\left(c(d+ex)^n\right)\right)}{en}$$
$$= \frac{e^{-\frac{a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\text{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{ben}$$

Mathematica [A]
time = 0.01, size = 63, normalized size = 1.00

$$\frac{e^{-\frac{a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\text{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{ben}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^(-1),x]
```

```
[Out] ((d + e*x)*ExpIntegralEi[(a + b*Log[c*(d + e*x)^n])/(b*n)])/(b*e*E^(a/(b*n)
)*n*(c*(d + e*x)^n)^n^(-1))
```

Maple [C] Result contains higher order function than in optimal. Order 9 vs. order 4.
time = 0.06, size = 311, normalized size = 4.94

method	result
risch	$-\frac{(ex+d)c^{-\frac{1}{n}}((ex+d)^n)^{-\frac{1}{n}}\mathrm{e}^{-\frac{-ib\pi\,\text{csgn}(ic)\text{csgn}(i(ex+d)^n)\text{csgn}(ic(ex+d)^n)+ib\pi\,\text{csgn}(ic)\text{csgn}(ic(ex+d)^n)^2+ib\pi\,\text{csgn}(i(ex+d)^n)\text{csgn}(ic(ex+d)^n}{2bn}}}{}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+b*ln(c*(e*x+d)^n)),x,method=_RETURNVERBOSE)
```

```
[Out] -1/e/b/n*(e*x+d)*c^(-1/n)*((e*x+d)^n)^(-1/n)*exp(-1/2*(-I*b*Pi*csgn(I*c)*cs
gn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+
I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-I*b*Pi*csgn(I*c*(e*x+d)^n)^3
+2*a)/b/n)*Ei(1,-ln(e*x+d)-1/2*(-I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*
c*(e*x+d)^n)+I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I*b*Pi*csgn(I*(e*x+d)^n
)*csgn(I*c*(e*x+d)^n)^2-I*b*Pi*csgn(I*c*(e*x+d)^n)^3+2*b*ln(c)+2*b*(ln((e*x
+d)^n)-n*ln(e*x+d))+2*a)/b/n)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(e*x+d)^n)),x, algorithm="maxima")
[Out] integrate(1/(b*log((x*e + d)^n*c) + a), x)
```

Fricas [A]
time = 0.40, size = 46, normalized size = 0.73

$$\frac{e^{\left(-\frac{b\log(c)+a}{bn}-1\right)}\,\mathrm{log\_integral}\left((xe+d)e^{\left(\frac{b\log(c)+a}{bn}\right)}\right)}{bn}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(e*x+d)^n)),x, algorithm="fricas")
[Out] e^(-(b*log(c) + a)/(b*n) - 1)*log_integral((x*e + d)*e^((b*log(c) + a)/(b*n
)))/(b*n)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{1}{a+b\log\left(c\left(d+ex\right)^{n}\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*ln(c*(e*x+d)**n)),x)
[Out] Integral(1/(a + b*log(c*(d + e*x)**n)), x)
```

Giac [A]
time = 2.70, size = 49, normalized size = 0.78

$$\frac{\mathrm{Ei}\left(\frac{\log(c)}{n}+\frac{a}{bn}+\log\left(xe+d\right)\right)e^{\left(-\frac{a}{bn}-1\right)}}{bc^{\left(\frac{1}{n}\right)}n}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(e*x+d)^n)),x, algorithm="giac")
[Out] Ei(log(c)/n + a/(b*n) + log(x*e + d))*e^(-a/(b*n) - 1)/(b*c^(1/n)*n)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.02

$$\int\frac{1}{a+b\,\ln\left(c\left(d+e\,x\right)^{n}\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a + b*log(c*(d + e*x)^n)),x)
[Out] int(1/(a + b*log(c*(d + e*x)^n)), x)
```

3.92 $\int \frac{1}{(f+gx)(a+b\log(c(d+ex)^n))}\,dx$

Optimal. Leaf size=27

$$\text{Int}\left(\frac{1}{(f+gx)\left(a+b\log\left(c(d+ex)^n\right)\right)},x\right)$$

```
[Out] Unintegrable(1/(g*x+f)/(a+b*ln(c*(e*x+d)^n)),x)
```

Rubi [A]
time = 0.02, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int \frac{1}{(f+gx)\left(a+b\log\left(c(d+ex)^n\right)\right)}\,dx$$

Verification is not applicable to the result.

```
[In] Int[1/((f + g*x)*(a + b*Log[c*(d + e*x)^n])),x]
[Out] Defer[Int][1/((f + g*x)*(a + b*Log[c*(d + e*x)^n])), x]
```

Rubi steps

$$\int \frac{1}{(f+gx)\left(a+b\log\left(c(d+ex)^n\right)\right)}\,dx = \int \frac{1}{(f+gx)\left(a+b\log\left(c(d+ex)^n\right)\right)}\,dx$$

Mathematica [A]
time = 0.13, size = 0, normalized size = 0.00

$$\int \frac{1}{(f+gx)\left(a+b\log\left(c(d+ex)^n\right)\right)}\,dx$$

Verification is not applicable to the result.

```
[In] Integrate[1/((f + g*x)*(a + b*Log[c*(d + e*x)^n])),x]
[Out] Integrate[1/((f + g*x)*(a + b*Log[c*(d + e*x)^n])), x]
```

Maple [A]
time = 0.20, size = 0, normalized size = 0.00

$$\int \frac{1}{(gx+f)\left(a+b\ln\left(c\left(ex+d\right)^{n}\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(g*x+f)/(a+b*ln(c*(e*x+d)^n)),x)
[Out] int(1/(g*x+f)/(a+b*ln(c*(e*x+d)^n)),x)
```

Maxima [A]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(a+b*log(c*(e*x+d)^n)),x, algorithm="maxima")
[Out] integrate(1/((g*x + f)*(b*log((x*e + d)^n*c) + a)), x)
```

Fricas [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(a+b*log(c*(e*x+d)^n)),x, algorithm="fricas")
[Out] integral(1/(a*g*x + a*f + (b*g*x + b*f)*log((x*e + d)^n*c)), x)
```

Sympy [A]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(a + b\log\left(c\left(d + ex\right)^{n}\right)\right)\left(f + gx\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(a+b*ln(c*(e*x+d)**n)),x)
[Out] Integral(1/((a + b*log(c*(d + e*x)**n))*(f + g*x)), x)
```

Giac [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(a+b*log(c*(e*x+d)^n)),x, algorithm="giac")
[Out] integrate(1/((g*x + f)*(b*log((x*e + d)^n*c) + a)), x)
```

Mupad [A]
time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{1}{\left(f+g\,x\right)\,\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((f + g*x)*(a + b*log(c*(d + e*x)^n))),x)
[Out] int(1/((f + g*x)*(a + b*log(c*(d + e*x)^n))), x)
```

3.93 $\int \frac{1}{(f+gx)^2(a+b\log(c(d+ex)^n))}\,dx$

Optimal. Leaf size=27

$$\text{Int}\left(\frac{1}{(f+gx)^2\left(a+b\log\left(c(d+ex)^n\right)\right)},x\right)$$

```
[Out] Unintegrable(1/(g*x+f)^2/(a+b*ln(c*(e*x+d)^n)),x)
```

Rubi [A]
time = 0.02, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int \frac{1}{(f+gx)^2\left(a+b\log\left(c(d+ex)^n\right)\right)}\,dx$$

Verification is not applicable to the result.

```
[In] Int[1/((f + g*x)^2*(a + b*Log[c*(d + e*x)^n])),x]
[Out] Defer[Int][1/((f + g*x)^2*(a + b*Log[c*(d + e*x)^n])), x]
```

Rubi steps

$$\int \frac{1}{(f+gx)^2\left(a+b\log\left(c(d+ex)^n\right)\right)}\,dx=\int \frac{1}{(f+gx)^2\left(a+b\log\left(c(d+ex)^n\right)\right)}\,dx$$

Mathematica [A]
time = 0.36, size = 0, normalized size = 0.00

$$\int \frac{1}{(f+gx)^2\left(a+b\log\left(c(d+ex)^n\right)\right)}\,dx$$

Verification is not applicable to the result.

```
[In] Integrate[1/((f + g*x)^2*(a + b*Log[c*(d + e*x)^n])),x]
[Out] Integrate[1/((f + g*x)^2*(a + b*Log[c*(d + e*x)^n])), x]
```

Maple [A]
time = 0.16, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(gx+f\right)^{2}\left(a+b\ln\left(c\left(ex+d\right)^{n}\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(g*x+f)^2/(a+b*ln(c*(e*x+d)^n)),x)
```

```
[Out] int(1/(g*x+f)^2/(a+b*ln(c*(e*x+d)^n)),x)
```

Maxima [A]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)^2/(a+b*log(c*(e*x+d)^n)),x, algorithm="maxima")
```

```
[Out] integrate(1/((g*x + f)^2*(b*log((x*e + d)^n*c) + a)), x)
```

Fricas [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)^2/(a+b*log(c*(e*x+d)^n)),x, algorithm="fricas")
```

```
[Out] integral(1/(a*g^2*x^2 + 2*a*f*g*x + a*f^2 + (b*g^2*x^2 + 2*b*f*g*x + b*f^2)
*log((x*e + d)^n*c)), x)
```

Sympy [A]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(a + b\log\left(c\left(d + ex\right)^{n}\right)\right)\left(f + gx\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)**2/(a+b*ln(c*(e*x+d)**n)),x)
```

```
[Out] Integral(1/((a + b*log(c*(d + e*x)**n))*(f + g*x)**2), x)
```

Giac [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)^2/(a+b*log(c*(e*x+d)^n)),x, algorithm="giac")
```

```
[Out] integrate(1/((g*x + f)^2*(b*log((x*e + d)^n*c) + a)), x)
```

Mupad [A]
time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{1}{(f+g\,x)^2\,\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((f + g*x)^2*(a + b*log(c*(d + e*x)^n))),x)
[Out] int(1/((f + g*x)^2*(a + b*log(c*(d + e*x)^n))), x)
```

3.94 $\int \frac{(f+gx)^3}{(a+b\log(c(d+ex)^n))^2}\,dx$

Optimal. Leaf size=339

$$\frac{e^{-\frac{a}{bn}}(ef-dg)^3(d+ex)\left(c(d+ex)^n\right)^{-1/n}\mathrm{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{b^2e^4n^2}+\frac{6e^{-\frac{2a}{bn}}g(ef-dg)^2(d+ex)^2\left(c(d+ex)^n\right)^{-2/n}\mathrm{E}}{b^2e^4n^2}$$

```
[Out] (-d*g+e*f)^3*(e*x+d)*Ei((a+b*ln(c*(e*x+d)^n))/b/n)/b^2/e^4/exp(a/b/n)/n^2/(
(c*(e*x+d)^n)^(1/n))+6*g*(-d*g+e*f)^2*(e*x+d)^2*Ei(2*(a+b*ln(c*(e*x+d)^n))/
b/n)/b^2/e^4/exp(2*a/b/n)/n^2/((c*(e*x+d)^n)^(2/n))+9*g^2*(-d*g+e*f)*(e*x+d
)^3*Ei(3*(a+b*ln(c*(e*x+d)^n))/b/n)/b^2/e^4/exp(3*a/b/n)/n^2/((c*(e*x+d)^n)
^(3/n))+4*g^3*(e*x+d)^4*Ei(4*(a+b*ln(c*(e*x+d)^n))/b/n)/b^2/e^4/exp(4*a/b/n
)/n^2/((c*(e*x+d)^n)^(4/n))-(e*x+d)*(g*x+f)^3/b/e/n/(a+b*ln(c*(e*x+d)^n))
```

Rubi [A]
time = 0.57, antiderivative size = 339, normalized size of antiderivative = 1.00, number of steps used = 26, number of rules used = 7, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.292$, Rules used = {2447, 2446, 2436, 2337, 2209, 2437, 2347}

$$\frac{9g^2e^{-\frac{3a}{bn}}(d+ex)^3(ef-dg)\left(c(d+ex)^n\right)^{-3/n}\mathrm{Ei}\left(\frac{3(a+b\log(c(d+ex)^n))}{bn}\right)}{b^2e^4n^2}+\frac{6ge^{-\frac{2a}{bn}}(d+ex)^2(ef-dg)^2\left(c(d+ex)^n\right)^{-2/n}\mathrm{Ei}\left(\frac{2(a+b\log(c(d+ex)^n))}{bn}\right)}{b^2e^4n^2}+\frac{e^{-\frac{a}{bn}}(d+ex)(ef-dg)^3\left(c(d+ex)^n\right)^{-1/n}\mathrm{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{b^2e^4n^2}+\frac{4g^3e^{-\frac{4a}{bn}}(d+ex)^4\left(c(d+ex)^n\right)^{-4/n}\mathrm{Ei}\left(\frac{4(a+b\log(c(d+ex)^n))}{bn}\right)}{b^2e^4n^2}-\frac{(d+ex)(f+gx)^3}{ben\left(a+b\log\left(c(d+ex)^n\right)\right)}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)^3/(a + b*Log[c*(d + e*x)^n])^2,x]
```

```
[Out] ((e*f - d*g)^3*(d + e*x)*ExpIntegralEi[(a + b*Log[c*(d + e*x)^n])/(b*n)])/(
b^2*e^4*E^(a/(b*n))*n^2*(c*(d + e*x)^n)^n^(-1)) + (6*g*(e*f - d*g)^2*(d + e
*x)^2*ExpIntegralEi[(2*(a + b*Log[c*(d + e*x)^n]))/(b*n)])/(b^2*e^4*E^((2*a
)/(b*n))*n^2*(c*(d + e*x)^n)^(2/n)) + (9*g^2*(e*f - d*g)*(d + e*x)^3*ExpInt
egralEi[(3*(a + b*Log[c*(d + e*x)^n]))/(b*n)])/(b^2*e^4*E^((3*a)/(b*n))*n^2
*(c*(d + e*x)^n)^(3/n)) + (4*g^3*(d + e*x)^4*ExpIntegralEi[(4*(a + b*Log[c*
(d + e*x)^n]))/(b*n)])/(b^2*e^4*E^((4*a)/(b*n))*n^2*(c*(d + e*x)^n)^(4/n))
 - ((d + e*x)*(f + g*x)^3)/(b*e*n*(a + b*Log[c*(d + e*x)^n]))
```

Rule 2209

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/((c_.) + (d_.)*(x_)), x_Symbol] :> Si
mp[(F^(g*(e - c*(f/d)))/d)*ExpIntegralEi[f*g*(c + d*x)*(Log[F]/d)], x] /; F
reeQ[{F, c, d, e, f, g}, x] &&  !TrueQ[$UseGamma]
```

Rule 2337

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2347

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_)*((d_.)*(x_))^(m_.), x_Symbol
] :> Dist[(d*x)^(m + 1)/(d*n*(c*x^n)^((m + 1)/n)), Subst[Int[E^(((m + 1)/n)
*x)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b, c, d, m, n, p}, x]
```

Rule 2436

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2437

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[(f*(x/d))^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2446

```
Int[((f_.) + (g_.)*(x_))^(q_.)/((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)
]*(b_.)), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q/(a + b*Log[c*(d + e*
x)^n]), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0] &
& IGtQ[q, 0]
```

Rule 2447

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[(d + e*x)*(f + g*x)^q*((a + b*Log[c*(d + e
*x)^n])^(p + 1)/(b*e*n*(p + 1))), x] + (-Dist[(q + 1)/(b*n*(p + 1)), Int[(f
 + g*x)^q*(a + b*Log[c*(d + e*x)^n])^(p + 1), x], x] + Dist[q*((e*f - d*g)/
(b*e*n*(p + 1))), Int[(f + g*x)^(q - 1)*(a + b*Log[c*(d + e*x)^n])^(p + 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0] && LtQ[
p, -1] && GtQ[q, 0]
```

Rubi steps

$$\int \frac{(f+gx)^3}{(a+b\log(c(d+ex)^n))^2}\,dx = -\frac{(d+ex)(f+gx)^3}{ben(a+b\log(c(d+ex)^n))} + \frac{4\int \frac{(f+gx)^3}{a+b\log(c(d+ex)^n)}\,dx}{bn} - \frac{(3(ef-dg))\int \frac{}{a+b}}{ben}$$

$$= -\frac{(d+ex)(f+gx)^3}{ben(a+b\log(c(d+ex)^n))} + \frac{4\int \left(\frac{(ef-dg)^3}{e^3(a+b\log(c(d+ex)^n))} + \frac{3g(ef-dg)^2(d+ex)}{e^3(a+b\log(c(d+ex)^n))}\right.}{}$$

$$= -\frac{(d+ex)(f+gx)^3}{ben(a+b\log(c(d+ex)^n))} + \frac{(4g^3)\int \frac{(d+ex)^3}{a+b\log(c(d+ex)^n)}\,dx}{be^3n} - \frac{(3g^2(ef-dg)}{}$$

$$= -\frac{(d+ex)(f+gx)^3}{ben(a+b\log(c(d+ex)^n))} + \frac{(4g^3)\,\text{Subst}\left(\int \frac{x^3}{a+b\log(cx^n)}\,dx, x, d+ex\right)}{be^4n} -$$

$$= -\frac{(d+ex)(f+gx)^3}{ben(a+b\log(c(d+ex)^n))} + \frac{\left(4g^3(d+ex)^4(c(d+ex)^n)^{-4/n}\right)\text{Subst}\left(\int \right.}{be^4n^2}$$

$$= \frac{e^{-\frac{a}{bn}}(ef-dg)^3(d+ex)(c(d+ex)^n)^{-1/n}\,\text{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{b^2e^4n^2} + \frac{6e^{-\frac{2a}{bn}}g(ef}{}$$

Mathematica [B] Leaf count is larger than twice the leaf count of optimal. 1674 vs. $2(339) = 678$.
time = 0.62, size = 1674, normalized size = 4.94

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)^3/(a + b*Log[c*(d + e*x)^n])^2,x]
```

```
[Out] (-(b*d*e^3*E^((4*a)/(b*n))*f^3*n*(c*(d + e*x)^n)^(4/n)) - b*e^4*E^((4*a)/(b
*n))*f^3*n*x*(c*(d + e*x)^n)^(4/n) - 3*b*d*e^3*E^((4*a)/(b*n))*f^2*g*n*x*(c
*(d + e*x)^n)^(4/n) - 3*b*e^4*E^((4*a)/(b*n))*f^2*g*n*x^2*(c*(d + e*x)^n)^(
4/n) - 3*b*d*e^3*E^((4*a)/(b*n))*f*g^2*n*x^2*(c*(d + e*x)^n)^(4/n) - 3*b*e^
4*E^((4*a)/(b*n))*f*g^2*n*x^3*(c*(d + e*x)^n)^(4/n) - b*d*e^3*E^((4*a)/(b*n
))*g^3*n*x^3*(c*(d + e*x)^n)^(4/n) - b*e^4*E^((4*a)/(b*n))*g^3*n*x^4*(c*(d
+ e*x)^n)^(4/n) + a*e^3*E^((3*a)/(b*n))*f^3*(d + e*x)*(c*(d + e*x)^n)^(3/n)
*ExpIntegralEi[(a + b*Log[c*(d + e*x)^n])/(b*n)] - 3*a*d*e^2*E^((3*a)/(b*n)
)*f^2*g*(d + e*x)*(c*(d + e*x)^n)^(3/n)*ExpIntegralEi[(a + b*Log[c*(d + e*x
)^n])/(b*n)] + 3*a*d^2*e*E^((3*a)/(b*n))*f*g^2*(d + e*x)*(c*(d + e*x)^n)^(3
/n)*ExpIntegralEi[(a + b*Log[c*(d + e*x)^n])/(b*n)] - a*d^3*E^((3*a)/(b*n))
*g^3*(d + e*x)*(c*(d + e*x)^n)^(3/n)*ExpIntegralEi[(a + b*Log[c*(d + e*x)^n
])/(b*n)] + 6*a*e^2*E^((2*a)/(b*n))*f^2*g*(d + e*x)^2*(c*(d + e*x)^n)^(2/n)
*ExpIntegralEi[(2*(a + b*Log[c*(d + e*x)^n]))/(b*n)] - 12*a*d*e*E^((2*a)/(b
*n))*f*g^2*(d + e*x)^2*(c*(d + e*x)^n)^(2/n)*ExpIntegralEi[(2*(a + b*Log[c*
```

```
(d + e*x)^n]))/(b*n)] + 6*a*d^2*E^((2*a)/(b*n))*g^3*(d + e*x)^2*(c*(d + e*x
)^n)^(2/n)*ExpIntegralEi[(2*(a + b*Log[c*(d + e*x)^n]))/(b*n)] + 9*a*e*E^(a
/(b*n))*f*g^2*(d + e*x)^3*(c*(d + e*x)^n)^n^(-1)*ExpIntegralEi[(3*(a + b*Lo
g[c*(d + e*x)^n]))/(b*n)] - 9*a*d*E^(a/(b*n))*g^3*(d + e*x)^3*(c*(d + e*x)^
n)^n^(-1)*ExpIntegralEi[(3*(a + b*Log[c*(d + e*x)^n]))/(b*n)] + 4*a*g^3*(d
+ e*x)^4*ExpIntegralEi[(4*(a + b*Log[c*(d + e*x)^n]))/(b*n)] + b*e^3*E^((3*
a)/(b*n))*f^3*(d + e*x)*(c*(d + e*x)^n)^(3/n)*ExpIntegralEi[(a + b*Log[c*(d
 + e*x)^n])/(b*n)]*Log[c*(d + e*x)^n] - 3*b*d*e^2*E^((3*a)/(b*n))*f^2*g*(d
+ e*x)*(c*(d + e*x)^n)^(3/n)*ExpIntegralEi[(a + b*Log[c*(d + e*x)^n])/(b*n)
]*Log[c*(d + e*x)^n] + 3*b*d^2*e*E^((3*a)/(b*n))*f*g^2*(d + e*x)*(c*(d + e*
x)^n)^(3/n)*ExpIntegralEi[(a + b*Log[c*(d + e*x)^n])/(b*n)]*Log[c*(d + e*x)
^n] - b*d^3*E^((3*a)/(b*n))*g^3*(d + e*x)*(c*(d + e*x)^n)^(3/n)*ExpIntegral
Ei[(a + b*Log[c*(d + e*x)^n])/(b*n)]*Log[c*(d + e*x)^n] + 6*b*e^2*E^((2*a)/
(b*n))*f^2*g*(d + e*x)^2*(c*(d + e*x)^n)^(2/n)*ExpIntegralEi[(2*(a + b*Log[
c*(d + e*x)^n]))/(b*n)]*Log[c*(d + e*x)^n] - 12*b*d*e*E^((2*a)/(b*n))*f*g^2
*(d + e*x)^2*(c*(d + e*x)^n)^(2/n)*ExpIntegralEi[(2*(a + b*Log[c*(d + e*x)^
n]))/(b*n)]*Log[c*(d + e*x)^n] + 6*b*d^2*E^((2*a)/(b*n))*g^3*(d + e*x)^2*(c
*(d + e*x)^n)^(2/n)*ExpIntegralEi[(2*(a + b*Log[c*(d + e*x)^n]))/(b*n)]*Log
[c*(d + e*x)^n] + 9*b*e*E^(a/(b*n))*f*g^2*(d + e*x)^3*(c*(d + e*x)^n)^n^(-1
)*ExpIntegralEi[(3*(a + b*Log[c*(d + e*x)^n]))/(b*n)]*Log[c*(d + e*x)^n] -
9*b*d*E^(a/(b*n))*g^3*(d + e*x)^3*(c*(d + e*x)^n)^n^(-1)*ExpIntegralEi[(3*(
a + b*Log[c*(d + e*x)^n]))/(b*n)]*Log[c*(d + e*x)^n] + 4*b*g^3*(d + e*x)^4*
ExpIntegralEi[(4*(a + b*Log[c*(d + e*x)^n]))/(b*n)]*Log[c*(d + e*x)^n])/(b^
2*e^4*E^((4*a)/(b*n))*n^2*(c*(d + e*x)^n)^(4/n)*(a + b*Log[c*(d + e*x)^n]))
```

Maple [**C**] Result contains higher order function than in optimal. Order 9 vs. order 4.
time = 1.23, size = 9517, normalized size = 28.07

method	result	size
risch	Expression too large to display	9517

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^3/(a+b*ln(c*(e*x+d)^n))^2,x,method=_RETURNVERBOSE)
```

```
[Out] result too large to display
```

Maxima [**F**]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^3/(a+b*log(c*(e*x+d)^n))^2,x, algorithm="maxima")
```

```
[Out] -(g^3*x^4*e + d*f^3 + (d*g^3 + 3*f*g^2*e)*x^3 + 3*(d*f*g^2 + f^2*g*e)*x^2 +
 (3*d*f^2*g + f^3*e)*x)/(b^2*n*e*log((x*e + d)^n) + (b^2*n*log(c) + a*b*n)*
```

```
e) + integrate((4*g^3*x^3*e + 3*d*f^2*g + f^3*e + 3*(d*g^3 + 3*f*g^2*e)*x^2
 + 6*(d*f*g^2 + f^2*g*e)*x)/(b^2*n*e*log((x*e + d)^n) + (b^2*n*log(c) + a*b
*n)*e), x)
```

Fricas [A]
time = 0.41, size = 676, normalized size = 1.99

$$-\frac{9\left(adg^3-afg^2e+\left(bdg^3n-bfg^2ne\right)\log\left(xe+d\right)+\left(bdg^3-bfg^2e\right)\log\left(c\right)\right)e^{\left(\frac{b\log\left(c\right)+a}{bn}\right)}\operatorname{log\_integral}\left(\left(x^3e^3+3dx^2e^2+3d^2xe+d^3\right)e^{\left(\frac{3\left(b\log\left(c\right)+a\right)}{bn}\right)}\right)-6\left(ad^2g^3-2adfg^2e+af^2ge^2+\left(bd^2g^3n-2bdfg^2ne+bf^2gne^2\right)\log\left(xe+d\right)+\left(bd^2g^3-2bdfg^2e+bf^2ge^2\right)\log\left(c\right)\right)e^{\left(\frac{2\left(b\log\left(c\right)+a\right)}{bn}\right)}\operatorname{log\_integral}\left(\left(x^2e^2+2dxe+d^2\right)e^{\left(\frac{2\left(b\log\left(c\right)+a\right)}{bn}\right)}\right)+\left(ad^3g^3-3ad^2fg^2e+3adf^2ge^2-af^3e^3+\left(bd^3g^3n-3bd^2fg^2ne+3bdf^2gne^2-bf^3ne^3\right)\log\left(xe+d\right)+\left(bd^3g^3-3bd^2fg^2e+3bdf^2ge^2-bf^3e^3\right)\log\left(c\right)\right)e^{\left(\frac{3\left(b\log\left(c\right)+a\right)}{bn}\right)}\operatorname{log\_integral}\left(\left(xe+d\right)e^{\left(\frac{b\log\left(c\right)+a}{bn}\right)}\right)+\left(\left(bg^3nx^4+3bfg^2nx^3+3bf^2gnx^2+bf^3nx\right)e^4+\left(bdg^3nx^3+3bdfg^2nx^2+3bdf^2gnx+bdf^3n\right)e^3\right)e^{\left(\frac{4\left(b\log\left(c\right)+a\right)}{bn}\right)}-4\left(bg^3n\log\left(xe+d\right)+bg^3\log\left(c\right)+ag^3\right)\operatorname{log\_integral}\left(\left(x^4e^4+4dx^3e^3+6d^2x^2e^2+4d^3xe+d^4\right)e^{\left(\frac{4\left(b\log\left(c\right)+a\right)}{bn}\right)}\right)\right)e^{\left(-\frac{4\left(b\log\left(c\right)+a\right)}{bn}\right)}}{b^3n^3e^4\log\left(xe+d\right)+b^3n^2e^4\log\left(c\right)+ab^2n^2e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^3/(a+b*log(c*(e*x+d)^n))^2,x, algorithm="fricas")
```

```
[Out] -(9*(a*d*g^3 - a*f*g^2*e + (b*d*g^3*n - b*f*g^2*n*e)*log(x*e + d) + (b*d*g^
3 - b*f*g^2*e)*log(c))*e^((b*log(c) + a)/(b*n))*log_integral((x^3*e^3 + 3*d
*x^2*e^2 + 3*d^2*x*e + d^3)*e^(3*(b*log(c) + a)/(b*n))) - 6*(a*d^2*g^3 - 2*
a*d*f*g^2*e + a*f^2*g*e^2 + (b*d^2*g^3*n - 2*b*d*f*g^2*n*e + b*f^2*g*n*e^2)
*log(x*e + d) + (b*d^2*g^3 - 2*b*d*f*g^2*e + b*f^2*g*e^2)*log(c))*e^(2*(b*l
og(c) + a)/(b*n))*log_integral((x^2*e^2 + 2*d*x*e + d^2)*e^(2*(b*log(c) + a
)/(b*n))) + (a*d^3*g^3 - 3*a*d^2*f*g^2*e + 3*a*d*f^2*g*e^2 - a*f^3*e^3 + (b
*d^3*g^3*n - 3*b*d^2*f*g^2*n*e + 3*b*d*f^2*g*n*e^2 - b*f^3*n*e^3)*log(x*e +
 d) + (b*d^3*g^3 - 3*b*d^2*f*g^2*e + 3*b*d*f^2*g*e^2 - b*f^3*e^3)*log(c))*e
^(3*(b*log(c) + a)/(b*n))*log_integral((x*e + d)*e^((b*log(c) + a)/(b*n)))
+ ((b*g^3*n*x^4 + 3*b*f*g^2*n*x^3 + 3*b*f^2*g*n*x^2 + b*f^3*n*x)*e^4 + (b*d
*g^3*n*x^3 + 3*b*d*f*g^2*n*x^2 + 3*b*d*f^2*g*n*x + b*d*f^3*n)*e^3)*e^(4*(b*
log(c) + a)/(b*n)) - 4*(b*g^3*n*log(x*e + d) + b*g^3*log(c) + a*g^3)*log_in
tegral((x^4*e^4 + 4*d*x^3*e^3 + 6*d^2*x^2*e^2 + 4*d^3*x*e + d^4)*e^(4*(b*lo
g(c) + a)/(b*n))))*e^(-4*(b*log(c) + a)/(b*n))/(b^3*n^3*e^4*log(x*e + d) +
b^3*n^2*e^4*log(c) + a*b^2*n^2*e^4)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{\left(f+gx\right)^{3}}{\left(a+b\log\left(c\left(d+ex\right)^{n}\right)\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**3/(a+b*ln(c*(e*x+d)**n))**2,x)
```

```
[Out] Integral((f + g*x)**3/(a + b*log(c*(d + e*x)**n))**2, x)
```

Giac [B] Leaf count of result is larger than twice the leaf count of optimal. 3475 vs. 2(354) = 708.
time = 5.70, size = 3475, normalized size = 10.25

Too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^3/(a+b*log(c*(e*x+d)^n))^2,x, algorithm="giac")

[Out] -(x*e + d)^4*b*g^3*n*e^6/(b^3*n^3*e^10*log(x*e + d) + b^3*n^2*e^10*log(c) +
 a*b^2*n^2*e^10) + 3*(x*e + d)^3*b*d*g^3*n*e^6/(b^3*n^3*e^10*log(x*e + d) +
 b^3*n^2*e^10*log(c) + a*b^2*n^2*e^10) - 3*(x*e + d)^2*b*d^2*g^3*n*e^6/(b^3
*n^3*e^10*log(x*e + d) + b^3*n^2*e^10*log(c) + a*b^2*n^2*e^10) + (x*e + d)*
b*d^3*g^3*n*e^6/(b^3*n^3*e^10*log(x*e + d) + b^3*n^2*e^10*log(c) + a*b^2*n^
2*e^10) - b*d^3*g^3*n*Ei(log(c)/n + a/(b*n) + log(x*e + d))*e^(-a/(b*n) + 6
)*log(x*e + d)/((b^3*n^3*e^10*log(x*e + d) + b^3*n^2*e^10*log(c) + a*b^2*n^
2*e^10)*c^(1/n)) - 3*(x*e + d)^3*b*f*g^2*n*e^7/(b^3*n^3*e^10*log(x*e + d) +
 b^3*n^2*e^10*log(c) + a*b^2*n^2*e^10) + 6*(x*e + d)^2*b*d*f*g^2*n*e^7/(b^3
*n^3*e^10*log(x*e + d) + b^3*n^2*e^10*log(c) + a*b^2*n^2*e^10) - 3*(x*e + d
)*b*d^2*f*g^2*n*e^7/(b^3*n^3*e^10*log(x*e + d) + b^3*n^2*e^10*log(c) + a*b^
2*n^2*e^10) + 3*b*d^2*f*g^2*n*Ei(log(c)/n + a/(b*n) + log(x*e + d))*e^(-a/(
b*n) + 7)*log(x*e + d)/((b^3*n^3*e^10*log(x*e + d) + b^3*n^2*e^10*log(c) +
a*b^2*n^2*e^10)*c^(1/n)) + 6*b*d^2*g^3*n*Ei(2*log(c)/n + 2*a/(b*n) + 2*log(
x*e + d))*e^(-2*a/(b*n) + 6)*log(x*e + d)/((b^3*n^3*e^10*log(x*e + d) + b^3
*n^2*e^10*log(c) + a*b^2*n^2*e^10)*c^(2/n)) - b*d^3*g^3*Ei(log(c)/n + a/(b*
n) + log(x*e + d))*e^(-a/(b*n) + 6)*log(c)/((b^3*n^3*e^10*log(x*e + d) + b^
3*n^2*e^10*log(c) + a*b^2*n^2*e^10)*c^(1/n)) - 3*(x*e + d)^2*b*f^2*g*n*e^8/
(b^3*n^3*e^10*log(x*e + d) + b^3*n^2*e^10*log(c) + a*b^2*n^2*e^10) + 3*(x*e
 + d)*b*d*f^2*g*n*e^8/(b^3*n^3*e^10*log(x*e + d) + b^3*n^2*e^10*log(c) + a*
b^2*n^2*e^10) - a*d^3*g^3*Ei(log(c)/n + a/(b*n) + log(x*e + d))*e^(-a/(b*n)
 + 6)/((b^3*n^3*e^10*log(x*e + d) + b^3*n^2*e^10*log(c) + a*b^2*n^2*e^10)*c
^(1/n)) - 3*b*d*f^2*g*n*Ei(log(c)/n + a/(b*n) + log(x*e + d))*e^(-a/(b*n) +
 8)*log(x*e + d)/((b^3*n^3*e^10*log(x*e + d) + b^3*n^2*e^10*log(c) + a*b^2*
n^2*e^10)*c^(1/n)) - 12*b*d*f*g^2*n*Ei(2*log(c)/n + 2*a/(b*n) + 2*log(x*e +
 d))*e^(-2*a/(b*n) + 7)*log(x*e + d)/((b^3*n^3*e^10*log(x*e + d) + b^3*n^2*
e^10*log(c) + a*b^2*n^2*e^10)*c^(2/n)) - 9*b*d*g^3*n*Ei(3*log(c)/n + 3*a/(b
*n) + 3*log(x*e + d))*e^(-3*a/(b*n) + 6)*log(x*e + d)/((b^3*n^3*e^10*log(x*
e + d) + b^3*n^2*e^10*log(c) + a*b^2*n^2*e^10)*c^(3/n)) + 3*b*d^2*f*g^2*Ei(
log(c)/n + a/(b*n) + log(x*e + d))*e^(-a/(b*n) + 7)*log(c)/((b^3*n^3*e^10*l
og(x*e + d) + b^3*n^2*e^10*log(c) + a*b^2*n^2*e^10)*c^(1/n)) + 6*b*d^2*g^3*
Ei(2*log(c)/n + 2*a/(b*n) + 2*log(x*e + d))*e^(-2*a/(b*n) + 6)*log(c)/((b^3
*n^3*e^10*log(x*e + d) + b^3*n^2*e^10*log(c) + a*b^2*n^2*e^10)*c^(2/n)) - (
x*e + d)*b*f^3*n*e^9/(b^3*n^3*e^10*log(x*e + d) + b^3*n^2*e^10*log(c) + a*b
^2*n^2*e^10) + 3*a*d^2*f*g^2*Ei(log(c)/n + a/(b*n) + log(x*e + d))*e^(-a/(b
*n) + 7)/((b^3*n^3*e^10*log(x*e + d) + b^3*n^2*e^10*log(c) + a*b^2*n^2*e^10
)*c^(1/n)) + 6*a*d^2*g^3*Ei(2*log(c)/n + 2*a/(b*n) + 2*log(x*e + d))*e^(-2*
a/(b*n) + 6)/((b^3*n^3*e^10*log(x*e + d) + b^3*n^2*e^10*log(c) + a*b^2*n^2*
e^10)*c^(2/n)) + b*f^3*n*Ei(log(c)/n + a/(b*n) + log(x*e + d))*e^(-a/(b*n)
+ 9)*log(x*e + d)/((b^3*n^3*e^10*log(x*e + d) + b^3*n^2*e^10*log(c) + a*b^2
*n^2*e^10)*c^(1/n)) + 6*b*f^2*g*n*Ei(2*log(c)/n + 2*a/(b*n) + 2*log(x*e + d
))*e^(-2*a/(b*n) + 8)*log(x*e + d)/((b^3*n^3*e^10*log(x*e + d) + b^3*n^2*e^
10*log(c) + a*b^2*n^2*e^10)*c^(2/n)) + 9*b*f*g^2*n*Ei(3*log(c)/n + 3*a/(b*n
```

```
) + 3*log(x*e + d))*e^(-3*a/(b*n) + 7)*log(x*e + d)/((b^3*n^3*e^10*log(x*e
+ d) + b^3*n^2*e^10*log(c) + a*b^2*n^2*e^10)*c^(3/n)) + 4*b*g^3*n*Ei(4*log(
c)/n + 4*a/(b*n) + 4*log(x*e + d))*e^(-4*a/(b*n) + 6)*log(x*e + d)/((b^3*n^
3*e^10*log(x*e + d) + b^3*n^2*e^10*log(c) + a*b^2*n^2*e^10)*c^(4/n)) - 3*b*
d*f^2*g*Ei(log(c)/n + a/(b*n) + log(x*e + d))*e^(-a/(b*n) + 8)*log(c)/((b^3
*n^3*e^10*log(x*e + d) + b^3*n^2*e^10*log(c) + a*b^2*n^2*e^10)*c^(1/n)) - 1
2*b*d*f*g^2*Ei(2*log(c)/n + 2*a/(b*n) + 2*log(x*e + d))*e^(-2*a/(b*n) + 7)*
log(c)/((b^3*n^3*e^10*log(x*e + d) + b^3*n^2*e^10*log(c) + a*b^2*n^2*e^10)*
c^(2/n)) - 9*b*d*g^3*Ei(3*log(c)/n + 3*a/(b*n) + 3*log(x*e + d))*e^(-3*a/(b
*n) + 6)*log(c)/((b^3*n^3*e^10*log(x*e + d) + b^3*n^2*e^10*log(c) + a*b^2*n
^2*e^10)*c^(3/n)) - 3*a*d*f^2*g*Ei(log(c)/n + a/(b*n) + log(x*e + d))*e^(-a
/(b*n) + 8)/((b^3*n^3*e^10*log(x*e + d) + b^3*n^2*e^10*log(c) + a*b^2*n^2*e
^10)*c^(1/n)) - 12*a*d*f*g^2*Ei(2*log(c)/n + 2*a/(b*n) + 2*log(x*e + d))*e^
(-2*a/(b*n) + 7)/((b^3*n^3*e^10*log(x*e + d) + b^3*n^2*e^10*log(c) + a*b^2*
n^2*e^10)*c^(2/n)) - 9*a*d*g^3*Ei(3*log(c)/n + 3*a/(b*n) + 3*log(x*e + d))*
e^(-3*a/(b*n) + 6)/((b^3*n^3*e^10*log(x*e + d) + b^3*n^2*e^10*log(c) + a*b^
2*n^2*e^10)*c^(3/n)) + b*f^3*Ei(log(c)/n + a/(b*n) + log(x*e + d))*e^(-a/(b
*n) + 9)*log(c)/((b^3*n^3*e^10*log(x*e + d) + b^3*n^2*e^10*log(c) + a*b^2*n
^2*e^10)*c^(1/n)) + 6*b*f^2*g*Ei(2*log(c)/n + 2*a/(b*n) + 2*log(x*e + d))*e
^(-2*a/(b*n) + 8)*log(c)/((b^3*n^3*e^10*log(x*e + d) + b^3*n^2*e^10*log(c)
+ a*b^2*n^2*e^10)*c^(2/n)) + 9*b*f*g^2*Ei(3*log(c)/n + 3*a/(b*n) + 3*log(x*
e + d))*e^(-3*a/(b*n) + 7)*log(c)/((b^3*n^3*e^10*log(x*e + d) + b^3*n^2*e^1
0*log(c) + a*b^2*n^2*e^10)*c^(3/n)) + 4*b*g^3*Ei(4*log(c)/n + 4*a/(b*n) + 4
*log(x*e + d))*e^(-4*a/(b*n) + 6)*log(c)/((b^3*...
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(f+g\,x)^3}{(a+b\,\ln(c\,(d+e\,x)^n))^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)^3/(a + b*log(c*(d + e*x)^n))^2,x)
```

```
[Out] int((f + g*x)^3/(a + b*log(c*(d + e*x)^n))^2, x)
```

3.95 $\int \frac{(f+gx)^2}{(a+b\log(c(d+ex)^n))^2}\,dx$

Optimal. Leaf size=259

$$\frac{e^{-\frac{a}{bn}}(ef-dg)^2(d+ex)\left(c(d+ex)^n\right)^{-1/n}\text{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{b^2e^3n^2}+\frac{4e^{-\frac{2a}{bn}}g(ef-dg)(d+ex)^2\left(c(d+ex)^n\right)^{-2/n}\text{E}}{b^2e^3n^2}$$

```
[Out] (-d*g+e*f)^2*(e*x+d)*Ei((a+b*ln(c*(e*x+d)^n))/b/n)/b^2/e^3/exp(a/b/n)/n^2/(
(c*(e*x+d)^n)^(1/n))+4*g*(-d*g+e*f)*(e*x+d)^2*Ei(2*(a+b*ln(c*(e*x+d)^n))/b/
n)/b^2/e^3/exp(2*a/b/n)/n^2/((c*(e*x+d)^n)^(2/n))+3*g^2*(e*x+d)^3*Ei(3*(a+b
*ln(c*(e*x+d)^n))/b/n)/b^2/e^3/exp(3*a/b/n)/n^2/((c*(e*x+d)^n)^(3/n))-(e*x+
d)*(g*x+f)^2/b/e/n/(a+b*ln(c*(e*x+d)^n))
```

Rubi [A]

time = 0.37, antiderivative size = 259, normalized size of antiderivative = 1.00, number of steps used = 20, number of rules used = 7, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.292$, Rules used = {2447, 2446, 2436, 2337, 2209, 2437, 2347}

$$\frac{4ge^{-\frac{2a}{bn}}(d+ex)^2(ef-dg)\left(c(d+ex)^n\right)^{-2/n}\text{Ei}\left(\frac{2(a+b\log(c(d+ex)^n))}{bn}\right)}{b^2e^3n^2}+\frac{e^{-\frac{a}{bn}}(d+ex)(ef-dg)^2\left(c(d+ex)^n\right)^{-1/n}\text{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{b^2e^3n^2}+\frac{3g^2e^{-\frac{3a}{bn}}(d+ex)^3\left(c(d+ex)^n\right)^{-3/n}\text{Ei}\left(\frac{3(a+b\log(c(d+ex)^n))}{bn}\right)}{b^2e^3n^2}-\frac{(d+ex)(f+gx)^2}{ben\left(a+b\log\left(c(d+ex)^n\right)\right)}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)^2/(a + b*Log[c*(d + e*x)^n])^2,x]
```

```
[Out] ((e*f - d*g)^2*(d + e*x)*ExpIntegralEi[(a + b*Log[c*(d + e*x)^n])/(b*n)])/(
b^2*e^3*E^(a/(b*n))*n^2*(c*(d + e*x)^n)^n^(-1)) + (4*g*(e*f - d*g)*(d + e*x
)^2*ExpIntegralEi[(2*(a + b*Log[c*(d + e*x)^n]))/(b*n)])/(b^2*e^3*E^((2*a)/
(b*n))*n^2*(c*(d + e*x)^n)^(2/n)) + (3*g^2*(d + e*x)^3*ExpIntegralEi[(3*(a
+ b*Log[c*(d + e*x)^n]))/(b*n)])/(b^2*e^3*E^((3*a)/(b*n))*n^2*(c*(d + e*x)^
n)^(3/n)) - ((d + e*x)*(f + g*x)^2)/(b*e*n*(a + b*Log[c*(d + e*x)^n]))
```

Rule 2209

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/((c_.) + (d_.)*(x_)), x_Symbol] :> Si
mp[(F^(g*(e - c*(f/d)))/d)*ExpIntegralEi[f*g*(c + d*x)*(Log[F]/d)], x] /; F
reeQ[{F, c, d, e, f, g}, x] &&  !TrueQ[$UseGamma]
```

Rule 2337

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2347

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_)*((d_.)*(x_))^(m_.), x_Symbol
] :> Dist[(d*x)^(m + 1)/(d*n*(c*x^n)^((m + 1)/n)), Subst[Int[E^(((m + 1)/n)
```

```
*x)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b, c, d, m, n, p}, x]
```

Rule 2436

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2437

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[(f*(x/d))^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2446

```
Int[((f_.) + (g_.)*(x_))^(q_.)/((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)
]*(b_.)), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q/(a + b*Log[c*(d + e*
x)^n]), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0] &
& IGtQ[q, 0]
```

Rule 2447

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[(d + e*x)*(f + g*x)^q*((a + b*Log[c*(d + e
*x)^n])^(p + 1)/(b*e*n*(p + 1))), x] + (-Dist[(q + 1)/(b*n*(p + 1)), Int[(f
 + g*x)^q*(a + b*Log[c*(d + e*x)^n])^(p + 1), x], x] + Dist[q*((e*f - d*g)/
(b*e*n*(p + 1))), Int[(f + g*x)^(q - 1)*(a + b*Log[c*(d + e*x)^n])^(p + 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0] && LtQ[
p, -1] && GtQ[q, 0]
```

Rubi steps

$$\int \frac{(f+gx)^2}{(a+b\log(c(d+ex)^n))^2}\,dx = -\frac{(d+ex)(f+gx)^2}{ben\,(a+b\log(c(d+ex)^n))} + \frac{3\int \frac{(f+gx)^2}{a+b\log(c(d+ex)^n)}\,dx}{bn} - \frac{(2(ef-dg))\int \frac{}{a-}}{be}$$

$$= -\frac{(d+ex)(f+gx)^2}{ben\,(a+b\log(c(d+ex)^n))} + \frac{3\int \left(\frac{(ef-dg)^2}{e^2(a+b\log(c(d+ex)^n))} + \frac{2g(ef-dg)(d+ex)}{e^2(a+b\log(c(d+ex)^n)}\right.}{bn}$$

$$= -\frac{(d+ex)(f+gx)^2}{ben\,(a+b\log(c(d+ex)^n))} + \frac{(3g^2)\int \frac{(d+ex)^2}{a+b\log(c(d+ex)^n)}\,dx}{be^2n} - \frac{(2g(ef-dg)}{}$$

$$= -\frac{(d+ex)(f+gx)^2}{ben\,(a+b\log(c(d+ex)^n))} + \frac{(3g^2)\,\mathrm{Subst}\left(\int \frac{x^2}{a+b\log(cx^n)}\,dx, x, d+ex\right)}{be^3n} -$$

$$= -\frac{(d+ex)(f+gx)^2}{ben\,(a+b\log(c(d+ex)^n))} + \frac{\left(3g^2(d+ex)^3\,(c(d+ex)^n)^{-3/n}\right)\mathrm{Subst}\left(\int\right.}{be^3n^2}$$

$$= \frac{e^{-\frac{a}{bn}}(ef-dg)^2(d+ex)\,(c(d+ex)^n)^{-1/n}\,\mathrm{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{b^2e^3n^2} + \frac{4e^{-\frac{2a}{bn}}g(e}{}$$

Mathematica [B] Leaf count is larger than twice the leaf count of optimal. 1015 vs. $2(259) = 518$.
time = 0.35, size = 1015, normalized size = 3.92

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)^2/(a + b*Log[c*(d + e*x)^n])^2,x]
```

```
[Out] (-(b*d*e^2*E^((3*a)/(b*n))*f^2*n*(c*(d + e*x)^n)^(3/n)) - b*e^3*E^((3*a)/(b
*n))*f^2*n*x*(c*(d + e*x)^n)^(3/n) - 2*b*d*e^2*E^((3*a)/(b*n))*f*g*n*x*(c*(
d + e*x)^n)^(3/n) - 2*b*e^3*E^((3*a)/(b*n))*f*g*n*x^2*(c*(d + e*x)^n)^(3/n)
 - b*d*e^2*E^((3*a)/(b*n))*g^2*n*x^2*(c*(d + e*x)^n)^(3/n) - b*e^3*E^((3*a)
/(b*n))*g^2*n*x^3*(c*(d + e*x)^n)^(3/n) + a*e^2*E^((2*a)/(b*n))*f^2*(d + e*
x)*(c*(d + e*x)^n)^(2/n)*ExpIntegralEi[(a + b*Log[c*(d + e*x)^n])/(b*n)] -
2*a*d*e*E^((2*a)/(b*n))*f*g*(d + e*x)*(c*(d + e*x)^n)^(2/n)*ExpIntegralEi[(
a + b*Log[c*(d + e*x)^n])/(b*n)] + a*d^2*E^((2*a)/(b*n))*g^2*(d + e*x)*(c*(
d + e*x)^n)^(2/n)*ExpIntegralEi[(a + b*Log[c*(d + e*x)^n])/(b*n)] + 4*a*e*E
^(a/(b*n))*f*g*(d + e*x)^2*(c*(d + e*x)^n)^n^(-1)*ExpIntegralEi[(2*(a + b*L
og[c*(d + e*x)^n]))/(b*n)] - 4*a*d*E^(a/(b*n))*g^2*(d + e*x)^2*(c*(d + e*x)
^n)^n^(-1)*ExpIntegralEi[(2*(a + b*Log[c*(d + e*x)^n]))/(b*n)] + 3*a*g^2*(d
 + e*x)^3*ExpIntegralEi[(3*(a + b*Log[c*(d + e*x)^n]))/(b*n)] + b*e^2*E^((2
*a)/(b*n))*f^2*(d + e*x)*(c*(d + e*x)^n)^(2/n)*ExpIntegralEi[(a + b*Log[c*(
d + e*x)^n])/(b*n)]*Log[c*(d + e*x)^n] - 2*b*d*e*E^((2*a)/(b*n))*f*g*(d + e
```

```
*x)*(c*(d + e*x)^n)^(2/n)*ExpIntegralEi[(a + b*Log[c*(d + e*x)^n])/(b*n)]*L
og[c*(d + e*x)^n] + b*d^2*E^((2*a)/(b*n))*g^2*(d + e*x)*(c*(d + e*x)^n)^(2/
n)*ExpIntegralEi[(a + b*Log[c*(d + e*x)^n])/(b*n)]*Log[c*(d + e*x)^n] + 4*b
*e*E^(a/(b*n))*f*g*(d + e*x)^2*(c*(d + e*x)^n)^n^(-1)*ExpIntegralEi[(2*(a +
 b*Log[c*(d + e*x)^n]))/(b*n)]*Log[c*(d + e*x)^n] - 4*b*d*E^(a/(b*n))*g^2*(
d + e*x)^2*(c*(d + e*x)^n)^n^(-1)*ExpIntegralEi[(2*(a + b*Log[c*(d + e*x)^n
]))/(b*n)]*Log[c*(d + e*x)^n] + 3*b*g^2*(d + e*x)^3*ExpIntegralEi[(3*(a + b
*Log[c*(d + e*x)^n]))/(b*n)]*Log[c*(d + e*x)^n])/(b^2*e^3*E^((3*a)/(b*n))*n
^2*(c*(d + e*x)^n)^(3/n)*(a + b*Log[c*(d + e*x)^n]))
```

Maple [C] Result contains higher order function than in optimal. Order 9 vs. order 4.
time = 1.01, size = 5123, normalized size = 19.78

method	result	size
risch	Expression too large to display	5123

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^2/(a+b*ln(c*(e*x+d)^n))^2,x,method=_RETURNVERBOSE)
```

```
[Out] result too large to display
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2/(a+b*log(c*(e*x+d)^n))^2,x, algorithm="maxima")
```

```
[Out] -(g^2*x^3*e + d*f^2 + (d*g^2 + 2*f*g*e)*x^2 + (2*d*f*g + f^2*e)*x)/(b^2*n*e
*log((x*e + d)^n) + (b^2*n*log(c) + a*b*n)*e) + integrate((3*g^2*x^2*e + 2*
d*f*g + f^2*e + 2*(d*g^2 + 2*f*g*e)*x)/(b^2*n*e*log((x*e + d)^n) + (b^2*n*l
og(c) + a*b*n)*e), x)
```

Fricas [A]
time = 0.39, size = 433, normalized size = 1.67

$$-\frac{\left(4\,(adg^2 - afge + (bdg^2n - bfgne)\log\left(xe + d\right) + (bdg^2 - bfge)\log\left(c\right))e^{\left(\frac{b\log(c)+a}{bn}\right)}\,\mathrm{log\_integral}\left((x^2e^2 + 2\,dxe + d^2)e^{\left(\frac{2\,(b\log(c)+a)}{bn}\right)}\right) - (ad^2g^2 - 2\,adfge + af^2e^2 + (bd^2g^2n - 2\,bdfgne + bf^2ne^2)\log\left(xe + d\right) + (bd^2g^2 - 2\,bdfge + bf^2e^2)\log\left(c\right))e^{\left(\frac{2\,(b\log(c)+a)}{bn}\right)}\,\mathrm{log\_integral}\left((xe + d)e^{\left(\frac{b\log(c)+a}{bn}\right)}\right) + ((bg^2nx^3 + 2\,bfgnx^2 + bf^2nx)e^3 + (bdg^2nx^2 + 2\,bdfgnx + bdf^2n)e^2)e^{\left(\frac{3\,(b\log(c)+a)}{bn}\right)} - 3\,(bg^2n\log\left(xe + d\right) + bg^2\log\left(c\right) + ag^2)\,\mathrm{log\_integral}\left((x^3e^3 + 3\,dx^2e^2 + 3\,d^2xe + d^3)e^{\left(\frac{3\,(b\log(c)+a)}{bn}\right)}\right)\right)e^{\left(-\frac{3\,(b\log(c)+a)}{bn}\right)}}{b^3n^3e^3\log\left(xe + d\right) + b^3n^2e^3\log\left(c\right) + ab^2n^2e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2/(a+b*log(c*(e*x+d)^n))^2,x, algorithm="fricas")
```

```
[Out] -(4*(a*d*g^2 - a*f*g*e + (b*d*g^2*n - b*f*g*n*e)*log(x*e + d) + (b*d*g^2 -
b*f*g*e)*log(c))*e^((b*log(c) + a)/(b*n))*log_integral((x^2*e^2 + 2*d*x*e +
 d^2)*e^(2*(b*log(c) + a)/(b*n))) - (a*d^2*g^2 - 2*a*d*f*g*e + a*f^2*e^2 +
(b*d^2*g^2*n - 2*b*d*f*g*n*e + b*f^2*n*e^2)*log(x*e + d) + (b*d^2*g^2 - 2*b
```

```
*d*f*g*e + b*f^2*e^2)*log(c))*e^(2*(b*log(c) + a)/(b*n))*log_integral((x*e
+ d)*e^((b*log(c) + a)/(b*n))) + ((b*g^2*n*x^3 + 2*b*f*g*n*x^2 + b*f^2*n*x)
*e^3 + (b*d*g^2*n*x^2 + 2*b*d*f*g*n*x + b*d*f^2*n)*e^2)*e^(3*(b*log(c) + a)
/(b*n)) - 3*(b*g^2*n*log(x*e + d) + b*g^2*log(c) + a*g^2)*log_integral((x^3
*e^3 + 3*d*x^2*e^2 + 3*d^2*x*e + d^3)*e^(3*(b*log(c) + a)/(b*n))))*e^(-3*(b
*log(c) + a)/(b*n))/(b^3*n^3*e^3*log(x*e + d) + b^3*n^2*e^3*log(c) + a*b^2*
n^2*e^3)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(f+gx)^2}{\left(a+b\log\left(c\left(d+ex\right)^n\right)\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**2/(a+b*ln(c*(e*x+d)**n))**2,x)
```

```
[Out] Integral((f + g*x)**2/(a + b*log(c*(d + e*x)**n))**2, x)
```

Giac [B] Leaf count of result is larger than twice the leaf count of optimal. 2041 vs. 2(269) = 538.
time = 6.25, size = 2041, normalized size = 7.88

Too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2/(a+b*log(c*(e*x+d)^n))^2,x, algorithm="giac")
```

```
[Out] -(x*e + d)^3*b*g^2*n*e^3/(b^3*n^3*e^6*log(x*e + d) + b^3*n^2*e^6*log(c) + a
*b^2*n^2*e^6) + 2*(x*e + d)^2*b*d*g^2*n*e^3/(b^3*n^3*e^6*log(x*e + d) + b^3
*n^2*e^6*log(c) + a*b^2*n^2*e^6) - (x*e + d)*b*d^2*g^2*n*e^3/(b^3*n^3*e^6*l
og(x*e + d) + b^3*n^2*e^6*log(c) + a*b^2*n^2*e^6) + b*d^2*g^2*n*Ei(log(c)/n
 + a/(b*n) + log(x*e + d))*e^(-a/(b*n) + 3)*log(x*e + d)/((b^3*n^3*e^6*log(
x*e + d) + b^3*n^2*e^6*log(c) + a*b^2*n^2*e^6)*c^(1/n)) - 2*(x*e + d)^2*b*f
*g*n*e^4/(b^3*n^3*e^6*log(x*e + d) + b^3*n^2*e^6*log(c) + a*b^2*n^2*e^6) +
2*(x*e + d)*b*d*f*g*n*e^4/(b^3*n^3*e^6*log(x*e + d) + b^3*n^2*e^6*log(c) +
a*b^2*n^2*e^6) - 2*b*d*f*g*n*Ei(log(c)/n + a/(b*n) + log(x*e + d))*e^(-a/(b
*n) + 4)*log(x*e + d)/((b^3*n^3*e^6*log(x*e + d) + b^3*n^2*e^6*log(c) + a*b
^2*n^2*e^6)*c^(1/n)) - 4*b*d*g^2*n*Ei(2*log(c)/n + 2*a/(b*n) + 2*log(x*e +
d))*e^(-2*a/(b*n) + 3)*log(x*e + d)/((b^3*n^3*e^6*log(x*e + d) + b^3*n^2*e^
6*log(c) + a*b^2*n^2*e^6)*c^(2/n)) + b*d^2*g^2*Ei(log(c)/n + a/(b*n) + log(
x*e + d))*e^(-a/(b*n) + 3)*log(c)/((b^3*n^3*e^6*log(x*e + d) + b^3*n^2*e^6*
log(c) + a*b^2*n^2*e^6)*c^(1/n)) - (x*e + d)*b*f^2*n*e^5/(b^3*n^3*e^6*log(x
*e + d) + b^3*n^2*e^6*log(c) + a*b^2*n^2*e^6) + a*d^2*g^2*Ei(log(c)/n + a/(
b*n) + log(x*e + d))*e^(-a/(b*n) + 3)/((b^3*n^3*e^6*log(x*e + d) + b^3*n^2*
e^6*log(c) + a*b^2*n^2*e^6)*c^(1/n)) + b*f^2*n*Ei(log(c)/n + a/(b*n) + log(
```

```
x*e + d))*e^(-a/(b*n) + 5)*log(x*e + d)/((b^3*n^3*e^6*log(x*e + d) + b^3*n^
2*e^6*log(c) + a*b^2*n^2*e^6)*c^(1/n)) + 4*b*f*g*n*Ei(2*log(c)/n + 2*a/(b*n
) + 2*log(x*e + d))*e^(-2*a/(b*n) + 4)*log(x*e + d)/((b^3*n^3*e^6*log(x*e +
 d) + b^3*n^2*e^6*log(c) + a*b^2*n^2*e^6)*c^(2/n)) + 3*b*g^2*n*Ei(3*log(c)/
n + 3*a/(b*n) + 3*log(x*e + d))*e^(-3*a/(b*n) + 3)*log(x*e + d)/((b^3*n^3*e
^6*log(x*e + d) + b^3*n^2*e^6*log(c) + a*b^2*n^2*e^6)*c^(3/n)) - 2*b*d*f*g*
Ei(log(c)/n + a/(b*n) + log(x*e + d))*e^(-a/(b*n) + 4)*log(c)/((b^3*n^3*e^6
*log(x*e + d) + b^3*n^2*e^6*log(c) + a*b^2*n^2*e^6)*c^(1/n)) - 4*b*d*g^2*Ei
(2*log(c)/n + 2*a/(b*n) + 2*log(x*e + d))*e^(-2*a/(b*n) + 3)*log(c)/((b^3*n
^3*e^6*log(x*e + d) + b^3*n^2*e^6*log(c) + a*b^2*n^2*e^6)*c^(2/n)) - 2*a*d*
f*g*Ei(log(c)/n + a/(b*n) + log(x*e + d))*e^(-a/(b*n) + 4)/((b^3*n^3*e^6*lo
g(x*e + d) + b^3*n^2*e^6*log(c) + a*b^2*n^2*e^6)*c^(1/n)) - 4*a*d*g^2*Ei(2*
log(c)/n + 2*a/(b*n) + 2*log(x*e + d))*e^(-2*a/(b*n) + 3)/((b^3*n^3*e^6*log
(x*e + d) + b^3*n^2*e^6*log(c) + a*b^2*n^2*e^6)*c^(2/n)) + b*f^2*Ei(log(c)/
n + a/(b*n) + log(x*e + d))*e^(-a/(b*n) + 5)*log(c)/((b^3*n^3*e^6*log(x*e +
 d) + b^3*n^2*e^6*log(c) + a*b^2*n^2*e^6)*c^(1/n)) + 4*b*f*g*Ei(2*log(c)/n
+ 2*a/(b*n) + 2*log(x*e + d))*e^(-2*a/(b*n) + 4)*log(c)/((b^3*n^3*e^6*log(x
*e + d) + b^3*n^2*e^6*log(c) + a*b^2*n^2*e^6)*c^(2/n)) + 3*b*g^2*Ei(3*log(c
)/n + 3*a/(b*n) + 3*log(x*e + d))*e^(-3*a/(b*n) + 3)*log(c)/((b^3*n^3*e^6*l
og(x*e + d) + b^3*n^2*e^6*log(c) + a*b^2*n^2*e^6)*c^(3/n)) + a*f^2*Ei(log(c
)/n + a/(b*n) + log(x*e + d))*e^(-a/(b*n) + 5)/((b^3*n^3*e^6*log(x*e + d) +
 b^3*n^2*e^6*log(c) + a*b^2*n^2*e^6)*c^(1/n)) + 4*a*f*g*Ei(2*log(c)/n + 2*a
/(b*n) + 2*log(x*e + d))*e^(-2*a/(b*n) + 4)/((b^3*n^3*e^6*log(x*e + d) + b^
3*n^2*e^6*log(c) + a*b^2*n^2*e^6)*c^(2/n)) + 3*a*g^2*Ei(3*log(c)/n + 3*a/(b
*n) + 3*log(x*e + d))*e^(-3*a/(b*n) + 3)/((b^3*n^3*e^6*log(x*e + d) + b^3*n
^2*e^6*log(c) + a*b^2*n^2*e^6)*c^(3/n))
```

Mupad [F]

time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(f+g\,x)^2}{(a+b\,\ln(c\,(d+e\,x)^n))^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)^2/(a + b*log(c*(d + e*x)^n))^2,x)
```

```
[Out] int((f + g*x)^2/(a + b*log(c*(d + e*x)^n))^2, x)
```

3.96 $\int \frac{f+gx}{(a+b\log(c(d+ex)^n))^2}\,dx$

Optimal. Leaf size=177

$$\frac{e^{-\frac{a}{bn}}(ef-dg)(d+ex)\left(c(d+ex)^n\right)^{-1/n}\text{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{b^2e^2n^2}+\frac{2e^{-\frac{2a}{bn}}g(d+ex)^2\left(c(d+ex)^n\right)^{-2/n}\text{Ei}\left(\frac{2(a+b\log(}{b}\right.}{b^2e^2n^2}$$

```
[Out] (-d*g+e*f)*(e*x+d)*Ei((a+b*ln(c*(e*x+d)^n))/b/n)/b^2/e^2/exp(a/b/n)/n^2/((c
*(e*x+d)^n)^(1/n))+2*g*(e*x+d)^2*Ei(2*(a+b*ln(c*(e*x+d)^n))/b/n)/b^2/e^2/ex
p(2*a/b/n)/n^2/((c*(e*x+d)^n)^(2/n))-(e*x+d)*(g*x+f)/b/e/n/(a+b*ln(c*(e*x+d
)^n))
```

Rubi [A]
time = 0.18, antiderivative size = 177, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 7, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.318$, Rules used = {2447, 2446, 2436, 2337, 2209, 2437, 2347}

$$\frac{e^{-\frac{a}{bn}}(d+ex)(ef-dg)\left(c(d+ex)^n\right)^{-1/n}\text{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{b^2e^2n^2}+\frac{2ge^{-\frac{2a}{bn}}(d+ex)^2\left(c(d+ex)^n\right)^{-2/n}\text{Ei}\left(\frac{2(a+b\log(c(d+ex)^n))}{bn}\right)}{b^2e^2n^2}-\frac{(d+ex)(f+gx)}{ben\left(a+b\log\left(c(d+ex)^n\right)\right)}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)/(a + b*Log[c*(d + e*x)^n])^2,x]
```

```
[Out] ((e*f - d*g)*(d + e*x)*ExpIntegralEi[(a + b*Log[c*(d + e*x)^n])/(b*n)])/(b^
2*e^2*E^(a/(b*n))*n^2*(c*(d + e*x)^n)^n^(-1)) + (2*g*(d + e*x)^2*ExpIntegra
lEi[(2*(a + b*Log[c*(d + e*x)^n]))/(b*n)])/(b^2*e^2*E^((2*a)/(b*n))*n^2*(c*
(d + e*x)^n)^(2/n)) - ((d + e*x)*(f + g*x))/(b*e*n*(a + b*Log[c*(d + e*x)^n
]))
```

Rule 2209

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/((c_.) + (d_.)*(x_)), x_Symbol] :> Si
mp[(F^(g*(e - c*(f/d)))/d)*ExpIntegralEi[f*g*(c + d*x)*(Log[F]/d)], x] /; F
reeQ[{F, c, d, e, f, g}, x] &&  !TrueQ[$UseGamma]
```

Rule 2337

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2347

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_)*((d_.)*(x_))^(m_.), x_Symbol
] :> Dist[(d*x)^(m + 1)/(d*n*(c*x^n)^((m + 1)/n)), Subst[Int[E^(((m + 1)/n)
```

```
*x)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b, c, d, m, n, p}, x]
```

Rule 2436

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2437

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[(f*(x/d))^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2446

```
Int[((f_.) + (g_.)*(x_))^(q_.)/((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)
]*(b_.)), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q/(a + b*Log[c*(d + e*
x)^n]), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0] &
& IGtQ[q, 0]
```

Rule 2447

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[(d + e*x)*(f + g*x)^q*((a + b*Log[c*(d + e
*x)^n])^(p + 1)/(b*e*n*(p + 1))), x] + (-Dist[(q + 1)/(b*n*(p + 1)), Int[(f
 + g*x)^q*(a + b*Log[c*(d + e*x)^n])^(p + 1), x], x] + Dist[q*((e*f - d*g)/
(b*e*n*(p + 1))), Int[(f + g*x)^(q - 1)*(a + b*Log[c*(d + e*x)^n])^(p + 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0] && LtQ[
p, -1] && GtQ[q, 0]
```

Rubi steps

$$\int \frac{f+gx}{(a+b\log(c(d+ex)^n))^2}\,dx = -\frac{(d+ex)(f+gx)}{ben\,(a+b\log(c(d+ex)^n))} + \frac{2\int \frac{f+gx}{a+b\log(c(d+ex)^n)}\,dx}{bn} - \frac{(ef-dg)\int \frac{\ldots}{a+b\log\ldots}}{ben}$$

$$= -\frac{(d+ex)(f+gx)}{ben\,(a+b\log(c(d+ex)^n))} + \frac{2\int \left(\frac{ef-dg}{e(a+b\log(c(d+ex)^n))} + \frac{g(d+ex)}{e(a+b\log(c(d+ex)^n))}\right)\ldots}{bn}$$

$$= -\frac{(d+ex)(f+gx)}{ben\,(a+b\log(c(d+ex)^n))} + \frac{(2g)\int \frac{d+ex}{a+b\log(c(d+ex)^n)}\,dx}{ben} + \frac{(2(ef-dg))\int\ldots}{\ldots}$$

$$= -\frac{e^{-\frac{a}{bn}}(ef-dg)(d+ex)\left(c(d+ex)^n\right)^{-1/n}\operatorname{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{b^2e^2n^2} - \frac{(d+\ldots}{ben\,(a+\ldots}$$

$$= -\frac{e^{-\frac{a}{bn}}(ef-dg)(d+ex)\left(c(d+ex)^n\right)^{-1/n}\operatorname{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{b^2e^2n^2} - \frac{(d+\ldots}{ben\,(a+\ldots}$$

$$= \frac{e^{-\frac{a}{bn}}(ef-dg)(d+ex)\left(c(d+ex)^n\right)^{-1/n}\operatorname{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{b^2e^2n^2} + \frac{2e^{-\frac{2a}{bn}}g(d+\ldots}{\ldots}$$

Mathematica [A]
time = 0.19, size = 208, normalized size = 1.18

$$-\frac{e^{-\frac{2a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-2/n}\left(bee^{\frac{2a}{bn}}n(c(d+ex)^n)^{2/n}(f+gx) - e^{\frac{a}{bn}}(ef-dg)\left(c(d+ex)^n\right)^{\frac{1}{n}}\operatorname{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)(a+b\log(c(d+ex)^n)) - 2g(d+ex)\operatorname{Ei}\left(\frac{2(a+b\log(c(d+ex)^n))}{bn}\right)(a+b\log(c(d+ex)^n))\right)}{b^2e^2n^2\,(a+b\log(c(d+ex)^n))}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)/(a + b*Log[c*(d + e*x)^n])^2,x]
```

```
[Out] -(((d + e*x)*(b*e*E^((2*a)/(b*n))*n*(c*(d + e*x)^n)^(2/n)*(f + g*x) - E^(a/
(b*n))*(e*f - d*g)*(c*(d + e*x)^n)^n^(-1)*ExpIntegralEi[(a + b*Log[c*(d + e
*x)^n])/(b*n)]*(a + b*Log[c*(d + e*x)^n]) - 2*g*(d + e*x)*ExpIntegralEi[(2*
(a + b*Log[c*(d + e*x)^n]))/(b*n)]*(a + b*Log[c*(d + e*x)^n])))/(b^2*e^2*E^
((2*a)/(b*n))*n^2*(c*(d + e*x)^n)^(2/n)*(a + b*Log[c*(d + e*x)^n])))
```

Maple [C] Result contains higher order function than in optimal. Order 9 vs. order 4.
time = 0.70, size = 2300, normalized size = 12.99

method	result	size
risch	Expression too large to display	2300

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)/(a+b*ln(c*(e*x+d)^n))^2,x,method=_RETURNVERBOSE)
```

```
[Out] -2*(e*x+d)*(g*x+f)/b/e/n/(2*a+2*b*ln(c)+2*b*ln((e*x+d)^n)-I*b*Pi*csgn(I*c)*
csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^
```

```
2+I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-I*b*Pi*csgn(I*c*(e*x+d)^n)
^3)-1/b^2/n^2*f*((e*x+d)^n)^(-1/n)*c^(-1/n)*exp(-1/2*(-I*b*Pi*csgn(I*c)*csg
n(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I
*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-I*b*Pi*csgn(I*c*(e*x+d)^n)^3+
2*a)/b/n)*Ei(1,-ln(e*x+d)-1/2*(-I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c
*(e*x+d)^n)+I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I*b*Pi*csgn(I*(e*x+d)^n)
*csgn(I*c*(e*x+d)^n)^2-I*b*Pi*csgn(I*c*(e*x+d)^n)^3+2*b*ln(c)+2*b*(ln((e*x+
d)^n)-n*ln(e*x+d))+2*a)/b/n)*x-1/b^2/e/n^2*f*((e*x+d)^n)^(-1/n)*c^(-1/n)*ex
p(-1/2*(-I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+I*b*Pi*csgn
(I*c)*csgn(I*c*(e*x+d)^n)^2+I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-
I*b*Pi*csgn(I*c*(e*x+d)^n)^3+2*a)/b/n)*Ei(1,-ln(e*x+d)-1/2*(-I*b*Pi*csgn(I*
c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^
n)^2+I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-I*b*Pi*csgn(I*c*(e*x+d)
^n)^3+2*b*ln(c)+2*b*(ln((e*x+d)^n)-n*ln(e*x+d))+2*a)/b/n)*d-2/b^2/n^2*g*((e
*x+d)^n)^(-2/n)*c^(-2/n)*exp(-(-I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c
*(e*x+d)^n)+I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I*b*Pi*csgn(I*(e*x+d)^n)
*csgn(I*c*(e*x+d)^n)^2-I*b*Pi*csgn(I*c*(e*x+d)^n)^3+2*a)/b/n)*Ei(1,-2*ln(e*
x+d)-(-I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+I*b*Pi*csgn(I
*c)*csgn(I*c*(e*x+d)^n)^2+I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-I*
b*Pi*csgn(I*c*(e*x+d)^n)^3+2*b*ln(c)+2*b*(ln((e*x+d)^n)-n*ln(e*x+d))+2*a)/b
/n)*x^2-4/b^2/e/n^2*g*((e*x+d)^n)^(-2/n)*c^(-2/n)*exp(-(-I*b*Pi*csgn(I*c)*c
sgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2
+I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-I*b*Pi*csgn(I*c*(e*x+d)^n)^
3+2*a)/b/n)*Ei(1,-2*ln(e*x+d)-(-I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c
*(e*x+d)^n)+I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I*b*Pi*csgn(I*(e*x+d)^n)
*csgn(I*c*(e*x+d)^n)^2-I*b*Pi*csgn(I*c*(e*x+d)^n)^3+2*b*ln(c)+2*b*(ln((e*x+
d)^n)-n*ln(e*x+d))+2*a)/b/n)*d*x-2/b^2/e^2/n^2*g*((e*x+d)^n)^(-2/n)*c^(-2/n
)*exp(-(-I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+I*b*Pi*csgn
(I*c)*csgn(I*c*(e*x+d)^n)^2+I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-
I*b*Pi*csgn(I*c*(e*x+d)^n)^3+2*a)/b/n)*Ei(1,-2*ln(e*x+d)-(-I*b*Pi*csgn(I*c)
*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)
^2+I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-I*b*Pi*csgn(I*c*(e*x+d)^n
)^3+2*b*ln(c)+2*b*(ln((e*x+d)^n)-n*ln(e*x+d))+2*a)/b/n)*d^2+1/b^2/e/n^2*d*g
*((e*x+d)^n)^(-1/n)*c^(-1/n)*exp(-1/2*(-I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*
csgn(I*c*(e*x+d)^n)+I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I*b*Pi*csgn(I*(e
*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-I*b*Pi*csgn(I*c*(e*x+d)^n)^3+2*a)/b/n)*Ei(1,
-ln(e*x+d)-1/2*(-I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+I*b
*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+
d)^n)^2-I*b*Pi*csgn(I*c*(e*x+d)^n)^3+2*b*ln(c)+2*b*(ln((e*x+d)^n)-n*ln(e*x+
d))+2*a)/b/n)*x+1/b^2/e^2/n^2*d^2*g*((e*x+d)^n)^(-1/n)*c^(-1/n)*exp(-1/2*(-
I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+I*b*Pi*csgn(I*c)*csg
n(I*c*(e*x+d)^n)^2+I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-I*b*Pi*cs
gn(I*c*(e*x+d)^n)^3+2*a)/b/n)*Ei(1,-ln(e*x+d)-1/2*(-I*b*Pi*csgn(I*c)*csgn(I
*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I*b*
Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-I*b*Pi*csgn(I*c*(e*x+d)^n)^3+2*b
```

```
*ln(c)+2*b*(ln((e*x+d)^n)-n*ln(e*x+d))+2*a)/b/n)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(a+b*log(c*(e*x+d)^n))^2,x, algorithm="maxima")
```

```
[Out] -(g*x^2*e + d*f + (d*g + f*e)*x)/(b^2*n*e*log((x*e + d)^n) + (b^2*n*log(c)
+ a*b*n)*e) + integrate((2*g*x*e + d*g + f*e)/(b^2*n*e*log((x*e + d)^n) + (
b^2*n*log(c) + a*b*n)*e), x)
```

Fricas [A]
time = 0.38, size = 244, normalized size = 1.38

$$-\frac{\left((adg-afe+(bdgn-bfne)\log\left(xe+d\right)+(bdg-bfe)\log\left(c\right))e^{\left(\frac{b\log(c)+a}{bn}\right)}\,\mathrm{log\_integral}\left((xe+d)e^{\left(\frac{b\log(c)+a}{bn}\right)}\right)+((bgnx^2+bfnx)e^2+(bdgnx+bdfn)e)e^{\left(\frac{2\,(b\log(c)+a)}{bn}\right)}-2\,(bgn\log\left(xe+d\right)+bg\log\left(c\right)+ag)\,\mathrm{log\_integral}\left((x^2e^2+2\,dxe+d^2)e^{\left(\frac{2\,(b\log(c)+a)}{bn}\right)}\right)\right)e^{\left(-\frac{2\,(b\log(c)+a)}{bn}\right)}}{b^3n^3e^2\log\left(xe+d\right)+b^3n^2e^2\log\left(c\right)+ab^2n^2e^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(a+b*log(c*(e*x+d)^n))^2,x, algorithm="fricas")
```

```
[Out] -((a*d*g - a*f*e + (b*d*g*n - b*f*n*e)*log(x*e + d) + (b*d*g - b*f*e)*log(c
))*e^((b*log(c) + a)/(b*n))*log_integral((x*e + d)*e^((b*log(c) + a)/(b*n))
) + ((b*g*n*x^2 + b*f*n*x)*e^2 + (b*d*g*n*x + b*d*f*n)*e)*e^(2*(b*log(c) +
a)/(b*n)) - 2*(b*g*n*log(x*e + d) + b*g*log(c) + a*g)*log_integral((x^2*e^2
 + 2*d*x*e + d^2)*e^(2*(b*log(c) + a)/(b*n))))*e^(-2*(b*log(c) + a)/(b*n))/
(b^3*n^3*e^2*log(x*e + d) + b^3*n^2*e^2*log(c) + a*b^2*n^2*e^2)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{f+gx}{\left(a+b\log\left(c\left(d+ex\right)^{n}\right)\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(a+b*ln(c*(e*x+d)**n))**2,x)
```

```
[Out] Integral((f + g*x)/(a + b*log(c*(d + e*x)**n))**2, x)
```

Giac [B] Leaf count of result is larger than twice the leaf count of optimal. 984 vs. 2(184) = 368.
time = 3.30, size = 984, normalized size = 5.56

$$-\frac{(xe+d)^2bgne}{b^3n^3e^3\log\left(xe+d\right)+b^3n^2e^3\log\left(c\right)+ab^2n^2e^3}+\frac{(xe+d)bdgne}{b^3n^3e^3\log\left(xe+d\right)+b^3n^2e^3\log\left(c\right)+ab^2n^2e^3}-\frac{bdgn\mathrm{Ei}\left(\frac{\log(c)}{n}+\frac{a}{bn}+\log\left(xe+d\right)\right)e^{\left(-\frac{a}{bn}+1\right)}\log\left(xe+d\right)}{(b^3n^3e^3\log\left(xe+d\right)+b^3n^2e^3\log\left(c\right)+ab^2n^2e^3)c^{\left(\frac{1}{n}\right)}}-\frac{(xe+d)bfne^2}{b^3n^3e^3\log\left(xe+d\right)+b^3n^2e^3\log\left(c\right)+ab^2n^2e^3}+\frac{bfn\mathrm{Ei}\left(\frac{\log(c)}{n}+\frac{a}{bn}+\log\left(xe+d\right)\right)e^{\left(-\frac{a}{bn}+2\right)}\log\left(xe+d\right)}{(b^3n^3e^3\log\left(xe+d\right)+b^3n^2e^3\log\left(c\right)+ab^2n^2e^3)c^{\left(\frac{1}{n}\right)}}+\frac{2\,bgn\mathrm{Ei}\left(\frac{2\,\log(c)}{n}+\frac{2a}{bn}+2\,\log\left(xe+d\right)\right)e^{\left(-\frac{2a}{bn}+1\right)}\log\left(xe+d\right)}{(b^3n^3e^3\log\left(xe+d\right)+b^3n^2e^3\log\left(c\right)+ab^2n^2e^3)c^{\frac{2}{n}}}-\frac{bdg\mathrm{Ei}\left(\frac{\log(c)}{n}+\frac{a}{bn}+\log\left(xe+d\right)\right)e^{\left(-\frac{a}{bn}+1\right)}\log\left(c\right)}{(b^3n^3e^3\log\left(xe+d\right)+b^3n^2e^3\log\left(c\right)+ab^2n^2e^3)c^{\left(\frac{1}{n}\right)}}-\frac{adg\mathrm{Ei}\left(\frac{\log(c)}{n}+\frac{a}{bn}+\log\left(xe+d\right)\right)e^{\left(-\frac{a}{bn}+1\right)}}{(b^3n^3e^3\log\left(xe+d\right)+b^3n^2e^3\log\left(c\right)+ab^2n^2e^3)c^{\left(\frac{1}{n}\right)}}+\frac{bf\mathrm{Ei}\left(\frac{\log(c)}{n}+\frac{a}{bn}+\log\left(xe+d\right)\right)e^{\left(-\frac{a}{bn}+2\right)}\log\left(c\right)}{(b^3n^3e^3\log\left(xe+d\right)+b^3n^2e^3\log\left(c\right)+ab^2n^2e^3)c^{\left(\frac{1}{n}\right)}}+\frac{2\,bg\mathrm{Ei}\left(\frac{2\,\log(c)}{n}+\frac{2a}{bn}+2\,\log\left(xe+d\right)\right)e^{\left(-\frac{2a}{bn}+1\right)}\log\left(c\right)}{(b^3n^3e^3\log\left(xe+d\right)+b^3n^2e^3\log\left(c\right)+ab^2n^2e^3)c^{\frac{2}{n}}}+\frac{af\mathrm{Ei}\left(\frac{\log(c)}{n}+\frac{a}{bn}+\log\left(xe+d\right)\right)e^{\left(-\frac{a}{bn}+2\right)}}{(b^3n^3e^3\log\left(xe+d\right)+b^3n^2e^3\log\left(c\right)+ab^2n^2e^3)c^{\left(\frac{1}{n}\right)}}+\frac{2\,ag\mathrm{Ei}\left(\frac{2\,\log(c)}{n}+\frac{2a}{bn}+2\,\log\left(xe+d\right)\right)e^{\left(-\frac{2a}{bn}+1\right)}}{(b^3n^3e^3\log\left(xe+d\right)+b^3n^2e^3\log\left(c\right)+ab^2n^2e^3)c^{\frac{2}{n}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(a+b*log(c*(e*x+d)^n))^2,x, algorithm="giac")
```

```
[Out] -(x*e + d)^2*b*g*n*e/(b^3*n^3*e^3*log(x*e + d) + b^3*n^2*e^3*log(c) + a*b^2
*n^2*e^3) + (x*e + d)*b*d*g*n*e/(b^3*n^3*e^3*log(x*e + d) + b^3*n^2*e^3*log
(c) + a*b^2*n^2*e^3) - b*d*g*n*Ei(log(c)/n + a/(b*n) + log(x*e + d))*e^(-a/
(b*n) + 1)*log(x*e + d)/((b^3*n^3*e^3*log(x*e + d) + b^3*n^2*e^3*log(c) + a
*b^2*n^2*e^3)*c^(1/n)) - (x*e + d)*b*f*n*e^2/(b^3*n^3*e^3*log(x*e + d) + b^
3*n^2*e^3*log(c) + a*b^2*n^2*e^3) + b*f*n*Ei(log(c)/n + a/(b*n) + log(x*e +
 d))*e^(-a/(b*n) + 2)*log(x*e + d)/((b^3*n^3*e^3*log(x*e + d) + b^3*n^2*e^3
*log(c) + a*b^2*n^2*e^3)*c^(1/n)) + 2*b*g*n*Ei(2*log(c)/n + 2*a/(b*n) + 2*l
og(x*e + d))*e^(-2*a/(b*n) + 1)*log(x*e + d)/((b^3*n^3*e^3*log(x*e + d) + b
^3*n^2*e^3*log(c) + a*b^2*n^2*e^3)*c^(2/n)) - b*d*g*Ei(log(c)/n + a/(b*n) +
 log(x*e + d))*e^(-a/(b*n) + 1)*log(c)/((b^3*n^3*e^3*log(x*e + d) + b^3*n^2
*e^3*log(c) + a*b^2*n^2*e^3)*c^(1/n)) - a*d*g*Ei(log(c)/n + a/(b*n) + log(x
*e + d))*e^(-a/(b*n) + 1)/((b^3*n^3*e^3*log(x*e + d) + b^3*n^2*e^3*log(c) +
 a*b^2*n^2*e^3)*c^(1/n)) + b*f*Ei(log(c)/n + a/(b*n) + log(x*e + d))*e^(-a/
(b*n) + 2)*log(c)/((b^3*n^3*e^3*log(x*e + d) + b^3*n^2*e^3*log(c) + a*b^2*n
^2*e^3)*c^(1/n)) + 2*b*g*Ei(2*log(c)/n + 2*a/(b*n) + 2*log(x*e + d))*e^(-2*
a/(b*n) + 1)*log(c)/((b^3*n^3*e^3*log(x*e + d) + b^3*n^2*e^3*log(c) + a*b^2
*n^2*e^3)*c^(2/n)) + a*f*Ei(log(c)/n + a/(b*n) + log(x*e + d))*e^(-a/(b*n)
+ 2)/((b^3*n^3*e^3*log(x*e + d) + b^3*n^2*e^3*log(c) + a*b^2*n^2*e^3)*c^(1/
n)) + 2*a*g*Ei(2*log(c)/n + 2*a/(b*n) + 2*log(x*e + d))*e^(-2*a/(b*n) + 1)/
((b^3*n^3*e^3*log(x*e + d) + b^3*n^2*e^3*log(c) + a*b^2*n^2*e^3)*c^(2/n))
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{f+g\,x}{{\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)}^2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)/(a + b*log(c*(d + e*x)^n))^2,x)
```

```
[Out] int((f + g*x)/(a + b*log(c*(d + e*x)^n))^2, x)
```

3.97 $\int \frac{1}{(a+b\log(c(d+ex)^n))^2}\,dx$

Optimal. Leaf size=96

$$\frac{e^{-\frac{a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\operatorname{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{b^2en^2}-\frac{d+ex}{ben\left(a+b\log\left(c(d+ex)^n\right)\right)}$$

```
[Out] (e*x+d)*Ei((a+b*ln(c*(e*x+d)^n))/b/n)/b^2/e/exp(a/b/n)/n^2/((c*(e*x+d)^n)^(
1/n))+(-e*x-d)/b/e/n/(a+b*ln(c*(e*x+d)^n))
```

Rubi [A]

time = 0.05, antiderivative size = 96, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}} = 0.250$, Rules used = {2436, 2334, 2337, 2209}

$$\frac{e^{-\frac{a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\operatorname{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{b^2en^2}-\frac{d+ex}{ben\left(a+b\log\left(c(d+ex)^n\right)\right)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^(-2),x]
```

```
[Out] ((d + e*x)*ExpIntegralEi[(a + b*Log[c*(d + e*x)^n])/(b*n)])/(b^2*e*E^(a/(b*
n))*n^2*(c*(d + e*x)^n)^n^(-1)) - (d + e*x)/(b*e*n*(a + b*Log[c*(d + e*x)^n
]))
```

Rule 2209

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/((c_.) + (d_.)*(x_)), x_Symbol] :> Si
mp[(F^(g*(e - c*(f/d)))/d)*ExpIntegralEi[f*g*(c + d*x)*(Log[F]/d)], x] /; F
reeQ[{F, c, d, e, f, g}, x] &&  !TrueQ[$UseGamma]
```

Rule 2334

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Simp[x*((a + b
*Log[c*x^n])^(p + 1)/(b*n*(p + 1))), x] - Dist[1/(b*n*(p + 1)), Int[(a + b*
Log[c*x^n])^(p + 1), x], x] /; FreeQ[{a, b, c, n}, x] && LtQ[p, -1] && Inte
gerQ[2*p]
```

Rule 2337

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2436

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rubi steps

$$\int \frac{1}{(a+b\log(c(d+ex)^n))^2}\,dx = \frac{\text{Subst}\left(\int \frac{1}{(a+b\log(cx^n))^2}\,dx, x, d+ex\right)}{e}$$

$$= -\frac{d+ex}{ben\,(a+b\log(c(d+ex)^n))} + \frac{\text{Subst}\left(\int \frac{1}{a+b\log(cx^n)}\,dx, x, d+ex\right)}{ben}$$

$$= -\frac{d+ex}{ben\,(a+b\log(c(d+ex)^n))} + \frac{\left((d+ex)\,(c(d+ex)^n)^{-1/n}\right)\text{Subst}\left(\int \frac{e^{\frac{x}{n}}}{a+bx}\right.}{ben^2}$$

$$= \frac{e^{-\frac{a}{bn}}(d+ex)\,(c(d+ex)^n)^{-1/n}\,\text{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{b^2en^2} - \frac{d+ex}{ben\,(a+b\log(c(d+e}$$

Mathematica [A]
time = 0.04, size = 123, normalized size = 1.28

$$-\frac{e^{-\frac{a}{bn}}(d+ex)\,(c(d+ex)^n)^{-1/n}\left(be^{\frac{a}{bn}}n(c(d+ex)^n)^{\frac{1}{n}} - \text{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)(a+b\log(c(d+ex)^n))\right)}{b^2en^2\,(a+b\log(c(d+ex)^n))}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^(-2),x]
```

```
[Out] -(((d + e*x)*(b*E^(a/(b*n))*n*(c*(d + e*x)^n)^n^(-1) - ExpIntegralEi[(a + b
*Log[c*(d + e*x)^n])/(b*n)]*(a + b*Log[c*(d + e*x)^n])))/(b^2*e*E^(a/(b*n))
*n^2*(c*(d + e*x)^n)^n^(-1)*(a + b*Log[c*(d + e*x)^n])))
```

Maple [C] Result contains higher order function than in optimal. Order 9 vs. order 4.
time = 0.06, size = 456, normalized size = 4.75

method	result
risch	$-\frac{2(ex+d)}{\left(2a+2b\ln(c)+2b\ln((ex+d)^n)-ib\pi\,\text{csgn}(ic)\text{csgn}(i(ex+d)^n)\text{csgn}(ic(ex+d)^n)+ib\pi\,\text{csgn}(ic)\text{csgn}(ic(ex+d)^n)^2+ib\pi\,\text{csgn}(i(ex+d)^n)\text{cs}\right.}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+b*ln(c*(e*x+d)^n))^2,x,method=_RETURNVERBOSE)
```

```
[Out] -2/(2*a+2*b*ln(c)+2*b*ln((e*x+d)^n)-I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn
(I*c*(e*x+d)^n)+I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I*b*Pi*csgn(I*(e*x+d
)^n)*csgn(I*c*(e*x+d)^n)^2-I*b*Pi*csgn(I*c*(e*x+d)^n)^3)/b/n/e*(e*x+d)-1/b^
2/n^2/e*(e*x+d)*c^(-1/n)*((e*x+d)^n)^(-1/n)*exp(-1/2*(-I*b*Pi*csgn(I*c)*csg
n(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I
*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-I*b*Pi*csgn(I*c*(e*x+d)^n)^3+
2*a)/b/n)*Ei(1,-ln(e*x+d)-1/2*(-I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c
*(e*x+d)^n)+I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I*b*Pi*csgn(I*(e*x+d)^n)
*csgn(I*c*(e*x+d)^n)^2-I*b*Pi*csgn(I*c*(e*x+d)^n)^3+2*b*ln(c)+2*b*(ln((e*x+
d)^n)-n*ln(e*x+d))+2*a)/b/n)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(e*x+d)^n))^2,x, algorithm="maxima")
```

```
[Out] -(x*e + d)/(b^2*n*e*log((x*e + d)^n) + (b^2*n*log(c) + a*b*n)*e) + integrat
e(1/(b^2*n*log((x*e + d)^n) + b^2*n*log(c) + a*b*n), x)
```

Fricas [A]
time = 0.35, size = 124, normalized size = 1.29

$$-\frac{\left((bnxe+bdn)e^{\left(\frac{b\log(c)+a}{bn}\right)}-(bn\log(xe+d)+b\log(c)+a)\,\mathrm{log\_integral}\left((xe+d)e^{\left(\frac{b\log(c)+a}{bn}\right)}\right)\right)e^{\left(-\frac{b\log(c)+a}{bn}\right)}}{b^3n^3e\log(xe+d)+b^3n^2e\log(c)+ab^2n^2e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(e*x+d)^n))^2,x, algorithm="fricas")
```

```
[Out] -((b*n*x*e + b*d*n)*e^((b*log(c) + a)/(b*n)) - (b*n*log(x*e + d) + b*log(c)
 + a)*log_integral((x*e + d)*e^((b*log(c) + a)/(b*n))))*e^(-(b*log(c) + a)/
(b*n))/(b^3*n^3*e*log(x*e + d) + b^3*n^2*e*log(c) + a*b^2*n^2*e)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(a+b\log\left(c\left(d+ex\right)^{n}\right)\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*ln(c*(e*x+d)**n))**2,x)
```

```
[Out] Integral((a + b*log(c*(d + e*x)**n))**(-2), x)
```

Giac [**B**] Leaf count of result is larger than twice the leaf count of optimal. 307 vs. $2(98) = 196$.
time = 5.63, size = 307, normalized size = 3.20

$$\frac{bn\mathrm{Ei}\left(\frac{\log(c)}{n}+\frac{a}{bn}+\log\left(xe+d\right)\right)e^{\left(-\frac{a}{bn}\right)}\log\left(xe+d\right)}{\left(b^{3}n^{3}e\log\left(xe+d\right)+b^{3}n^{2}e\log\left(c\right)+ab^{2}n^{2}e\right)c^{\left(\frac{1}{n}\right)}}-\frac{(xe+d)bn}{b^{3}n^{3}e\log\left(xe+d\right)+b^{3}n^{2}e\log\left(c\right)+ab^{2}n^{2}e}+\frac{b\mathrm{Ei}\left(\frac{\log(c)}{n}+\frac{a}{bn}+\log\left(xe+d\right)\right)e^{\left(-\frac{a}{bn}\right)}\log\left(c\right)}{\left(b^{3}n^{3}e\log\left(xe+d\right)+b^{3}n^{2}e\log\left(c\right)+ab^{2}n^{2}e\right)c^{\left(\frac{1}{n}\right)}}+\frac{a\mathrm{Ei}\left(\frac{\log(c)}{n}+\frac{a}{bn}+\log\left(xe+d\right)\right)e^{\left(-\frac{a}{bn}\right)}}{\left(b^{3}n^{3}e\log\left(xe+d\right)+b^{3}n^{2}e\log\left(c\right)+ab^{2}n^{2}e\right)c^{\left(\frac{1}{n}\right)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(e*x+d)^n))^2,x, algorithm="giac")
```

```
[Out] b*n*Ei(log(c)/n + a/(b*n) + log(x*e + d))*e^(-a/(b*n))*log(x*e + d)/((b^3*n
^3*e*log(x*e + d) + b^3*n^2*e*log(c) + a*b^2*n^2*e)*c^(1/n)) - (x*e + d)*b*
n/(b^3*n^3*e*log(x*e + d) + b^3*n^2*e*log(c) + a*b^2*n^2*e) + b*Ei(log(c)/n
 + a/(b*n) + log(x*e + d))*e^(-a/(b*n))*log(c)/((b^3*n^3*e*log(x*e + d) + b
^3*n^2*e*log(c) + a*b^2*n^2*e)*c^(1/n)) + a*Ei(log(c)/n + a/(b*n) + log(x*e
 + d))*e^(-a/(b*n))/((b^3*n^3*e*log(x*e + d) + b^3*n^2*e*log(c) + a*b^2*n^2
*e)*c^(1/n))
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{1}{\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)}^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a + b*log(c*(d + e*x)^n))^2,x)
```

```
[Out] int(1/(a + b*log(c*(d + e*x)^n))^2, x)
```

3.98 $\int \frac{1}{(f+gx)(a+b\log(c(d+ex)^n))^2} dx$

Optimal. Leaf size=27

$$\text{Int}\left(\frac{1}{(f+gx)\,(a+b\log\left(c(d+ex)^n\right))^2},x\right)$$

```
[Out] Unintegrable(1/(g*x+f)/(a+b*ln(c*(e*x+d)^n))^2,x)
```

Rubi [A]
time = 0.02, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int \frac{1}{(f+gx)\,(a+b\log\left(c(d+ex)^n\right))^2}\,dx$$

Verification is not applicable to the result.

```
[In] Int[1/((f + g*x)*(a + b*Log[c*(d + e*x)^n])^2),x]
[Out] Defer[Int][1/((f + g*x)*(a + b*Log[c*(d + e*x)^n])^2), x]
```

Rubi steps

$$\int \frac{1}{(f+gx)\,(a+b\log\left(c(d+ex)^n\right))^2}\,dx = \int \frac{1}{(f+gx)\,(a+b\log\left(c(d+ex)^n\right))^2}\,dx$$

Mathematica [A]
time = 0.34, size = 0, normalized size = 0.00

$$\int \frac{1}{(f+gx)\,(a+b\log\left(c(d+ex)^n\right))^2}\,dx$$

Verification is not applicable to the result.

```
[In] Integrate[1/((f + g*x)*(a + b*Log[c*(d + e*x)^n])^2),x]
[Out] Integrate[1/((f + g*x)*(a + b*Log[c*(d + e*x)^n])^2), x]
```

Maple [A]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{(gx+f)\,(a+b\ln\left(c\,(ex+d)^{n}\right))^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(g*x+f)/(a+b*ln(c*(e*x+d)^n))^2,x)
```

```
[Out] int(1/(g*x+f)/(a+b*ln(c*(e*x+d)^n))^2,x)
```

Maxima [A]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(a+b*log(c*(e*x+d)^n))^2,x, algorithm="maxima")
```

```
[Out] -(d*g - f*e)*integrate(1/((b^2*g^2*n*log(c) + a*b*g^2*n)*x^2*e + 2*(b^2*f*g
*n*log(c) + a*b*f*g*n)*x*e + (b^2*f^2*n*log(c) + a*b*f^2*n)*e + (b^2*g^2*n*
x^2*e + 2*b^2*f*g*n*x*e + b^2*f^2*n*e)*log((x*e + d)^n)), x) - (x*e + d)/((
b^2*g*n*log(c) + a*b*g*n)*x*e + (b^2*f*n*log(c) + a*b*f*n)*e + (b^2*g*n*x*e
 + b^2*f*n*e)*log((x*e + d)^n))
```

Fricas [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(a+b*log(c*(e*x+d)^n))^2,x, algorithm="fricas")
```

```
[Out] integral(1/(a^2*g*x + a^2*f + (b^2*g*x + b^2*f)*log((x*e + d)^n*c)^2 + 2*(a
*b*g*x + a*b*f)*log((x*e + d)^n*c)), x)
```

Sympy [A]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(a + b \log \left(c \left(d + ex\right)^{n}\right)\right)^{2} \left(f + gx\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(a+b*ln(c*(e*x+d)**n))**2,x)
```

```
[Out] Integral(1/((a + b*log(c*(d + e*x)**n))**2*(f + g*x)), x)
```

Giac [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(a+b*log(c*(e*x+d)^n))^2,x, algorithm="giac")
[Out] integrate(1/((g*x + f)*(b*log((x*e + d)^n*c) + a)^2), x)
```

Mupad [A]

time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{1}{(f+g\,x)\,\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((f + g*x)*(a + b*log(c*(d + e*x)^n))^2),x)
[Out] int(1/((f + g*x)*(a + b*log(c*(d + e*x)^n))^2), x)
```

3.99 $\int \frac{1}{(f+gx)^2(a+b\log(c(d+ex)^n))^2}\,dx$

Optimal. Leaf size=27

$$\text{Int}\left(\frac{1}{(f+gx)^2\left(a+b\log\left(c(d+ex)^n\right)\right)^2},x\right)$$

[Out] Unintegrable(1/(g*x+f)^2/(a+b*ln(c*(e*x+d)^n))^2,x)

Rubi [A]
time = 0.02, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int \frac{1}{(f+gx)^2\left(a+b\log\left(c(d+ex)^n\right)\right)^2}\,dx$$

Verification is not applicable to the result.

[In] Int[1/((f + g*x)^2*(a + b*Log[c*(d + e*x)^n])^2),x]

[Out] Defer[Int][1/((f + g*x)^2*(a + b*Log[c*(d + e*x)^n])^2), x]

Rubi steps

$$\int \frac{1}{(f+gx)^2\left(a+b\log\left(c(d+ex)^n\right)\right)^2}\,dx = \int \frac{1}{(f+gx)^2\left(a+b\log\left(c(d+ex)^n\right)\right)^2}\,dx$$

Mathematica [A]
time = 2.44, size = 0, normalized size = 0.00

$$\int \frac{1}{(f+gx)^2\left(a+b\log\left(c(d+ex)^n\right)\right)^2}\,dx$$

Verification is not applicable to the result.

[In] Integrate[1/((f + g*x)^2*(a + b*Log[c*(d + e*x)^n])^2),x]

[Out] Integrate[1/((f + g*x)^2*(a + b*Log[c*(d + e*x)^n])^2), x]

Maple [A]
time = 0.03, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(gx+f\right)^2\left(a+b\ln\left(c\left(ex+d\right)^n\right)\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(g*x+f)^2/(a+b*ln(c*(e*x+d)^n))^2,x)
```

```
[Out] int(1/(g*x+f)^2/(a+b*ln(c*(e*x+d)^n))^2,x)
```

Maxima [A]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)^2/(a+b*log(c*(e*x+d)^n))^2,x, algorithm="maxima")
```

```
[Out] -(x*e + d)/((b^2*g^2*n*log(c) + a*b*g^2*n)*x^2*e + 2*(b^2*f*g*n*log(c) + a*
b*f*g*n)*x*e + (b^2*f^2*n*log(c) + a*b*f^2*n)*e + (b^2*g^2*n*x^2*e + 2*b^2*
f*g*n*x*e + b^2*f^2*n*e)*log((x*e + d)^n)) - integrate((g*x*e + 2*d*g - f*e
)/((b^2*g^3*n*log(c) + a*b*g^3*n)*x^3*e + 3*(b^2*f*g^2*n*log(c) + a*b*f*g^2
*n)*x^2*e + 3*(b^2*f^2*g*n*log(c) + a*b*f^2*g*n)*x*e + (b^2*f^3*n*log(c) +
a*b*f^3*n)*e + (b^2*g^3*n*x^3*e + 3*b^2*f*g^2*n*x^2*e + 3*b^2*f^2*g*n*x*e +
 b^2*f^3*n*e)*log((x*e + d)^n)), x)
```

Fricas [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)^2/(a+b*log(c*(e*x+d)^n))^2,x, algorithm="fricas")
```

```
[Out] integral(1/(a^2*g^2*x^2 + 2*a^2*f*g*x + a^2*f^2 + (b^2*g^2*x^2 + 2*b^2*f*g*
x + b^2*f^2)*log((x*e + d)^n*c)^2 + 2*(a*b*g^2*x^2 + 2*a*b*f*g*x + a*b*f^2)
*log((x*e + d)^n*c)), x)
```

Sympy [A]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(a + b \log \left(c \left(d + ex\right)^{n}\right)\right)^{2} \left(f + gx\right)^{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)**2/(a+b*ln(c*(e*x+d)**n))**2,x)
```

```
[Out] Integral(1/((a + b*log(c*(d + e*x)**n))**2*(f + g*x)**2), x)
```

Giac [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)^2/(a+b*log(c*(e*x+d)^n))^2,x, algorithm="giac")
[Out] integrate(1/((g*x + f)^2*(b*log((x*e + d)^n*c) + a)^2), x)
```

Mupad [A]
time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{1}{(f+g\,x)^2\,\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((f + g*x)^2*(a + b*log(c*(d + e*x)^n))^2),x)
[Out] int(1/((f + g*x)^2*(a + b*log(c*(d + e*x)^n))^2), x)
```

3.100 $\int \frac{(f+gx)^2}{(a+b\log(c(d+ex)^n))^3}\,dx$

Optimal. Leaf size=351

$$\frac{e^{-\frac{a}{bn}}(ef-dg)^2(d+ex)\left(c(d+ex)^n\right)^{-1/n}\operatorname{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{2b^3e^3n^3}+\frac{4e^{-\frac{2a}{bn}}g(ef-dg)(d+ex)^2\left(c(d+ex)^n\right)^{-2/n}\,\mathrm{E}}{b^3e^3n^3}$$

```
[Out] 1/2*(-d*g+e*f)^2*(e*x+d)*Ei((a+b*ln(c*(e*x+d)^n))/b/n)/b^3/e^3/exp(a/b/n)/n
^3/((c*(e*x+d)^n)^(1/n))+4*g*(-d*g+e*f)*(e*x+d)^2*Ei(2*(a+b*ln(c*(e*x+d)^n)
)/b/n)/b^3/e^3/exp(2*a/b/n)/n^3/((c*(e*x+d)^n)^(2/n))+9/2*g^2*(e*x+d)^3*Ei(
3*(a+b*ln(c*(e*x+d)^n))/b/n)/b^3/e^3/exp(3*a/b/n)/n^3/((c*(e*x+d)^n)^(3/n))
-1/2*(e*x+d)*(g*x+f)^2/b/e/n/(a+b*ln(c*(e*x+d)^n))^2+(-d*g+e*f)*(e*x+d)*(g*
x+f)/b^2/e^2/n^2/(a+b*ln(c*(e*x+d)^n))-3/2*(e*x+d)*(g*x+f)^2/b^2/e/n^2/(a+b
*ln(c*(e*x+d)^n))
```

Rubi [A]

time = 0.61, antiderivative size = 351, normalized size of antiderivative = 1.00, number of steps used = 33, number of rules used = 7, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.292$, Rules used = {2447, 2446, 2436, 2337, 2209, 2437, 2347}

$$\frac{4ge^{-\frac{2a}{bn}}(d+ex)^2(ef-dg)\left(c(d+ex)^n\right)^{-2/n}\operatorname{Ei}\left(\frac{2(a+b\log(c(d+ex)^n))}{bn}\right)}{b^3e^3n^3}+\frac{e^{-\frac{a}{bn}}(d+ex)(ef-dg)^2\left(c(d+ex)^n\right)^{-1/n}\operatorname{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{2b^3e^3n^3}+\frac{9g^2e^{-\frac{3a}{bn}}(d+ex)^3\left(c(d+ex)^n\right)^{-3/n}\operatorname{Ei}\left(\frac{3(a+b\log(c(d+ex)^n))}{bn}\right)}{2b^3e^3n^3}+\frac{(d+ex)(f+gx)(ef-dg)}{b^2e^2n^2\left(a+b\log\left(c(d+ex)^n\right)\right)}-\frac{3(d+ex)(f+gx)^2}{2b^2en^2\left(a+b\log\left(c(d+ex)^n\right)\right)}-\frac{(d+ex)(f+gx)^2}{2ben\left(a+b\log\left(c(d+ex)^n\right)\right)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)^2/(a + b*Log[c*(d + e*x)^n])^3,x]
```

```
[Out] ((e*f - d*g)^2*(d + e*x)*ExpIntegralEi[(a + b*Log[c*(d + e*x)^n])/(b*n)])/(
2*b^3*e^3*E^(a/(b*n))*n^3*(c*(d + e*x)^n)^n^(-1)) + (4*g*(e*f - d*g)*(d + e
*x)^2*ExpIntegralEi[(2*(a + b*Log[c*(d + e*x)^n]))/(b*n)])/(b^3*e^3*E^((2*a
)/(b*n))*n^3*(c*(d + e*x)^n)^(2/n)) + (9*g^2*(d + e*x)^3*ExpIntegralEi[(3*(
a + b*Log[c*(d + e*x)^n]))/(b*n)])/(2*b^3*e^3*E^((3*a)/(b*n))*n^3*(c*(d + e
*x)^n)^(3/n)) - ((d + e*x)*(f + g*x)^2)/(2*b*e*n*(a + b*Log[c*(d + e*x)^n])
^2) + ((e*f - d*g)*(d + e*x)*(f + g*x))/(b^2*e^2*n^2*(a + b*Log[c*(d + e*x)
^n])) - (3*(d + e*x)*(f + g*x)^2)/(2*b^2*e*n^2*(a + b*Log[c*(d + e*x)^n]))
```

Rule 2209

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/((c_.) + (d_.)*(x_)), x_Symbol] :> Si
mp[(F^(g*(e - c*(f/d)))/d)*ExpIntegralEi[f*g*(c + d*x)*(Log[F]/d)], x] /; F
reeQ[{F, c, d, e, f, g}, x] &&  !TrueQ[$UseGamma]
```

Rule 2337

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
```

```
{a, b, c, n, p}, x]
```

Rule 2347

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_)*((d_.)*(x_))^(m_.), x_Symbol
] :> Dist[(d*x)^(m + 1)/(d*n*(c*x^n)^((m + 1)/n)), Subst[Int[E^(((m + 1)/n)
*x)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b, c, d, m, n, p}, x]
```

Rule 2436

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2437

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[(f*(x/d))^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2446

```
Int[((f_.) + (g_.)*(x_))^(q_.)/((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)
]*(b_.)), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q/(a + b*Log[c*(d + e*
x)^n]), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0] &
& IGtQ[q, 0]
```

Rule 2447

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[(d + e*x)*(f + g*x)^q*((a + b*Log[c*(d + e
*x)^n])^(p + 1)/(b*e*n*(p + 1))), x] + (-Dist[(q + 1)/(b*n*(p + 1)), Int[(f
 + g*x)^q*(a + b*Log[c*(d + e*x)^n])^(p + 1), x], x] + Dist[q*((e*f - d*g)/
(b*e*n*(p + 1))), Int[(f + g*x)^(q - 1)*(a + b*Log[c*(d + e*x)^n])^(p + 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0] && LtQ[
p, -1] && GtQ[q, 0]
```

Rubi steps

$$\int \frac{(f+gx)^2}{(a+b\log(c(d+ex)^n))^3}\,dx = -\frac{(d+ex)(f+gx)^2}{2ben\,(a+b\log(c(d+ex)^n))^2} + \frac{3\int \frac{(f+gx)^2}{(a+b\log(c(d+ex)^n))^2}\,dx}{2bn} - \frac{(ef-dg)\int}{}$$

$$= -\frac{(d+ex)(f+gx)^2}{2ben\,(a+b\log(c(d+ex)^n))^2} + \frac{(ef-dg)(d+ex)(f+gx)}{b^2e^2n^2\,(a+b\log(c(d+ex)^n))} - \frac{}{2b^2en}$$

$$= -\frac{(d+ex)(f+gx)^2}{2ben\,(a+b\log(c(d+ex)^n))^2} + \frac{(ef-dg)(d+ex)(f+gx)}{b^2e^2n^2\,(a+b\log(c(d+ex)^n))} - \frac{}{2b^2en}$$

$$= -\frac{(d+ex)(f+gx)^2}{2ben\,(a+b\log(c(d+ex)^n))^2} + \frac{(ef-dg)(d+ex)(f+gx)}{b^2e^2n^2\,(a+b\log(c(d+ex)^n))} - \frac{}{2b^2en}$$

$$= \frac{e^{-\frac{a}{bn}}(ef-dg)^2(d+ex)\,(c(d+ex)^n)^{-1/n}\,\mathrm{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{b^3e^3n^3} - \frac{(d+}{2ben\,(a+}$$

$$= \frac{e^{-\frac{a}{bn}}(ef-dg)^2(d+ex)\,(c(d+ex)^n)^{-1/n}\,\mathrm{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{b^3e^3n^3} - \frac{(d+}{2ben\,(a+}$$

$$= \frac{e^{-\frac{a}{bn}}(ef-dg)^2(d+ex)\,(c(d+ex)^n)^{-1/n}\,\mathrm{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{2b^3e^3n^3} + \frac{4e^{-\frac{2a}{bn}}g(e}{}$$

Mathematica [A]
time = 0.95, size = 351, normalized size = 1.00

$$\frac{e^{-\frac{3a}{bn}}(d+ex)\,(c(d+ex)^n)^{-3/n}\left(e^{\frac{2a}{bn}}(ef-dg)^2\,(c(d+ex)^n)^{2/n}\,\mathrm{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)(a+b\log(c(d+ex)^n))^2 - 8e^{\frac{a}{bn}}g(-ef+dg)(d+ex)\,(c(d+ex)^n)^{\frac{1}{n}}\,\mathrm{Ei}\left(\frac{2(a+b\log(c(d+ex)^n))}{bn}\right)(a+b\log(c(d+ex)^n))^2 + 9g^2(d+ex)^2\mathrm{Ei}\left(\frac{3(a+b\log(c(d+ex)^n))}{bn}\right)(a+b\log(c(d+ex)^n))^2 - bee^{\frac{3a}{bn}}n(c(d+ex)^n)^{3/n}\,(f+gx)\,(ben(f+gx)+a(ef+2dg+3egx)+b(2dg+e(f+3gx))\log(c(d+ex)^n))\right)}{2b^3e^3n^3\,(a+b\log(c(d+ex)^n))^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)^2/(a + b*Log[c*(d + e*x)^n])^3,x]
```

```
[Out] ((d + e*x)*(E^((2*a)/(b*n))*(e*f - d*g)^2*(c*(d + e*x)^n)^(2/n)*ExpIntegral
Ei[(a + b*Log[c*(d + e*x)^n])/(b*n)]*(a + b*Log[c*(d + e*x)^n])^2 - 8*E^(a/
(b*n))*g*(-(e*f) + d*g)*(d + e*x)*(c*(d + e*x)^n)^n^(-1)*ExpIntegralEi[(2*(
a + b*Log[c*(d + e*x)^n]))/(b*n)]*(a + b*Log[c*(d + e*x)^n])^2 + 9*g^2*(d +
 e*x)^2*ExpIntegralEi[(3*(a + b*Log[c*(d + e*x)^n]))/(b*n)]*(a + b*Log[c*(d
 + e*x)^n])^2 - b*e*E^((3*a)/(b*n))*n*(c*(d + e*x)^n)^(3/n)*(f + g*x)*(b*e*
n*(f + g*x) + a*(e*f + 2*d*g + 3*e*g*x) + b*(2*d*g + e*(f + 3*g*x))*Log[c*(
d + e*x)^n])))/(2*b^3*e^3*E^((3*a)/(b*n))*n^3*(c*(d + e*x)^n)^(3/n)*(a + b*
Log[c*(d + e*x)^n])^2)
```

Maple [C] Result contains higher order function than in optimal. Order 9 vs. order 4.
time = 1.03, size = 6545, normalized size = 18.65

method	result	size
risch	Expression too large to display	6545

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^2/(a+b*ln(c*(e*x+d)^n))^3,x,method=_RETURNVERBOSE)
```

```
[Out] result too large to display
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2/(a+b*log(c*(e*x+d)^n))^3,x, algorithm="maxima")
```

```
[Out] -1/2*(2*b*d^2*f*g*log(c) + 2*a*d^2*f*g + (3*a*g^2 + (g^2*n + 3*g^2*log(c))*
b)*x^3*e^2 + (2*(2*a*f*g + (f*g*n + 2*f*g*log(c))*b)*e^2 + (5*a*d*g^2 + (d*
g^2*n + 5*d*g^2*log(c))*b)*e)*x^2 + (2*b*d^2*g^2*log(c) + 2*a*d^2*g^2 + (a*
f^2 + (f^2*n + f^2*log(c))*b)*e^2 + 2*(3*a*d*f*g + (d*f*g*n + 3*d*f*g*log(c
))*b)*e)*x + (a*d*f^2 + (d*f^2*n + d*f^2*log(c))*b)*e + (3*b*g^2*x^3*e^2 +
2*b*d^2*f*g + b*d*f^2*e + (5*b*d*g^2*e + 4*b*f*g*e^2)*x^2 + (2*b*d^2*g^2 +
6*b*d*f*g*e + b*f^2*e^2)*x)*log((x*e + d)^n))/(b^4*n^2*e^2*log((x*e + d)^n)
^2 + 2*(b^4*n^2*log(c) + a*b^3*n^2)*e^2*log((x*e + d)^n) + (b^4*n^2*log(c)^
2 + 2*a*b^3*n^2*log(c) + a^2*b^2*n^2)*e^2) + integrate(1/2*(9*g^2*x^2*e^2 +
 2*d^2*g^2 + 6*d*f*g*e + f^2*e^2 + 2*(5*d*g^2*e + 4*f*g*e^2)*x)/(b^3*n^2*e^
2*log((x*e + d)^n) + (b^3*n^2*log(c) + a*b^2*n^2)*e^2), x)
```

Fricas [B] Leaf count of result is larger than twice the leaf count of optimal. 1088 vs. $2(357) = 714$.
time = 0.37, size = 1088, normalized size = 3.10

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2/(a+b*log(c*(e*x+d)^n))^3,x, algorithm="fricas")
```

```
[Out] -1/2*(8*(a^2*d*g^2 - a^2*f*g*e + (b^2*d*g^2*n^2 - b^2*f*g*n^2*e)*log(x*e +
d)^2 + (b^2*d*g^2 - b^2*f*g*e)*log(c)^2 + 2*(a*b*d*g^2*n - a*b*f*g*n*e + (b
^2*d*g^2*n - b^2*f*g*n*e)*log(c))*log(x*e + d) + 2*(a*b*d*g^2 - a*b*f*g*e)*
log(c))*e^((b*log(c) + a)/(b*n))*log_integral((x^2*e^2 + 2*d*x*e + d^2)*e^(
2*(b*log(c) + a)/(b*n))) - (a^2*d^2*g^2 - 2*a^2*d*f*g*e + a^2*f^2*e^2 + (b^
2*d^2*g^2*n^2 - 2*b^2*d*f*g*n^2*e + b^2*f^2*n^2*e^2)*log(x*e + d)^2 + (b^2*
d^2*g^2 - 2*b^2*d*f*g*e + b^2*f^2*e^2)*log(c)^2 + 2*(a*b*d^2*g^2*n - 2*a*b*
```

```
d*f*g*n*e + a*b*f^2*n*e^2 + (b^2*d^2*g^2*n - 2*b^2*d*f*g*n*e + b^2*f^2*n*e^
2)*log(c))*log(x*e + d) + 2*(a*b*d^2*g^2 - 2*a*b*d*f*g*e + a*b*f^2*e^2)*log
(c))*e^(2*(b*log(c) + a)/(b*n))*log_integral((x*e + d)*e^((b*log(c) + a)/(b
*n))) + (((b^2*g^2*n^2 + 3*a*b*g^2*n)*x^3 + 2*(b^2*f*g*n^2 + 2*a*b*f*g*n)*x
^2 + (b^2*f^2*n^2 + a*b*f^2*n)*x)*e^3 + (b^2*d*f^2*n^2 + a*b*d*f^2*n + (b^2
*d*g^2*n^2 + 5*a*b*d*g^2*n)*x^2 + 2*(b^2*d*f*g*n^2 + 3*a*b*d*f*g*n)*x)*e^2
+ 2*(a*b*d^2*g^2*n*x + a*b*d^2*f*g*n)*e + ((3*b^2*g^2*n^2*x^3 + 4*b^2*f*g*n
^2*x^2 + b^2*f^2*n^2*x)*e^3 + (5*b^2*d*g^2*n^2*x^2 + 6*b^2*d*f*g*n^2*x + b^
2*d*f^2*n^2)*e^2 + 2*(b^2*d^2*g^2*n^2*x + b^2*d^2*f*g*n^2)*e)*log(x*e + d)
+ ((3*b^2*g^2*n*x^3 + 4*b^2*f*g*n*x^2 + b^2*f^2*n*x)*e^3 + (5*b^2*d*g^2*n*x
^2 + 6*b^2*d*f*g*n*x + b^2*d*f^2*n)*e^2 + 2*(b^2*d^2*g^2*n*x + b^2*d^2*f*g*
n)*e)*log(c))*e^(3*(b*log(c) + a)/(b*n)) - 9*(b^2*g^2*n^2*log(x*e + d)^2 +
b^2*g^2*log(c)^2 + 2*a*b*g^2*log(c) + a^2*g^2 + 2*(b^2*g^2*n*log(c) + a*b*g
^2*n)*log(x*e + d))*log_integral((x^3*e^3 + 3*d*x^2*e^2 + 3*d^2*x*e + d^3)*
e^(3*(b*log(c) + a)/(b*n))))*e^(-3*(b*log(c) + a)/(b*n))/(b^5*n^5*e^3*log(x
*e + d)^2 + b^5*n^3*e^3*log(c)^2 + 2*a*b^4*n^3*e^3*log(c) + a^2*b^3*n^3*e^3
 + 2*(b^5*n^4*e^3*log(c) + a*b^4*n^4*e^3)*log(x*e + d))
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(f+gx)^2}{(a+b\log(c(d+ex)^n))^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**2/(a+b*ln(c*(e*x+d)**n))**3,x)
```

```
[Out] Integral((f + g*x)**2/(a + b*log(c*(d + e*x)**n))**3, x)
```

Giac [B] Leaf count of result is larger than twice the leaf count of optimal. 8396 vs. 2(357) = 714.
time = 5.70, size = 8396, normalized size = 23.92

Too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2/(a+b*log(c*(e*x+d)^n))^3,x, algorithm="giac")
```

```
[Out] -3/2*(x*e + d)^3*b^2*g^2*n^2*e^3*log(x*e + d)/(b^5*n^5*e^6*log(x*e + d)^2 +
 2*b^5*n^4*e^6*log(x*e + d)*log(c) + 2*a*b^4*n^4*e^6*log(x*e + d) + b^5*n^3
*e^6*log(c)^2 + 2*a*b^4*n^3*e^6*log(c) + a^2*b^3*n^3*e^6) + 2*(x*e + d)^2*b
^2*d*g^2*n^2*e^3*log(x*e + d)/(b^5*n^5*e^6*log(x*e + d)^2 + 2*b^5*n^4*e^6*l
og(x*e + d)*log(c) + 2*a*b^4*n^4*e^6*log(x*e + d) + b^5*n^3*e^6*log(c)^2 +
2*a*b^4*n^3*e^6*log(c) + a^2*b^3*n^3*e^6) - 1/2*(x*e + d)*b^2*d^2*g^2*n^2*e
^3*log(x*e + d)/(b^5*n^5*e^6*log(x*e + d)^2 + 2*b^5*n^4*e^6*log(x*e + d)*lo
g(c) + 2*a*b^4*n^4*e^6*log(x*e + d) + b^5*n^3*e^6*log(c)^2 + 2*a*b^4*n^3*e^
```

6*log(c) + a^2*b^3*n^3*e^6) + 1/2*b^2*d^2*g^2*n^2*Ei(log(c)/n + a/(b*n) + l
og(x*e + d))*e^(-a/(b*n) + 3)*log(x*e + d)^2/((b^5*n^5*e^6*log(x*e + d)^2 +
 2*b^5*n^4*e^6*log(x*e + d)*log(c) + 2*a*b^4*n^4*e^6*log(x*e + d) + b^5*n^3
*e^6*log(c)^2 + 2*a*b^4*n^3*e^6*log(c) + a^2*b^3*n^3*e^6)*c^(1/n)) - 1/2*(x
*e + d)^3*b^2*g^2*n^2*e^3/(b^5*n^5*e^6*log(x*e + d)^2 + 2*b^5*n^4*e^6*log(x
*e + d)*log(c) + 2*a*b^4*n^4*e^6*log(x*e + d) + b^5*n^3*e^6*log(c)^2 + 2*a*
b^4*n^3*e^6*log(c) + a^2*b^3*n^3*e^6) + (x*e + d)^2*b^2*d*g^2*n^2*e^3/(b^5*
n^5*e^6*log(x*e + d)^2 + 2*b^5*n^4*e^6*log(x*e + d)*log(c) + 2*a*b^4*n^4*e^
6*log(x*e + d) + b^5*n^3*e^6*log(c)^2 + 2*a*b^4*n^3*e^6*log(c) + a^2*b^3*n^
3*e^6) - 1/2*(x*e + d)*b^2*d^2*g^2*n^2*e^3/(b^5*n^5*e^6*log(x*e + d)^2 + 2*
b^5*n^4*e^6*log(x*e + d)*log(c) + 2*a*b^4*n^4*e^6*log(x*e + d) + b^5*n^3*e^
6*log(c)^2 + 2*a*b^4*n^3*e^6*log(c) + a^2*b^3*n^3*e^6) - 2*(x*e + d)^2*b^2*
f*g*n^2*e^4*log(x*e + d)/(b^5*n^5*e^6*log(x*e + d)^2 + 2*b^5*n^4*e^6*log(x*
e + d)*log(c) + 2*a*b^4*n^4*e^6*log(x*e + d) + b^5*n^3*e^6*log(c)^2 + 2*a*b
^4*n^3*e^6*log(c) + a^2*b^3*n^3*e^6) + (x*e + d)*b^2*d*f*g*n^2*e^4*log(x*e
+ d)/(b^5*n^5*e^6*log(x*e + d)^2 + 2*b^5*n^4*e^6*log(x*e + d)*log(c) + 2*a*
b^4*n^4*e^6*log(x*e + d) + b^5*n^3*e^6*log(c)^2 + 2*a*b^4*n^3*e^6*log(c) +
a^2*b^3*n^3*e^6) - b^2*d*f*g*n^2*Ei(log(c)/n + a/(b*n) + log(x*e + d))*e^(-
a/(b*n) + 4)*log(x*e + d)^2/((b^5*n^5*e^6*log(x*e + d)^2 + 2*b^5*n^4*e^6*lo
g(x*e + d)*log(c) + 2*a*b^4*n^4*e^6*log(x*e + d) + b^5*n^3*e^6*log(c)^2 + 2
*a*b^4*n^3*e^6*log(c) + a^2*b^3*n^3*e^6)*c^(1/n)) - 4*b^2*d*g^2*n^2*Ei(2*lo
g(c)/n + 2*a/(b*n) + 2*log(x*e + d))*e^(-2*a/(b*n) + 3)*log(x*e + d)^2/((b^
5*n^5*e^6*log(x*e + d)^2 + 2*b^5*n^4*e^6*log(x*e + d)*log(c) + 2*a*b^4*n^4*
e^6*log(x*e + d) + b^5*n^3*e^6*log(c)^2 + 2*a*b^4*n^3*e^6*log(c) + a^2*b^3*
n^3*e^6)*c^(2/n)) - 3/2*(x*e + d)^3*b^2*g^2*n*e^3*log(c)/(b^5*n^5*e^6*log(x
*e + d)^2 + 2*b^5*n^4*e^6*log(x*e + d)*log(c) + 2*a*b^4*n^4*e^6*log(x*e + d
) + b^5*n^3*e^6*log(c)^2 + 2*a*b^4*n^3*e^6*log(c) + a^2*b^3*n^3*e^6) + 2*(x
*e + d)^2*b^2*d*g^2*n*e^3*log(c)/(b^5*n^5*e^6*log(x*e + d)^2 + 2*b^5*n^4*e^
6*log(x*e + d)*log(c) + 2*a*b^4*n^4*e^6*log(x*e + d) + b^5*n^3*e^6*log(c)^2
 + 2*a*b^4*n^3*e^6*log(c) + a^2*b^3*n^3*e^6) - 1/2*(x*e + d)*b^2*d^2*g^2*n*
e^3*log(c)/(b^5*n^5*e^6*log(x*e + d)^2 + 2*b^5*n^4*e^6*log(x*e + d)*log(c)
+ 2*a*b^4*n^4*e^6*log(x*e + d) + b^5*n^3*e^6*log(c)^2 + 2*a*b^4*n^3*e^6*log
(c) + a^2*b^3*n^3*e^6) + b^2*d^2*g^2*n*Ei(log(c)/n + a/(b*n) + log(x*e + d)
)*e^(-a/(b*n) + 3)*log(x*e + d)*log(c)/((b^5*n^5*e^6*log(x*e + d)^2 + 2*b^5
*n^4*e^6*log(x*e + d)*log(c) + 2*a*b^4*n^4*e^6*log(x*e + d) + b^5*n^3*e^6*l
og(c)^2 + 2*a*b^4*n^3*e^6*log(c) + a^2*b^3*n^3*e^6)*c^(1/n)) - (x*e + d)^2*
b^2*f*g*n^2*e^4/(b^5*n^5*e^6*log(x*e + d)^2 + 2*b^5*n^4*e^6*log(x*e + d)*lo
g(c) + 2*a*b^4*n^4*e^6*log(x*e + d) + b^5*n^3*e^6*log(c)^2 + 2*a*b^4*n^3*e^
6*log(c) + a^2*b^3*n^3*e^6) + (x*e + d)*b^2*d*f*g*n^2*e^4/(b^5*n^5*e^6*log(
x*e + d)^2 + 2*b^5*n^4*e^6*log(x*e + d)*log(c) + 2*a*b^4*n^4*e^6*log(x*e +
d) + b^5*n^3*e^6*log(c)^2 + 2*a*b^4*n^3*e^6*log(c) + a^2*b^3*n^3*e^6) - 3/2
*(x*e + d)^3*a*b*g^2*n*e^3/(b^5*n^5*e^6*log(x*e + d)^2 + 2*b^5*n^4*e^6*log(
x*e + d)*log(c) + 2*a*b^4*n^4*e^6*log(x*e + d) + b^5*n^3*e^6*log(c)^2 + 2*a
*b^4*n^3*e^6*log(c) + a^2*b^3*n^3*e^6) + 2*(x*e + d)^2*a*b*d*g^2*n*e^3/(b^5
*n^5*e^6*log(x*e + d)^2 + 2*b^5*n^4*e^6*log(x*e + d)*log(c) + 2*a*b^4*n^4*e

```
^6*log(x*e + d) + b^5*n^3*e^6*log(c)^2 + 2*a*b^4*n^3*e^6*log(c) + a^2*b^3*n
^3*e^6) - 1/2*(x*e + d)*a*b*d^2*g^2*n*e^3/(b^5*n^5*e^6*log(x*e + d)^2 + 2*b
^5*n^4*e^6*log(x*e + d)*log(c) + 2*a*b^4*n^4*e^6*log(x*e + d) + b^5*n^3*e^6
*log(c)^2 + 2*a*b^4*n^3*e^6*log(c) + a^2*b^3*n^3*e^6) - 1/2*(x*e + d)*b^2*f
^2*n^2*e^5*log(x*e + d)/(b^5*n^5*e^6*log(x*e + d)^2 + 2*b^5*n^4*e^6*log(x*e
 + d)*log(c) + 2*a*b^4*n^4*e^6*log(x*e + d) + b^5*n^3*e^6*log(c)^2 + 2*a*b^
4*n^3*e^6*log(c) + a^2*b^3*n^3*e^6) + a*b*d^2*g^2*n*Ei(log(c)/n + a/(b*n) +
 log(x*e + d))*e^(-a/(b*n) + 3)*log(x*e + d)/((b^5*n^5*e^6*log(x*e + d)^2 +
 2*b^5*n^4*e^6*log(x*e + d)*log(c) + 2*a*b^4*n^4*e^6*log(x*e + d) + b^5*n^3
*e^6*log(c)^2 + 2*a*b^4*n^3*e^6*log(c) + a^2*b^3*n^3*e^6)*c^(1/n)) + 1/2*b^
2*f^2*n^2*Ei(log(c)/n + a/(b*n) + log(x*e + d))*e^(-a/(b*n) + 5)*log(x*e +
d)^2/((b^5*n^5*e^6*log(x*e + d)^2 + 2*b^5*n^4*e^6*log(x*e + d)*log(c) + 2*a
*b^4*n^4*e^6*log(x*e + d) + b^5*n^3*e^6*log(c)^2 + 2*a*b^4*n^3*e^6*log(c) +
 a^2*b^3*n^3*e^6)*c^(1/n)) + 4*b^2*f*g*n^2*Ei(2...
```

Mupad [F]

time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(f+g\,x)^2}{\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)^2/(a + b*log(c*(d + e*x)^n))^3,x)
```

```
[Out] int((f + g*x)^2/(a + b*log(c*(d + e*x)^n))^3, x)
```

3.101 $\int \frac{f+gx}{(a+b\log(c(d+ex)^n))^3}\,dx$

Optimal. Leaf size=261

$$\frac{e^{-\frac{a}{bn}}(ef-dg)(d+ex)\left(c(d+ex)^n\right)^{-1/n}\text{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{2b^3e^2n^3}+\frac{2e^{-\frac{2a}{bn}}g(d+ex)^2\left(c(d+ex)^n\right)^{-2/n}\text{Ei}\left(\frac{2(a+b\log(c(\right.}{bn}}{b^3e^2n^3}$$

```
[Out] 1/2*(-d*g+e*f)*(e*x+d)*Ei((a+b*ln(c*(e*x+d)^n))/b/n)/b^3/e^2/exp(a/b/n)/n^3
/((c*(e*x+d)^n)^(1/n))+2*g*(e*x+d)^2*Ei(2*(a+b*ln(c*(e*x+d)^n))/b/n)/b^3/e^
2/exp(2*a/b/n)/n^3/((c*(e*x+d)^n)^(2/n))-1/2*(e*x+d)*(g*x+f)/b/e/n/(a+b*ln(
c*(e*x+d)^n))^2+1/2*(-d*g+e*f)*(e*x+d)/b^2/e^2/n^2/(a+b*ln(c*(e*x+d)^n))-(e
*x+d)*(g*x+f)/b^2/e/n^2/(a+b*ln(c*(e*x+d)^n))
```

Rubi [A]

time = 0.26, antiderivative size = 261, normalized size of antiderivative = 1.00, number of steps used = 17, number of rules used = 8, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.364$, Rules used = {2447, 2446, 2436, 2337, 2209, 2437, 2347, 2334}

$$\frac{e^{-\frac{a}{bn}}(d+ex)(ef-dg)\left(c(d+ex)^n\right)^{-1/n}\text{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{2b^3e^2n^3}+\frac{2ge^{-\frac{2a}{bn}}(d+ex)^2\left(c(d+ex)^n\right)^{-2/n}\text{Ei}\left(\frac{2(a+b\log(c(d+ex)^n))}{bn}\right)}{b^3e^2n^3}+\frac{(d+ex)(ef-dg)}{2b^2e^2n^2\left(a+b\log\left(c(d+ex)^n\right)\right)}-\frac{(d+ex)(f+gx)}{b^2en^2\left(a+b\log\left(c(d+ex)^n\right)\right)}-\frac{(d+ex)(f+gx)}{2ben\left(a+b\log\left(c(d+ex)^n\right)\right)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)/(a + b*Log[c*(d + e*x)^n])^3,x]
```

```
[Out] ((e*f - d*g)*(d + e*x)*ExpIntegralEi[(a + b*Log[c*(d + e*x)^n])/(b*n)])/(2*
b^3*e^2*E^(a/(b*n))*n^3*(c*(d + e*x)^n)^n^(-1)) + (2*g*(d + e*x)^2*ExpInteg
ralEi[(2*(a + b*Log[c*(d + e*x)^n]))/(b*n)])/(b^3*e^2*E^((2*a)/(b*n))*n^3*(
c*(d + e*x)^n)^(2/n)) - ((d + e*x)*(f + g*x))/(2*b*e*n*(a + b*Log[c*(d + e*
x)^n])^2) + ((e*f - d*g)*(d + e*x))/(2*b^2*e^2*n^2*(a + b*Log[c*(d + e*x)^n
])) - ((d + e*x)*(f + g*x))/(b^2*e*n^2*(a + b*Log[c*(d + e*x)^n]))
```

Rule 2209

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/((c_.) + (d_.)*(x_)), x_Symbol] :> Si
mp[(F^(g*(e - c*(f/d)))/d)*ExpIntegralEi[f*g*(c + d*x)*(Log[F]/d)], x] /; F
reeQ[{F, c, d, e, f, g}, x] &&  !TrueQ[$UseGamma]
```

Rule 2334

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Simp[x*((a + b
*Log[c*x^n])^(p + 1)/(b*n*(p + 1))), x] - Dist[1/(b*n*(p + 1)), Int[(a + b*
Log[c*x^n])^(p + 1), x], x] /; FreeQ[{a, b, c, n}, x] && LtQ[p, -1] && Inte
gerQ[2*p]
```

Rule 2337

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2347

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_)*((d_.)*(x_))^(m_.), x_Symbol
] :> Dist[(d*x)^(m + 1)/(d*n*(c*x^n)^((m + 1)/n)), Subst[Int[E^(((m + 1)/n)
*x)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b, c, d, m, n, p}, x]
```

Rule 2436

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2437

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[(f*(x/d))^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2446

```
Int[((f_.) + (g_.)*(x_))^(q_.)/((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)
]*(b_.)), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q/(a + b*Log[c*(d + e*
x)^n]), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0] &
& IGtQ[q, 0]
```

Rule 2447

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[(d + e*x)*(f + g*x)^q*((a + b*Log[c*(d + e
*x)^n])^(p + 1)/(b*e*n*(p + 1))), x] + (-Dist[(q + 1)/(b*n*(p + 1)), Int[(f
 + g*x)^q*(a + b*Log[c*(d + e*x)^n])^(p + 1), x], x] + Dist[q*((e*f - d*g)/
(b*e*n*(p + 1))), Int[(f + g*x)^(q - 1)*(a + b*Log[c*(d + e*x)^n])^(p + 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0] && LtQ[
p, -1] && GtQ[q, 0]
```

Rubi steps

$$\int \frac{f+gx}{(a+b\log(c(d+ex)^n))^3}\,dx = -\frac{(d+ex)(f+gx)}{2ben(a+b\log(c(d+ex)^n))^2} + \frac{\int \frac{f+gx}{(a+b\log(c(d+ex)^n))^2}\,dx}{bn} - \frac{(ef-dg)\int \frac{}{(a+}}{2b}$$

$$= -\frac{(d+ex)(f+gx)}{2ben(a+b\log(c(d+ex)^n))^2} - \frac{(d+ex)(f+gx)}{b^2en^2(a+b\log(c(d+ex)^n))} + \frac{2\int \frac{}{a+b\log}}{}$$

$$= -\frac{(d+ex)(f+gx)}{2ben(a+b\log(c(d+ex)^n))^2} + \frac{(ef-dg)(d+ex)}{2b^2e^2n^2(a+b\log(c(d+ex)^n))} - \frac{}{b^2en^2}$$

$$= -\frac{(d+ex)(f+gx)}{2ben(a+b\log(c(d+ex)^n))^2} + \frac{(ef-dg)(d+ex)}{2b^2e^2n^2(a+b\log(c(d+ex)^n))} - \frac{}{b^2en^2}$$

$$= -\frac{3e^{-\frac{a}{bn}}(ef-dg)(d+ex)(c(d+ex)^n)^{-1/n}\operatorname{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{2b^3e^2n^3} - \frac{(d}{2ben(a+}$$

$$= -\frac{3e^{-\frac{a}{bn}}(ef-dg)(d+ex)(c(d+ex)^n)^{-1/n}\operatorname{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{2b^3e^2n^3} - \frac{(d}{2ben(a+}$$

$$= \frac{e^{-\frac{a}{bn}}(ef-dg)(d+ex)(c(d+ex)^n)^{-1/n}\operatorname{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{2b^3e^2n^3} + \frac{2e^{-\frac{2a}{bn}}g(d+}{}$$

Mathematica [A]
time = 0.27, size = 256, normalized size = 0.98

$$-\frac{e^{-\frac{2a}{bn}}(d+ex)(c(d+ex)^n)^{-2/n}\left(-e^{\frac{a}{bn}}(ef-dg)(c(d+ex)^n)^{\frac{1}{n}}\operatorname{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)(a+b\log(c(d+ex)^n))^2-4g(d+ex)\operatorname{Ei}\left(\frac{2(a+b\log(c(d+ex)^n))}{bn}\right)(a+b\log(c(d+ex)^n))^2+be^{\frac{2a}{bn}}n(c(d+ex)^n)^{2/n}(ben(f+gx)+a(ef+dg+2egx)+b(dg+e(f+2gx))\log(c(d+ex)^n))\right)}{2b^3e^2n^3(a+b\log(c(d+ex)^n))^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)/(a + b*Log[c*(d + e*x)^n])^3,x]
```

```
[Out] -1/2*((d + e*x)*(-(E^(a/(b*n))*(e*f - d*g)*(c*(d + e*x)^n)^n^(-1)*ExpIntegr
alEi[(a + b*Log[c*(d + e*x)^n])/(b*n)]*(a + b*Log[c*(d + e*x)^n])^2) - 4*g*
(d + e*x)*ExpIntegralEi[(2*(a + b*Log[c*(d + e*x)^n]))/(b*n)]*(a + b*Log[c*
(d + e*x)^n])^2 + b*E^((2*a)/(b*n))*n*(c*(d + e*x)^n)^(2/n)*(b*e*n*(f + g*x
) + a*(e*f + d*g + 2*e*g*x) + b*(d*g + e*(f + 2*g*x))*Log[c*(d + e*x)^n])))
/(b^3*e^2*E^((2*a)/(b*n))*n^3*(c*(d + e*x)^n)^(2/n)*(a + b*Log[c*(d + e*x)^
n])^2)
```

Maple [C] Result contains higher order function than in optimal. Order 9 vs. order 4.
time = 0.80, size = 3114, normalized size = 11.93

method	result	size

risch	Expression too large to display	3114

Verification of antiderivative is not currently implemented for this CAS.

[In] int((g*x+f)/(a+b*ln(c*(e*x+d)^n))^3,x,method=_RETURNVERBOSE)

```
[Out] -(2*b*d*e*f*n+6*a*d*e*g*x+I*Pi*b*d^2*g*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-3*I*
Pi*b*d*e*g*x*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+2*a*d^2*g+2*a*
d*e*f+4*a*e^2*g*x^2+2*a*e^2*f*x+2*ln(c)*b*d*e*f+I*Pi*b*d*e*f*csgn(I*c)*csgn
(I*c*(e*x+d)^n)^2+I*Pi*b*e^2*f*x*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I*Pi*b*e^2
*f*x*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-3*I*Pi*b*d*e*g*x*csgn(I*c*(e*x
+d)^n)^3-2*I*Pi*b*e^2*g*x^2*csgn(I*c*(e*x+d)^n)^3-I*Pi*b*e^2*f*x*csgn(I*c*(
e*x+d)^n)^3-I*Pi*b*d*e*f*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+2*
I*Pi*b*e^2*g*x^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-2*I*Pi*b*e^2*g*x^2
*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+3*I*Pi*b*d*e*g*x*csgn(I*c)
*csgn(I*c*(e*x+d)^n)^2+3*I*Pi*b*d*e*g*x*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^
n)^2+2*b*e^2*g*n*x^2+2*b*e^2*f*n*x-I*Pi*b*e^2*f*x*csgn(I*c)*csgn(I*(e*x+d)^
n)*csgn(I*c*(e*x+d)^n)+2*b*e^2*f*x*ln((e*x+d)^n)+2*b*d*e*f*ln((e*x+d)^n)+4*
b*e^2*g*x^2*ln((e*x+d)^n)+I*Pi*b*d^2*g*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n
)^2+2*b*d*e*g*n*x+6*b*d*e*g*x*ln((e*x+d)^n)+4*ln(c)*b*e^2*g*x^2+2*ln(c)*b*e
^2*f*x+I*Pi*b*d*e*f*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-I*Pi*b*d^2*g*cs
gn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+2*I*Pi*b*e^2*g*x^2*csgn(I*c)*
csgn(I*c*(e*x+d)^n)^2+2*ln(c)*b*d^2*g-I*Pi*b*d*e*f*csgn(I*c*(e*x+d)^n)^3+2*
b*d^2*g*ln((e*x+d)^n)-I*Pi*b*d^2*g*csgn(I*c*(e*x+d)^n)^3+6*ln(c)*b*d*e*g*x)
/b^2/e^2/n^2/(2*a+2*b*ln(c)+2*b*ln((e*x+d)^n)-I*b*Pi*csgn(I*c)*csgn(I*(e*x+
d)^n)*csgn(I*c*(e*x+d)^n)+I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I*b*Pi*csg
n(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-I*b*Pi*csgn(I*c*(e*x+d)^n)^3)^2-1/2/b^
3/n^3*f*c^(-1/n)*((e*x+d)^n)^(-1/n)*exp(-1/2*(-I*b*Pi*csgn(I*c)*csgn(I*(e*x
+d)^n)*csgn(I*c*(e*x+d)^n)+I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I*b*Pi*cs
gn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-I*b*Pi*csgn(I*c*(e*x+d)^n)^3+2*a)/b/n
)*Ei(1,-ln(e*x+d)-1/2*(-I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)
^n)+I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*
c*(e*x+d)^n)^2-I*b*Pi*csgn(I*c*(e*x+d)^n)^3+2*b*ln(c)+2*b*(ln((e*x+d)^n)-n*
ln(e*x+d))+2*a)/b/n)*x-1/2/b^3/n^3/e*f*c^(-1/n)*((e*x+d)^n)^(-1/n)*exp(-1/2
*(-I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+I*b*Pi*csgn(I*c)*
csgn(I*c*(e*x+d)^n)^2+I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-I*b*Pi
*csgn(I*c*(e*x+d)^n)^3+2*a)/b/n)*Ei(1,-ln(e*x+d)-1/2*(-I*b*Pi*csgn(I*c)*csg
n(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I
*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-I*b*Pi*csgn(I*c*(e*x+d)^n)^3+
2*b*ln(c)+2*b*(ln((e*x+d)^n)-n*ln(e*x+d))+2*a)/b/n)*d-2/b^3/n^3*g*c^(-2/n)*
((e*x+d)^n)^(-2/n)*exp(-(-I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+
d)^n)+I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I*b*Pi*csgn(I*(e*x+d)^n)*csgn(
I*c*(e*x+d)^n)^2-I*b*Pi*csgn(I*c*(e*x+d)^n)^3+2*a)/b/n)*Ei(1,-2*ln(e*x+d)-(
-I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+I*b*Pi*csgn(I*c)*cs
```

```
gn(I*c*(e*x+d)^n)^2+I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-I*b*Pi*c
sgn(I*c*(e*x+d)^n)^3+2*b*ln(c)+2*b*(ln((e*x+d)^n)-n*ln(e*x+d))+2*a)/b/n)*x^
2-4/b^3/n^3/e*g*c^(-2/n)*((e*x+d)^n)^(-2/n)*exp(-(-I*b*Pi*csgn(I*c)*csgn(I*
(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I*b*P
i*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-I*b*Pi*csgn(I*c*(e*x+d)^n)^3+2*a)
/b/n)*Ei(1,-2*ln(e*x+d)-(-I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+
d)^n)+I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I*b*Pi*csgn(I*(e*x+d)^n)*csgn(
I*c*(e*x+d)^n)^2-I*b*Pi*csgn(I*c*(e*x+d)^n)^3+2*b*ln(c)+2*b*(ln((e*x+d)^n)-
n*ln(e*x+d))+2*a)/b/n)*d*x-2/b^3/n^3/e^2*g*c^(-2/n)*((e*x+d)^n)^(-2/n)*exp(
-(-I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+I*b*Pi*csgn(I*c)*
csgn(I*c*(e*x+d)^n)^2+I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-I*b*Pi
*csgn(I*c*(e*x+d)^n)^3+2*a)/b/n)*Ei(1,-2*ln(e*x+d)-(-I*b*Pi*csgn(I*c)*csgn(
I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I*b
*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-I*b*Pi*csgn(I*c*(e*x+d)^n)^3+2*
b*ln(c)+2*b*(ln((e*x+d)^n)-n*ln(e*x+d))+2*a)/b/n)*d^2+1/2/b^3/n^3/e*d*g*c^(
-1/n)*((e*x+d)^n)^(-1/n)*exp(-1/2*(-I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn
(I*c*(e*x+d)^n)+I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I*b*Pi*csgn(I*(e*x+d
)^n)*csgn(I*c*(e*x+d)^n)^2-I*b*Pi*csgn(I*c*(e*x+d)^n)^3+2*a)/b/n)*Ei(1,-ln(
e*x+d)-1/2*(-I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+I*b*Pi*
csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n
)^2-I*b*Pi*csgn(I*c*(e*x+d)^n)^3+2*b*ln(c)+2*b*(ln((e*x+d)^n)-n*ln(e*x+d))+
2*a)/b/n)*x+1/2/b^3/n^3/e^2*d^2*g*c^(-1/n)*((e*x+d)^n)^(-1/n)*exp(-1/2*(-I*
b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+I*b*Pi*csgn(I*c)*csgn(
I*c*(e*x+d)^n)^2+I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-I*b*Pi*csgn
(I*c*(e*x+d)^n)^3+2*a)/b/n)*Ei(1,-ln(e*x+d)-1/2*(-I*b*Pi*csgn(I*c)*csgn(I*(
e*x+d)^n)*csgn(I*c*(e*x+d)^n)+I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I*b*Pi
*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-I*b*Pi*csgn(I*c*(e*x+d)^n)^3+2*b*l
n(c)+2*b*(ln((e*x+d)^n)-n*ln(e*x+d))+2*a)/b/n)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(a+b*log(c*(e*x+d)^n))^3,x, algorithm="maxima")
```

```
[Out] -1/2*(b*d^2*g*log(c) + a*d^2*g + ((g*n + 2*g*log(c))*b + 2*a*g)*x^2*e^2 + (
((f*n + f*log(c))*b + a*f)*e^2 + (3*a*d*g + (d*g*n + 3*d*g*log(c))*b)*e)*x
+ (a*d*f + (d*f*n + d*f*log(c))*b)*e + (2*b*g*x^2*e^2 + b*d^2*g + b*d*f*e +
 (3*b*d*g*e + b*f*e^2)*x)*log((x*e + d)^n))/(b^4*n^2*e^2*log((x*e + d)^n)^2
 + 2*(b^4*n^2*log(c) + a*b^3*n^2)*e^2*log((x*e + d)^n) + (b^4*n^2*log(c)^2
+ 2*a*b^3*n^2*log(c) + a^2*b^2*n^2)*e^2) + integrate(1/2*(4*g*x*e + 3*d*g +
 f*e)/(b^3*n^2*e*log((x*e + d)^n) + (b^3*n^2*log(c) + a*b^2*n^2)*e), x)
```

Fricas [B] Leaf count of result is larger than twice the leaf count of optimal. 594 vs. 2(264) = 528.

time = 0.40, size = 594, normalized size = 2.28

$$-\frac{\left(\left(a^2dg - a^2fe + (b^2dgn^2 - b^2fn^2e)\log(xe+d)^2 + (b^2dg - b^2fe)\log(c)^2 + 2\,(abdgn - abfne + (b^2dgn - b^2fne)\log(c))\log(xe+d) + 2\,(abdg - abfe)\log(c)\right)e^{\left(\frac{b\log(c)+a}{bn}\right)}\operatorname{log\_integral}\left((xe+d)e^{\left(\frac{b\log(c)+a}{bn}\right)}\right) + \left(abd^2gn + ((b^2gn^2 + 2\,abgn)x^2 + (b^2fn^2 + abfn)x)e^2 + (b^2dfn^2 + abdfn + (b^2dgn^2 + 3\,abdgn)x)e + (b^2d^2gn^2 + (2\,b^2gn^2x^2 + b^2fn^2x)e^2 + (3\,b^2dgn^2x + b^2dfn^2)e)\log(xe+d) + (b^2d^2gn + (2\,b^2gnx^2 + b^2fnx)e^2 + (3\,b^2dgnx + b^2dfn)e)\log(c)\right)e^{\left(\frac{2\,(b\log(c)+a)}{bn}\right)} - 4\,\left(b^2gn^2\log(xe+d)^2 + b^2g\log(c)^2 + 2\,abg\log(c) + a^2g + 2\,(b^2gn\log(c) + abgn)\log(xe+d)\right)\operatorname{log\_integral}\left((x^2e^2 + 2\,dxe + d^2)e^{\left(\frac{2\,(b\log(c)+a)}{bn}\right)}\right)\right)e^{\left(-\frac{2\,(b\log(c)+a)}{bn}\right)}}{2\,\left(b^5n^5e^2\log(xe+d)^2 + b^5n^3e^2\log(c)^2 + 2\,ab^4n^3e^2\log(c) + a^2b^3n^3e^2 + 2\,(b^5n^4e^2\log(c) + ab^4n^4e^2)\log(xe+d)\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(a+b*log(c*(e*x+d)^n))^3,x, algorithm="fricas")
```

```
[Out] -1/2*((a^2*d*g - a^2*f*e + (b^2*d*g*n^2 - b^2*f*n^2*e)*log(x*e + d)^2 + (b^
2*d*g - b^2*f*e)*log(c)^2 + 2*(a*b*d*g*n - a*b*f*n*e + (b^2*d*g*n - b^2*f*n
*e)*log(c))*log(x*e + d) + 2*(a*b*d*g - a*b*f*e)*log(c))*e^((b*log(c) + a)/
(b*n))*log_integral((x*e + d)*e^((b*log(c) + a)/(b*n))) + (a*b*d^2*g*n + ((
b^2*g*n^2 + 2*a*b*g*n)*x^2 + (b^2*f*n^2 + a*b*f*n)*x)*e^2 + (b^2*d*f*n^2 +
a*b*d*f*n + (b^2*d*g*n^2 + 3*a*b*d*g*n)*x)*e + (b^2*d^2*g*n^2 + (2*b^2*g*n^
2*x^2 + b^2*f*n^2*x)*e^2 + (3*b^2*d*g*n^2*x + b^2*d*f*n^2)*e)*log(x*e + d)
+ (b^2*d^2*g*n + (2*b^2*g*n*x^2 + b^2*f*n*x)*e^2 + (3*b^2*d*g*n*x + b^2*d*f
*n)*e)*log(c))*e^(2*(b*log(c) + a)/(b*n)) - 4*(b^2*g*n^2*log(x*e + d)^2 + b
^2*g*log(c)^2 + 2*a*b*g*log(c) + a^2*g + 2*(b^2*g*n*log(c) + a*b*g*n)*log(x
*e + d))*log_integral((x^2*e^2 + 2*d*x*e + d^2)*e^(2*(b*log(c) + a)/(b*n)))
)*e^(-2*(b*log(c) + a)/(b*n))/(b^5*n^5*e^2*log(x*e + d)^2 + b^5*n^3*e^2*log
(c)^2 + 2*a*b^4*n^3*e^2*log(c) + a^2*b^3*n^3*e^2 + 2*(b^5*n^4*e^2*log(c) +
a*b^4*n^4*e^2)*log(x*e + d))
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{f + gx}{\left(a + b\log\left(c\left(d + ex\right)^{n}\right)\right)^{3}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(a+b*ln(c*(e*x+d)**n))**3,x)
```

```
[Out] Integral((f + g*x)/(a + b*log(c*(d + e*x)**n))**3, x)
```

Giac [B] Leaf count of result is larger than twice the leaf count of optimal. 4114 vs. $2(264) = 528$.
time = 5.28, size = 4114, normalized size = 15.76

Too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(a+b*log(c*(e*x+d)^n))^3,x, algorithm="giac")
```

```
[Out] -(x*e + d)^2*b^2*g*n^2*e*log(x*e + d)/(b^5*n^5*e^3*log(x*e + d)^2 + 2*b^5*n
^4*e^3*log(x*e + d)*log(c) + 2*a*b^4*n^4*e^3*log(x*e + d) + b^5*n^3*e^3*log
(c)^2 + 2*a*b^4*n^3*e^3*log(c) + a^2*b^3*n^3*e^3) + 1/2*(x*e + d)*b^2*d*g*n
```

^2*e*log(x*e + d)/(b^5*n^5*e^3*log(x*e + d)^2 + 2*b^5*n^4*e^3*log(x*e + d)*log(c) + 2*a*b^4*n^4*e^3*log(x*e + d) + b^5*n^3*e^3*log(c)^2 + 2*a*b^4*n^3*e^3*log(c) + a^2*b^3*n^3*e^3) - 1/2*b^2*d*g*n^2*Ei(log(c)/n + a/(b*n) + log(x*e + d))*e^(-a/(b*n) + 1)*log(x*e + d)^2/((b^5*n^5*e^3*log(x*e + d)^2 + 2*b^5*n^4*e^3*log(x*e + d)*log(c) + 2*a*b^4*n^4*e^3*log(x*e + d) + b^5*n^3*e^3*log(c)^2 + 2*a*b^4*n^3*e^3*log(c) + a^2*b^3*n^3*e^3)*c^(1/n)) - 1/2*(x*e + d)^2*b^2*g*n^2*e/(b^5*n^5*e^3*log(x*e + d)^2 + 2*b^5*n^4*e^3*log(x*e + d)*log(c) + 2*a*b^4*n^4*e^3*log(x*e + d) + b^5*n^3*e^3*log(c)^2 + 2*a*b^4*n^3*e^3*log(c) + a^2*b^3*n^3*e^3) + 1/2*(x*e + d)*b^2*d*g*n^2*e/(b^5*n^5*e^3*log(x*e + d)^2 + 2*b^5*n^4*e^3*log(x*e + d)*log(c) + 2*a*b^4*n^4*e^3*log(x*e + d) + b^5*n^3*e^3*log(c)^2 + 2*a*b^4*n^3*e^3*log(c) + a^2*b^3*n^3*e^3) - 1/2*(x*e + d)*b^2*f*n^2*e^2*log(x*e + d)/(b^5*n^5*e^3*log(x*e + d)^2 + 2*b^5*n^4*e^3*log(x*e + d)*log(c) + 2*a*b^4*n^4*e^3*log(x*e + d) + b^5*n^3*e^3*log(c)^2 + 2*a*b^4*n^3*e^3*log(c) + a^2*b^3*n^3*e^3) + 1/2*b^2*f*n^2*Ei(log(c)/n + a/(b*n) + log(x*e + d))*e^(-a/(b*n) + 2)*log(x*e + d)^2/((b^5*n^5*e^3*log(x*e + d)^2 + 2*b^5*n^4*e^3*log(x*e + d)*log(c) + 2*a*b^4*n^4*e^3*log(x*e + d) + b^5*n^3*e^3*log(c)^2 + 2*a*b^4*n^3*e^3*log(c) + a^2*b^3*n^3*e^3)*c^(1/n)) + 2*b^2*g*n^2*Ei(2*log(c)/n + 2*a/(b*n) + 2*log(x*e + d))*e^(-2*a/(b*n) + 1)*log(x*e + d)^2/((b^5*n^5*e^3*log(x*e + d)^2 + 2*b^5*n^4*e^3*log(x*e + d)*log(c) + 2*a*b^4*n^4*e^3*log(x*e + d) + b^5*n^3*e^3*log(c)^2 + 2*a*b^4*n^3*e^3*log(c) + a^2*b^3*n^3*e^3)*c^(2/n)) - (x*e + d)^2*b^2*g*n*e*log(c)/(b^5*n^5*e^3*log(x*e + d)^2 + 2*b^5*n^4*e^3*log(x*e + d)*log(c) + 2*a*b^4*n^4*e^3*log(x*e + d) + b^5*n^3*e^3*log(c)^2 + 2*a*b^4*n^3*e^3*log(c) + a^2*b^3*n^3*e^3) + 1/2*(x*e + d)*b^2*d*g*n*e*log(c)/(b^5*n^5*e^3*log(x*e + d)^2 + 2*b^5*n^4*e^3*log(x*e + d)*log(c) + 2*a*b^4*n^4*e^3*log(x*e + d) + b^5*n^3*e^3*log(c)^2 + 2*a*b^4*n^3*e^3*log(c) + a^2*b^3*n^3*e^3) - b^2*d*g*n*Ei(log(c)/n + a/(b*n) + log(x*e + d))*e^(-a/(b*n) + 1)*log(x*e + d)*log(c)/((b^5*n^5*e^3*log(x*e + d)^2 + 2*b^5*n^4*e^3*log(x*e + d)*log(c) + 2*a*b^4*n^4*e^3*log(x*e + d) + b^5*n^3*e^3*log(c)^2 + 2*a*b^4*n^3*e^3*log(c) + a^2*b^3*n^3*e^3)*c^(1/n)) - 1/2*(x*e + d)*b^2*f*n^2*e^2/(b^5*n^5*e^3*log(x*e + d)^2 + 2*b^5*n^4*e^3*log(x*e + d)*log(c) + 2*a*b^4*n^4*e^3*log(x*e + d) + b^5*n^3*e^3*log(c)^2 + 2*a*b^4*n^3*e^3*log(c) + a^2*b^3*n^3*e^3) - (x*e + d)^2*a*b*g*n*e/(b^5*n^5*e^3*log(x*e + d)^2 + 2*b^5*n^4*e^3*log(x*e + d)*log(c) + 2*a*b^4*n^4*e^3*log(x*e + d) + b^5*n^3*e^3*log(c)^2 + 2*a*b^4*n^3*e^3*log(c) + a^2*b^3*n^3*e^3) + 1/2*(x*e + d)*a*b*d*g*n*e/(b^5*n^5*e^3*log(x*e + d)^2 + 2*b^5*n^4*e^3*log(x*e + d)*log(c) + 2*a*b^4*n^4*e^3*log(x*e + d) + b^5*n^3*e^3*log(c)^2 + 2*a*b^4*n^3*e^3*log(c) + a^2*b^3*n^3*e^3) - a*b*d*g*n*Ei(log(c)/n + a/(b*n) + log(x*e + d))*e^(-a/(b*n) + 1)*log(x*e + d)/((b^5*n^5*e^3*log(x*e + d)^2 + 2*b^5*n^4*e^3*log(x*e + d)*log(c) + 2*a*b^4*n^4*e^3*log(x*e + d) + b^5*n^3*e^3*log(c)^2 + 2*a*b^4*n^3*e^3*log(c) + a^2*b^3*n^3*e^3)*c^(1/n)) - 1/2*(x*e + d)*b^2*f*n*e^2*log(c)/(b^5*n^5*e^3*log(x*e + d)^2 + 2*b^5*n^4*e^3*log(x*e + d)*log(c) + 2*a*b^4*n^4*e^3*log(x*e + d) + b^5*n^3*e^3*log(c)^2 + 2*a*b^4*n^3*e^3*log(c) + a^2*b^3*n^3*e^3) + b^2*f*n*Ei(log(c)/n + a/(b*n) + log(x*e + d))*e^(-a/(b*n) + 2)*log(x*e + d)*log(c)/((b^5*n^5*e^3*log(x*e + d)^2 + 2*b^5*n^4*e^3*log(x*e + d)*log(c) + 2*a*b^

```
4*n^4*e^3*log(x*e + d) + b^5*n^3*e^3*log(c)^2 + 2*a*b^4*n^3*e^3*log(c) + a^
2*b^3*n^3*e^3)*c^(1/n)) + 4*b^2*g*n*Ei(2*log(c)/n + 2*a/(b*n) + 2*log(x*e +
 d))*e^(-2*a/(b*n) + 1)*log(x*e + d)*log(c)/((b^5*n^5*e^3*log(x*e + d)^2 +
2*b^5*n^4*e^3*log(x*e + d)*log(c) + 2*a*b^4*n^4*e^3*log(x*e + d) + b^5*n^3*
e^3*log(c)^2 + 2*a*b^4*n^3*e^3*log(c) + a^2*b^3*n^3*e^3)*c^(2/n)) - 1/2*b^2
*d*g*Ei(log(c)/n + a/(b*n) + log(x*e + d))*e^(-a/(b*n) + 1)*log(c)^2/((b^5*
n^5*e^3*log(x*e + d)^2 + 2*b^5*n^4*e^3*log(x*e + d)*log(c) + 2*a*b^4*n^4*e^
3*log(x*e + d) + b^5*n^3*e^3*log(c)^2 + 2*a*b^4*n^3*e^3*log(c) + a^2*b^3*n^
3*e^3)*c^(1/n)) - 1/2*(x*e + d)*a*b*f*n*e^2/(b^5*n^5*e^3*log(x*e + d)^2 + 2
*b^5*n^4*e^3*log(x*e + d)*log(c) + 2*a*b^4*n^4*e^3*log(x*e + d) + b^5*n^3*e
^3*log(c)^2 + 2*a*b^4*n^3*e^3*log(c) + a^2*b^3*n^3*e^3) + a*b*f*n*Ei(log(c)
/n + a/(b*n) + log(x*e + d))*e^(-a/(b*n) + 2)*log(x*e + d)/((b^5*n^5*e^3*lo
g(x*e + d)^2 + 2*b^5*n^4*e^3*log(x*e + d)*log(c) + 2*a*b^4*n^4*e^3*log(x*e
+ d) + b^5*n^3*e^3*log(c)^2 + 2*a*b^4*n^3*e^3*log(c) + a^2*b^3*n^3*e^3)*c^(
1/n)) + 4*a*b*g*n*Ei(2*log(c)/n + 2*a/(b*n) + 2*log(x*e + d))*e^(-2*a/(b*n)
 + 1)*log(x*e + d)/((b^5*n^5*e^3*log(x*e + d)^2 + 2*b^5*n^4*e^3*log(x*e + d
)*log(c) + 2*a*b^4*n^4*e^3*log(x*e + d) + b^5*n^3*e^3*log(c)^2 + 2*a*b^4*n^
3*e^3*log(c) + a^2*b^3*n^3*e^3)*c^(2/n)) - a*b*d*g*Ei(log(c)/n + a/(b*n) +
log(x*e + d))*e^(-a/(b*n) + 1)*log(c)/((b^5*n^5...
```

Mupad [F]

time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{f+g\,x}{{\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)}^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)/(a + b*log(c*(d + e*x)^n))^3,x)
[Out] int((f + g*x)/(a + b*log(c*(d + e*x)^n))^3, x)
```

3.102 $\int \frac{1}{(a+b\log(c(d+ex)^n))^3}\,dx$

Optimal. Leaf size=135

$$\frac{e^{-\frac{a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\operatorname{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{2b^3en^3}-\frac{d+ex}{2ben\left(a+b\log\left(c(d+ex)^n\right)\right)^2}-\frac{d+ex}{2b^2en^2\left(a+b\log\left(c(d+e\right.\right.}$$

```
[Out] 1/2*(e*x+d)*Ei((a+b*ln(c*(e*x+d)^n))/b/n)/b^3/e/exp(a/b/n)/n^3/((c*(e*x+d)^
n)^(1/n))+1/2*(-e*x-d)/b/e/n/(a+b*ln(c*(e*x+d)^n))^2+1/2*(-e*x-d)/b^2/e/n^2
/(a+b*ln(c*(e*x+d)^n))
```

Rubi [A]
time = 0.06, antiderivative size = 135, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}} = 0.250$, Rules used = {2436, 2334, 2337, 2209}

$$\frac{e^{-\frac{a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\operatorname{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{2b^3en^3}-\frac{d+ex}{2b^2en^2\left(a+b\log\left(c(d+ex)^n\right)\right)}-\frac{d+ex}{2ben\left(a+b\log\left(c(d+ex)^n\right)\right)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^(-3),x]
```

```
[Out] ((d + e*x)*ExpIntegralEi[(a + b*Log[c*(d + e*x)^n])/(b*n)])/(2*b^3*e*E^(a/(
b*n))*n^3*(c*(d + e*x)^n)^n^(-1)) - (d + e*x)/(2*b*e*n*(a + b*Log[c*(d + e*
x)^n])^2) - (d + e*x)/(2*b^2*e*n^2*(a + b*Log[c*(d + e*x)^n]))
```

Rule 2209

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/((c_.) + (d_.)*(x_)), x_Symbol] :> Si
mp[(F^(g*(e - c*(f/d)))/d)*ExpIntegralEi[f*g*(c + d*x)*(Log[F]/d)], x] /; F
reeQ[{F, c, d, e, f, g}, x] &&  !TrueQ[$UseGamma]
```

Rule 2334

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Simp[x*((a + b
*Log[c*x^n])^(p + 1)/(b*n*(p + 1))), x] - Dist[1/(b*n*(p + 1)), Int[(a + b*
Log[c*x^n])^(p + 1), x], x] /; FreeQ[{a, b, c, n}, x] && LtQ[p, -1] && Inte
gerQ[2*p]
```

Rule 2337

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2436

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rubi steps

$$\int \frac{1}{(a+b\log(c(d+ex)^n))^3}\,dx = \frac{\text{Subst}\left(\int \frac{1}{(a+b\log(cx^n))^3}\,dx, x, d+ex\right)}{e}$$

$$= -\frac{d+ex}{2ben\,(a+b\log(c(d+ex)^n))^2} + \frac{\text{Subst}\left(\int \frac{1}{(a+b\log(cx^n))^2}\,dx, x, d+ex\right)}{2ben}$$

$$= -\frac{d+ex}{2ben\,(a+b\log(c(d+ex)^n))^2} - \frac{d+ex}{2b^2en^2\,(a+b\log(c(d+ex)^n))} + \frac{\text{Subst}}{}$$

$$= -\frac{d+ex}{2ben\,(a+b\log(c(d+ex)^n))^2} - \frac{d+ex}{2b^2en^2\,(a+b\log(c(d+ex)^n))} + \frac{((d+}{}$$

$$= \frac{e^{-\frac{a}{bn}}(d+ex)\,(c(d+ex)^n)^{-1/n}\,\text{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{2b^3en^3} - \frac{d+ex}{2ben\,(a+b\log(c(d-}$$

Mathematica [A]
time = 0.08, size = 118, normalized size = 0.87

$$\frac{e^{-\frac{a}{bn}}(d+ex)\,(c(d+ex)^n)^{-1/n}\,\text{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{2b^3en^3} - \frac{(d+ex)\,(a+bn+b\log(c(d+ex)^n))}{2b^2en^2\,(a+b\log(c(d+ex)^n))^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^(-3),x]
```

```
[Out] ((d + e*x)*ExpIntegralEi[(a + b*Log[c*(d + e*x)^n])/(b*n)])/(2*b^3*e*E^(a/(
b*n))*n^3*(c*(d + e*x)^n)^n^(-1)) - ((d + e*x)*(a + b*n + b*Log[c*(d + e*x)
^n]))/(2*b^2*e*n^2*(a + b*Log[c*(d + e*x)^n])^2)
```

Maple [C] Result contains higher order function than in optimal. Order 9 vs. order 4.
time = 0.05, size = 734, normalized size = 5.44

method	result

risch	$-\frac{2benx+2bdn-i\pi bd\,\mathrm{csgn}(ic)\mathrm{csgn}(i(ex+d)^n)\mathrm{csgn}(ic(ex+d)^n)+i\pi bd\,\mathrm{csgn}(ic)\mathrm{csgn}(ic(ex+d)^n)^2+i\pi bd\,\mathrm{csgn}(i(ex+d)^n)\mathrm{csgn}(ic(ex+d)^n}{\left(2a+2b\ln(c)+2b\ln((ex+d)^n)-\right.}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+b*ln(c*(e*x+d)^n))^3,x,method=_RETURNVERBOSE)
```

```
[Out] -(2*b*e*n*x+2*b*d*n-I*Pi*b*d*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n
)+I*Pi*b*d*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I*Pi*b*d*csgn(I*(e*x+d)^n)*csgn(
I*c*(e*x+d)^n)^2-I*Pi*b*e*x*csgn(I*c*(e*x+d)^n)^3+I*Pi*b*e*x*csgn(I*(e*x+d)
^n)*csgn(I*c*(e*x+d)^n)^2+I*Pi*b*e*x*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-I*Pi*b
*d*csgn(I*c*(e*x+d)^n)^3-I*Pi*b*e*x*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e
*x+d)^n)+2*ln(c)*b*e*x+2*b*e*x*ln((e*x+d)^n)+2*d*b*ln(c)+2*a*e*x+2*b*d*ln((
e*x+d)^n)+2*a*d)/(2*a+2*b*ln(c)+2*b*ln((e*x+d)^n)-I*b*Pi*csgn(I*c)*csgn(I*(
e*x+d)^n)*csgn(I*c*(e*x+d)^n)+I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I*b*Pi
*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-I*b*Pi*csgn(I*c*(e*x+d)^n)^3)^2/b^
2/n^2/e-1/2/b^3/n^3/e*(e*x+d)*c^(-1/n)*((e*x+d)^n)^(-1/n)*exp(-1/2*(-I*b*Pi
*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+I*b*Pi*csgn(I*c)*csgn(I*c*
(e*x+d)^n)^2+I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-I*b*Pi*csgn(I*c
*(e*x+d)^n)^3+2*a)/b/n)*Ei(1,-ln(e*x+d)-1/2*(-I*b*Pi*csgn(I*c)*csgn(I*(e*x+
d)^n)*csgn(I*c*(e*x+d)^n)+I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I*b*Pi*csg
n(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-I*b*Pi*csgn(I*c*(e*x+d)^n)^3+2*b*ln(c)
+2*b*(ln((e*x+d)^n)-n*ln(e*x+d))+2*a)/b/n)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(e*x+d)^n))^3,x, algorithm="maxima")
```

```
[Out] -1/2*((b*(n + log(c)) + a)*x*e + (d*n + d*log(c))*b + a*d + (b*x*e + b*d)*l
og((x*e + d)^n))/(b^4*n^2*e*log((x*e + d)^n)^2 + 2*(b^4*n^2*log(c) + a*b^3*
n^2)*e*log((x*e + d)^n) + (b^4*n^2*log(c)^2 + 2*a*b^3*n^2*log(c) + a^2*b^2*
n^2)*e) + integrate(1/2/(b^3*n^2*log((x*e + d)^n) + b^3*n^2*log(c) + a*b^2*
n^2), x)
```

Fricas [B] Leaf count of result is larger than twice the leaf count of optimal. 277 vs. $2(132) = 264$.
time = 0.36, size = 277, normalized size = 2.05

$$-\frac{\left((b^2dn^2+abdn+(b^2n^2+abn)xe+(b^2n^2xe+b^2dn^2)\log(xe+d)+(b^2nxe+b^2dn)\log(c))e^{\left(\frac{b\log(c)+a}{bn}\right)}-(b^2n^2\log(xe+d)^2+b^2\log(c)^2+2ab\log(c)+a^2+2(b^2n\log(c)+abn)\log(xe+d))\,\mathrm{log\_integral}\left((xe+d)e^{\left(\frac{b\log(c)+a}{bn}\right)}\right)\right)e^{\left(-\frac{b\log(c)+a}{bn}\right)}}{2\left(b^5n^5e\log(xe+d)^2+b^5n^3e\log(c)^2+2ab^4n^3e\log(c)+a^2b^3n^3e+2(b^5n^4e\log(c)+ab^4n^4e)\log(xe+d)\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(e*x+d)^n))^3,x, algorithm="fricas")
```

```
[Out] -1/2*((b^2*d*n^2 + a*b*d*n + (b^2*n^2 + a*b*n)*x*e + (b^2*n^2*x*e + b^2*d*n
^2)*log(x*e + d) + (b^2*n*x*e + b^2*d*n)*log(c))*e^((b*log(c) + a)/(b*n)) -
 (b^2*n^2*log(x*e + d)^2 + b^2*log(c)^2 + 2*a*b*log(c) + a^2 + 2*(b^2*n*log
(c) + a*b*n)*log(x*e + d))*log_integral((x*e + d)*e^((b*log(c) + a)/(b*n)))
)*e^(-(b*log(c) + a)/(b*n))/(b^5*n^5*e*log(x*e + d)^2 + b^5*n^3*e*log(c)^2
+ 2*a*b^4*n^3*e*log(c) + a^2*b^3*n^3*e + 2*(b^5*n^4*e*log(c) + a*b^4*n^4*e)
*log(x*e + d))
```

Sympy [**F**]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(a+b\log\left(c\left(d+ex\right)^n\right)\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*ln(c*(e*x+d)**n))**3,x)
```

```
[Out] Integral((a + b*log(c*(d + e*x)**n))**(-3), x)
```

Giac [**B**] Leaf count of result is larger than twice the leaf count of optimal. 1322 vs. 2(132) = 264.
time = 4.86, size = 1322, normalized size = 9.79

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(e*x+d)^n))^3,x, algorithm="giac")
```

```
[Out] 1/2*b^2*n^2*Ei(log(c)/n + a/(b*n) + log(x*e + d))*e^(-a/(b*n))*log(x*e + d)
^2/((b^5*n^5*e*log(x*e + d)^2 + 2*b^5*n^4*e*log(x*e + d)*log(c) + 2*a*b^4*n
^4*e*log(x*e + d) + b^5*n^3*e*log(c)^2 + 2*a*b^4*n^3*e*log(c) + a^2*b^3*n^3
*e)*c^(1/n)) - 1/2*(x*e + d)*b^2*n^2*log(x*e + d)/(b^5*n^5*e*log(x*e + d)^2
 + 2*b^5*n^4*e*log(x*e + d)*log(c) + 2*a*b^4*n^4*e*log(x*e + d) + b^5*n^3*e
*log(c)^2 + 2*a*b^4*n^3*e*log(c) + a^2*b^3*n^3*e) + b^2*n*Ei(log(c)/n + a/(
b*n) + log(x*e + d))*e^(-a/(b*n))*log(x*e + d)*log(c)/((b^5*n^5*e*log(x*e +
 d)^2 + 2*b^5*n^4*e*log(x*e + d)*log(c) + 2*a*b^4*n^4*e*log(x*e + d) + b^5*
n^3*e*log(c)^2 + 2*a*b^4*n^3*e*log(c) + a^2*b^3*n^3*e)*c^(1/n)) - 1/2*(x*e
+ d)*b^2*n^2/(b^5*n^5*e*log(x*e + d)^2 + 2*b^5*n^4*e*log(x*e + d)*log(c) +
2*a*b^4*n^4*e*log(x*e + d) + b^5*n^3*e*log(c)^2 + 2*a*b^4*n^3*e*log(c) + a^
2*b^3*n^3*e) + a*b*n*Ei(log(c)/n + a/(b*n) + log(x*e + d))*e^(-a/(b*n))*log
(x*e + d)/((b^5*n^5*e*log(x*e + d)^2 + 2*b^5*n^4*e*log(x*e + d)*log(c) + 2*
a*b^4*n^4*e*log(x*e + d) + b^5*n^3*e*log(c)^2 + 2*a*b^4*n^3*e*log(c) + a^2*
b^3*n^3*e)*c^(1/n)) - 1/2*(x*e + d)*b^2*n*log(c)/(b^5*n^5*e*log(x*e + d)^2
+ 2*b^5*n^4*e*log(x*e + d)*log(c) + 2*a*b^4*n^4*e*log(x*e + d) + b^5*n^3*e*
```

```
log(c)^2 + 2*a*b^4*n^3*e*log(c) + a^2*b^3*n^3*e) + 1/2*b^2*Ei(log(c)/n + a/
(b*n) + log(x*e + d))*e^(-a/(b*n))*log(c)^2/((b^5*n^5*e*log(x*e + d)^2 + 2*
b^5*n^4*e*log(x*e + d)*log(c) + 2*a*b^4*n^4*e*log(x*e + d) + b^5*n^3*e*log(
c)^2 + 2*a*b^4*n^3*e*log(c) + a^2*b^3*n^3*e)*c^(1/n)) - 1/2*(x*e + d)*a*b*n
/(b^5*n^5*e*log(x*e + d)^2 + 2*b^5*n^4*e*log(x*e + d)*log(c) + 2*a*b^4*n^4*
e*log(x*e + d) + b^5*n^3*e*log(c)^2 + 2*a*b^4*n^3*e*log(c) + a^2*b^3*n^3*e)
 + a*b*Ei(log(c)/n + a/(b*n) + log(x*e + d))*e^(-a/(b*n))*log(c)/((b^5*n^5*
e*log(x*e + d)^2 + 2*b^5*n^4*e*log(x*e + d)*log(c) + 2*a*b^4*n^4*e*log(x*e
+ d) + b^5*n^3*e*log(c)^2 + 2*a*b^4*n^3*e*log(c) + a^2*b^3*n^3*e)*c^(1/n))
+ 1/2*a^2*Ei(log(c)/n + a/(b*n) + log(x*e + d))*e^(-a/(b*n))/((b^5*n^5*e*lo
g(x*e + d)^2 + 2*b^5*n^4*e*log(x*e + d)*log(c) + 2*a*b^4*n^4*e*log(x*e + d)
 + b^5*n^3*e*log(c)^2 + 2*a*b^4*n^3*e*log(c) + a^2*b^3*n^3*e)*c^(1/n))
```

Mupad [F]

time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{1}{\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)}^3\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a + b*log(c*(d + e*x)^n))^3,x)
```

```
[Out] int(1/(a + b*log(c*(d + e*x)^n))^3, x)
```

3.103 $\int \frac{1}{(f+gx)(a+b\log(c(d+ex)^n))^3}\,dx$

Optimal. Leaf size=27

$$\operatorname{Int}\left(\frac{1}{(f+gx)\left(a+b\log\left(c(d+ex)^n\right)\right)^3},x\right)$$

```
[Out] Unintegrable(1/(g*x+f)/(a+b*ln(c*(e*x+d)^n))^3,x)
```

Rubi [A]
time = 0.02, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int \frac{1}{(f+gx)\left(a+b\log\left(c(d+ex)^n\right)\right)^3}\,dx$$

Verification is not applicable to the result.

```
[In] Int[1/((f + g*x)*(a + b*Log[c*(d + e*x)^n])^3),x]
[Out] Defer[Int][1/((f + g*x)*(a + b*Log[c*(d + e*x)^n])^3), x]
```

Rubi steps

$$\int \frac{1}{(f+gx)\left(a+b\log\left(c(d+ex)^n\right)\right)^3}\,dx = \int \frac{1}{(f+gx)\left(a+b\log\left(c(d+ex)^n\right)\right)^3}\,dx$$

Mathematica [A]
time = 0.61, size = 0, normalized size = 0.00

$$\int \frac{1}{(f+gx)\left(a+b\log\left(c(d+ex)^n\right)\right)^3}\,dx$$

Verification is not applicable to the result.

```
[In] Integrate[1/((f + g*x)*(a + b*Log[c*(d + e*x)^n])^3),x]
[Out] Integrate[1/((f + g*x)*(a + b*Log[c*(d + e*x)^n])^3), x]
```

Maple [A]
time = 0.03, size = 0, normalized size = 0.00

$$\int \frac{1}{(gx+f)\left(a+b\ln\left(c\,(ex+d)^{n}\right)\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(g*x+f)/(a+b*ln(c*(e*x+d)^n))^3,x)
```

```
[Out] int(1/(g*x+f)/(a+b*ln(c*(e*x+d)^n))^3,x)
```

Maxima [A]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(a+b*log(c*(e*x+d)^n))^3,x, algorithm="maxima")
```

```
[Out] -1/2*(b*g*n*x^2*e^2 - b*d^2*g*log(c) - a*d^2*g + (((f*n + f*log(c))*b + a*f
)*e^2 - (a*d*g - (d*g*n - d*g*log(c))*b)*e)*x + (a*d*f + (d*f*n + d*f*log(c
))*b)*e - (b*d^2*g - b*d*f*e + (b*d*g*e - b*f*e^2)*x)*log((x*e + d)^n))/((b
^4*g^2*n^2*log(c)^2 + 2*a*b^3*g^2*n^2*log(c) + a^2*b^2*g^2*n^2)*x^2*e^2 + 2
*(b^4*f*g*n^2*log(c)^2 + 2*a*b^3*f*g*n^2*log(c) + a^2*b^2*f*g*n^2)*x*e^2 +
(b^4*g^2*n^2*x^2*e^2 + 2*b^4*f*g*n^2*x*e^2 + b^4*f^2*n^2*e^2)*log((x*e + d)
^n)^2 + (b^4*f^2*n^2*log(c)^2 + 2*a*b^3*f^2*n^2*log(c) + a^2*b^2*f^2*n^2)*e
^2 + 2*((b^4*g^2*n^2*log(c) + a*b^3*g^2*n^2)*x^2*e^2 + 2*(b^4*f*g*n^2*log(c
) + a*b^3*f*g*n^2)*x*e^2 + (b^4*f^2*n^2*log(c) + a*b^3*f^2*n^2)*e^2)*log((x
*e + d)^n)) - integrate(-1/2*(2*d^2*g^2 - 3*d*f*g*e + f^2*e^2 + (d*g^2*e -
f*g*e^2)*x)/((b^3*g^3*n^2*log(c) + a*b^2*g^3*n^2)*x^3*e^2 + 3*(b^3*f*g^2*n^
2*log(c) + a*b^2*f*g^2*n^2)*x^2*e^2 + 3*(b^3*f^2*g*n^2*log(c) + a*b^2*f^2*g
*n^2)*x*e^2 + (b^3*f^3*n^2*log(c) + a*b^2*f^3*n^2)*e^2 + (b^3*g^3*n^2*x^3*e
^2 + 3*b^3*f*g^2*n^2*x^2*e^2 + 3*b^3*f^2*g*n^2*x*e^2 + b^3*f^3*n^2*e^2)*log
((x*e + d)^n)), x)
```

Fricas [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(a+b*log(c*(e*x+d)^n))^3,x, algorithm="fricas")
```

```
[Out] integral(1/(a^3*g*x + a^3*f + (b^3*g*x + b^3*f)*log((x*e + d)^n*c)^3 + 3*(a
*b^2*g*x + a*b^2*f)*log((x*e + d)^n*c)^2 + 3*(a^2*b*g*x + a^2*b*f)*log((x*e
 + d)^n*c)), x)
```

Sympy [A]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(a + b \log \left(c \left(d + ex\right)^{n}\right)\right)^{3} \left(f + gx\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(a+b*ln(c*(e*x+d)**n))**3,x)
```

```
[Out] Integral(1/((a + b*log(c*(d + e*x)**n))**3*(f + g*x)), x)
```

Giac [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(a+b*log(c*(e*x+d)^n))^3,x, algorithm="giac")
```

```
[Out] integrate(1/((g*x + f)*(b*log((x*e + d)^n*c) + a)^3), x)
```

Mupad [A]
time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{1}{(f+g\,x)\,\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((f + g*x)*(a + b*log(c*(d + e*x)^n))^3),x)
```

```
[Out] int(1/((f + g*x)*(a + b*log(c*(d + e*x)^n))^3), x)
```

3.104 $\int \frac{1}{(f+gx)^2(a+b\log(c(d+ex)^n))^3}\,dx$

Optimal. Leaf size=27

$$\text{Int}\left(\frac{1}{(f+gx)^2\left(a+b\log\left(c(d+ex)^n\right)\right)^3},x\right)$$

```
[Out] Unintegrable(1/(g*x+f)^2/(a+b*ln(c*(e*x+d)^n))^3,x)
```

Rubi [A]
time = 0.02, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int \frac{1}{(f+gx)^2\left(a+b\log\left(c(d+ex)^n\right)\right)^3}\,dx$$

Verification is not applicable to the result.

```
[In] Int[1/((f + g*x)^2*(a + b*Log[c*(d + e*x)^n])^3),x]
```

```
[Out] Defer[Int][1/((f + g*x)^2*(a + b*Log[c*(d + e*x)^n])^3), x]
```

Rubi steps

$$\int \frac{1}{(f+gx)^2\left(a+b\log\left(c(d+ex)^n\right)\right)^3}\,dx=\int \frac{1}{(f+gx)^2\left(a+b\log\left(c(d+ex)^n\right)\right)^3}\,dx$$

Mathematica [A]
time = 3.21, size = 0, normalized size = 0.00

$$\int \frac{1}{(f+gx)^2\left(a+b\log\left(c(d+ex)^n\right)\right)^3}\,dx$$

Verification is not applicable to the result.

```
[In] Integrate[1/((f + g*x)^2*(a + b*Log[c*(d + e*x)^n])^3),x]
```

```
[Out] Integrate[1/((f + g*x)^2*(a + b*Log[c*(d + e*x)^n])^3), x]
```

Maple [A]
time = 180.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(gx+f\right)^{2}\left(a+b\ln\left(c\left(ex+d\right)^{n}\right)\right)^{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(g*x+f)^2/(a+b*ln(c*(e*x+d)^n))^3,x)
```

```
[Out] int(1/(g*x+f)^2/(a+b*ln(c*(e*x+d)^n))^3,x)
```

Maxima [A]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)^2/(a+b*log(c*(e*x+d)^n))^3,x, algorithm="maxima")
```

```
[Out] 1/2*(2*b*d^2*g*log(c) + 2*a*d^2*g - ((g*n - g*log(c))*b - a*g)*x^2*e^2 - ((
(f*n + f*log(c))*b + a*f)*e^2 - (3*a*d*g - (d*g*n - 3*d*g*log(c))*b)*e)*x -
 (a*d*f + (d*f*n + d*f*log(c))*b)*e + (b*g*x^2*e^2 + 2*b*d^2*g - b*d*f*e +
(3*b*d*g*e - b*f*e^2)*x)*log((x*e + d)^n))/((b^4*g^3*n^2*log(c)^2 + 2*a*b^3
*g^3*n^2*log(c) + a^2*b^2*g^3*n^2)*x^3*e^2 + 3*(b^4*f*g^2*n^2*log(c)^2 + 2*
a*b^3*f*g^2*n^2*log(c) + a^2*b^2*f*g^2*n^2)*x^2*e^2 + 3*(b^4*f^2*g*n^2*log(
c)^2 + 2*a*b^3*f^2*g*n^2*log(c) + a^2*b^2*f^2*g*n^2)*x*e^2 + (b^4*g^3*n^2*x
^3*e^2 + 3*b^4*f*g^2*n^2*x^2*e^2 + 3*b^4*f^2*g*n^2*x*e^2 + b^4*f^3*n^2*e^2)
*log((x*e + d)^n)^2 + (b^4*f^3*n^2*log(c)^2 + 2*a*b^3*f^3*n^2*log(c) + a^2*
b^2*f^3*n^2)*e^2 + 2*((b^4*g^3*n^2*log(c) + a*b^3*g^3*n^2)*x^3*e^2 + 3*(b^4
*f*g^2*n^2*log(c) + a*b^3*f*g^2*n^2)*x^2*e^2 + 3*(b^4*f^2*g*n^2*log(c) + a*
b^3*f^2*g*n^2)*x*e^2 + (b^4*f^3*n^2*log(c) + a*b^3*f^3*n^2)*e^2)*log((x*e +
 d)^n)) + integrate(1/2*(g^2*x^2*e^2 + 6*d^2*g^2 - 6*d*f*g*e + f^2*e^2 + 2*
(3*d*g^2*e - 2*f*g*e^2)*x)/((b^3*g^4*n^2*log(c) + a*b^2*g^4*n^2)*x^4*e^2 +
4*(b^3*f*g^3*n^2*log(c) + a*b^2*f*g^3*n^2)*x^3*e^2 + 6*(b^3*f^2*g^2*n^2*log
(c) + a*b^2*f^2*g^2*n^2)*x^2*e^2 + 4*(b^3*f^3*g*n^2*log(c) + a*b^2*f^3*g*n^
2)*x*e^2 + (b^3*f^4*n^2*log(c) + a*b^2*f^4*n^2)*e^2 + (b^3*g^4*n^2*x^4*e^2
+ 4*b^3*f*g^3*n^2*x^3*e^2 + 6*b^3*f^2*g^2*n^2*x^2*e^2 + 4*b^3*f^3*g*n^2*x*e
^2 + b^3*f^4*n^2*e^2)*log((x*e + d)^n)), x)
```

Fricas [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)^2/(a+b*log(c*(e*x+d)^n))^3,x, algorithm="fricas")
```

```
[Out] integral(1/(a^3*g^2*x^2 + 2*a^3*f*g*x + a^3*f^2 + (b^3*g^2*x^2 + 2*b^3*f*g*
x + b^3*f^2)*log((x*e + d)^n*c)^3 + 3*(a*b^2*g^2*x^2 + 2*a*b^2*f*g*x + a*b^
2*f^2)*log((x*e + d)^n*c)^2 + 3*(a^2*b*g^2*x^2 + 2*a^2*b*f*g*x + a^2*b*f^2)
*log((x*e + d)^n*c)), x)
```

Sympy [A]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(a+b\log\left(c\left(d+ex\right)^{n}\right)\right)^{3}\left(f+gx\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)**2/(a+b*ln(c*(e*x+d)**n))**3,x)
[Out] Integral(1/((a + b*log(c*(d + e*x)**n))**3*(f + g*x)**2), x)
```

Giac [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)^2/(a+b*log(c*(e*x+d)^n))^3,x, algorithm="giac")
[Out] integrate(1/((g*x + f)^2*(b*log((x*e + d)^n*c) + a)^3), x)
```

Mupad [A]
time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{1}{{\left(f+g\,x\right)}^2\,{\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)}^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((f + g*x)^2*(a + b*log(c*(d + e*x)^n))^3),x)
[Out] int(1/((f + g*x)^2*(a + b*log(c*(d + e*x)^n))^3), x)
```

3.105 $\int (f+gx)^2 \sqrt{a+b\log\left(c(d+ex)^n\right)}\,dx$

Optimal. Leaf size=404

$$-\frac{\sqrt{b}\,e^{-\frac{a}{bn}}(ef-dg)^2\sqrt{n}\,\sqrt{\pi}\,(d+ex)\left(c(d+ex)^n\right)^{-1/n}\operatorname{erfi}\left(\frac{\sqrt{a+b\log\left(c(d+ex)^n\right)}}{\sqrt{b}\,\sqrt{n}}\right)}{2e^3}-\frac{\sqrt{b}\,e^{-\frac{2a}{bn}}g(ef-d}{}$$

```
[Out] -1/18*g^2*(e*x+d)^3*erfi(3^(1/2)*(a+b*ln(c*(e*x+d)^n))^(1/2)/b^(1/2)/n^(1/2
))*b^(1/2)*n^(1/2)*3^(1/2)*Pi^(1/2)/e^3/exp(3*a/b/n)/((c*(e*x+d)^n)^(3/n))-
1/4*g*(-d*g+e*f)*(e*x+d)^2*erfi(2^(1/2)*(a+b*ln(c*(e*x+d)^n))^(1/2)/b^(1/2)
/n^(1/2))*b^(1/2)*n^(1/2)*2^(1/2)*Pi^(1/2)/e^3/exp(2*a/b/n)/((c*(e*x+d)^n)^
(2/n))-1/2*(-d*g+e*f)^2*(e*x+d)*erfi((a+b*ln(c*(e*x+d)^n))^(1/2)/b^(1/2)/n^
(1/2))*b^(1/2)*n^(1/2)*Pi^(1/2)/e^3/exp(a/b/n)/((c*(e*x+d)^n)^(1/n))+(-d*g+
e*f)^2*(e*x+d)*(a+b*ln(c*(e*x+d)^n))^(1/2)/e^3+g*(-d*g+e*f)*(e*x+d)^2*(a+b*
ln(c*(e*x+d)^n))^(1/2)/e^3+1/3*g^2*(e*x+d)^3*(a+b*ln(c*(e*x+d)^n))^(1/2)/e^
3
```

Rubi [A]

time = 0.51, antiderivative size = 404, normalized size of antiderivative = 1.00, number of steps used = 17, number of rules used = 9, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.346$, Rules used = {2448, 2436, 2333, 2337, 2211, 2235, 2437, 2342, 2347}

$$-\frac{\sqrt{\frac{\pi}{2}}\sqrt{b}\,g\sqrt{n}\,e^{-\frac{2a}{bn}}(d+ex)^2(ef-dg)\left(c(d+ex)^n\right)^{-2/n}\operatorname{Erfi}\left(\frac{\sqrt{2}\,\sqrt{a+b\log\left(c(d+ex)^n\right)}}{\sqrt{b}\,\sqrt{n}}\right)}{2e^3}-\frac{\sqrt{\pi}\,\sqrt{b}\,\sqrt{n}\,e^{-\frac{a}{bn}}(d+ex)(ef-dg)^2\left(c(d+ex)^n\right)^{-1/n}\operatorname{Erfi}\left(\frac{\sqrt{a+b\log\left(c(d+ex)^n\right)}}{\sqrt{b}\,\sqrt{n}}\right)}{2e^3}-\frac{\sqrt{\frac{\pi}{3}}\sqrt{b}\,g^2\sqrt{n}\,e^{-\frac{3a}{bn}}(d+ex)^3\left(c(d+ex)^n\right)^{-3/n}\operatorname{Erfi}\left(\frac{\sqrt{3}\,\sqrt{a+b\log\left(c(d+ex)^n\right)}}{\sqrt{b}\,\sqrt{n}}\right)}{6e^3}+\frac{g(d+ex)^2(ef-dg)\sqrt{a+b\log\left(c(d+ex)^n\right)}}{e^3}+\frac{(d+ex)(ef-dg)^2\sqrt{a+b\log\left(c(d+ex)^n\right)}}{e^3}+\frac{g^2(d+ex)^3\sqrt{a+b\log\left(c(d+ex)^n\right)}}{3e^3}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)^2*Sqrt[a + b*Log[c*(d + e*x)^n]],x]
```

```
[Out] -1/2*(Sqrt[b]*(e*f - d*g)^2*Sqrt[n]*Sqrt[Pi]*(d + e*x)*Erfi[Sqrt[a + b*Log[
c*(d + e*x)^n]]/(Sqrt[b]*Sqrt[n])])/(e^3*E^(a/(b*n))*(c*(d + e*x)^n)^n^(-1)
) - (Sqrt[b]*g*(e*f - d*g)*Sqrt[n]*Sqrt[Pi/2]*(d + e*x)^2*Erfi[(Sqrt[2]*Sqr
t[a + b*Log[c*(d + e*x)^n]])/(Sqrt[b]*Sqrt[n])])/(2*e^3*E^((2*a)/(b*n))*(c*
(d + e*x)^n)^(2/n)) - (Sqrt[b]*g^2*Sqrt[n]*Sqrt[Pi/3]*(d + e*x)^3*Erfi[(Sqr
t[3]*Sqrt[a + b*Log[c*(d + e*x)^n]])/(Sqrt[b]*Sqrt[n])])/(6*e^3*E^((3*a)/(b
*n))*(c*(d + e*x)^n)^(3/n)) + ((e*f - d*g)^2*(d + e*x)*Sqrt[a + b*Log[c*(d
+ e*x)^n]])/e^3 + (g*(e*f - d*g)*(d + e*x)^2*Sqrt[a + b*Log[c*(d + e*x)^n]]
)/e^3 + (g^2*(d + e*x)^3*Sqrt[a + b*Log[c*(d + e*x)^n]])/(3*e^3)
```

Rule 2211

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - c*(f/d)) + f*g*(x^2/d)), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !TrueQ[$UseGamma]
```

Rule 2235

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[F^a*Sqrt
[Pi]*(Erfi[(c + d*x)*Rt[b*Log[F], 2]]/(2*d*Rt[b*Log[F], 2])), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2333

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2337

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2342

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_.)*(x_))^(m_.), x_Symbo
l] :> Simp[(d*x)^(m + 1)*((a + b*Log[c*x^n])^p/(d*(m + 1))), x] - Dist[b*n*
(p/(m + 1)), Int[(d*x)^m*(a + b*Log[c*x^n])^(p - 1), x], x] /; FreeQ[{a, b,
 c, d, m, n}, x] && NeQ[m, -1] && GtQ[p, 0]
```

Rule 2347

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_)*((d_.)*(x_))^(m_.), x_Symbol
] :> Dist[(d*x)^(m + 1)/(d*n*(c*x^n)^((m + 1)/n)), Subst[Int[E^(((m + 1)/n)
*x)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b, c, d, m, n, p}, x]
```

Rule 2436

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2437

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[(f*(x/d))^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2448

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q*(a + b*Log[c*(d
```

```
+ e*x)^n])^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f -
d*g, 0] && IGtQ[q, 0]
```

Rubi steps

$$\int (f+gx)^2\sqrt{a+b\log\left(c(d+ex)^n\right)}\,dx=\int \left(\frac{(ef-dg)^2\sqrt{a+b\log\left(c(d+ex)^n\right)}}{e^2}+\frac{2g(ef-dg)(d+ex)}{}\right.$$

$$=\frac{g^2\int (d+ex)^2\sqrt{a+b\log\left(c(d+ex)^n\right)}\,dx}{e^2}+\frac{(2g(ef-dg))\int (d-}{}$$

$$=\frac{g^2\text{Subst}\left(\int x^2\sqrt{a+b\log\left(cx^n\right)}\,dx,x,d+ex\right)}{e^3}+\frac{(2g(ef-dg))\text{S}}{}$$

$$=\frac{(ef-dg)^2(d+ex)\sqrt{a+b\log\left(c(d+ex)^n\right)}}{e^3}+\frac{g(ef-dg)(d+e}{}$$

$$=\frac{(ef-dg)^2(d+ex)\sqrt{a+b\log\left(c(d+ex)^n\right)}}{e^3}+\frac{g(ef-dg)(d+e}{}$$

$$=\frac{(ef-dg)^2(d+ex)\sqrt{a+b\log\left(c(d+ex)^n\right)}}{e^3}+\frac{g(ef-dg)(d+e}{}$$

$$=-\frac{\sqrt{b}\,e^{-\frac{a}{bn}}(ef-dg)^2\sqrt{n}\,\sqrt{\pi}\,(d+ex)\left(c(d+ex)^n\right)^{-1/n}\text{erfi}\left(\frac{\sqrt{c}}{}\right.}{2e^3}$$

Mathematica [A]
time = 0.35, size = 374, normalized size = 0.93

$$\frac{(d+ex)\left(-18\sqrt{b}\,e^{-\frac{a}{bn}}(ef-dg)^2\sqrt{n}\,\sqrt{\pi}\,\left(c(d+ex)^n\right)^{-1/n}\text{erfi}\left(\frac{\sqrt{a+b\log\left(c(d+ex)^n\right)}}{\sqrt{b}\,\sqrt{n}}\right)+9\sqrt{b}\,e^{-\frac{2a}{bn}}g(-ef+dg)\sqrt{n}\,\sqrt{2\pi}\,(d+ex)\left(c(d+ex)^n\right)^{-2/n}\text{erfi}\left(\frac{\sqrt{2}\,\sqrt{a+b\log\left(c(d+ex)^n\right)}}{\sqrt{b}\,\sqrt{n}}\right)-2\sqrt{b}\,e^{-\frac{3a}{bn}}g^2\sqrt{n}\,\sqrt{3\pi}\,(d+ex)^2\left(c(d+ex)^n\right)^{-3/n}\text{erfi}\left(\frac{\sqrt{3}\,\sqrt{a+b\log\left(c(d+ex)^n\right)}}{\sqrt{b}\,\sqrt{n}}\right)+36(ef-dg)^2\sqrt{a+b\log\left(c(d+ex)^n\right)}+36g(ef-dg)(d+ex)\sqrt{a+b\log\left(c(d+ex)^n\right)}+12g^2(d+ex)^2\sqrt{a+b\log\left(c(d+ex)^n\right)}\right)}{36e^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)^2*Sqrt[a + b*Log[c*(d + e*x)^n]],x]
```

```
[Out] ((d + e*x)*((-18*Sqrt[b]*(e*f - d*g)^2*Sqrt[n]*Sqrt[Pi]*Erfi[Sqrt[a + b*Log
[c*(d + e*x)^n]]/(Sqrt[b]*Sqrt[n])])/(E^(a/(b*n))*(c*(d + e*x)^n)^n^(-1)) +
 (9*Sqrt[b]*g*(-(e*f) + d*g)*Sqrt[n]*Sqrt[2*Pi]*(d + e*x)*Erfi[(Sqrt[2]*Sqr
t[a + b*Log[c*(d + e*x)^n]])/(Sqrt[b]*Sqrt[n])])/(E^((2*a)/(b*n))*(c*(d + e
*x)^n)^(2/n)) - (2*Sqrt[b]*g^2*Sqrt[n]*Sqrt[3*Pi]*(d + e*x)^2*Erfi[(Sqrt[3]
*Sqrt[a + b*Log[c*(d + e*x)^n]])/(Sqrt[b]*Sqrt[n])])/(E^((3*a)/(b*n))*(c*(d
 + e*x)^n)^(3/n)) + 36*(e*f - d*g)^2*Sqrt[a + b*Log[c*(d + e*x)^n]] + 36*g*
(e*f - d*g)*(d + e*x)*Sqrt[a + b*Log[c*(d + e*x)^n]] + 12*g^2*(d + e*x)^2*S
qrt[a + b*Log[c*(d + e*x)^n]]))/(36*e^3)
```

Maple [F]
time = 0.13, size = 0, normalized size = 0.00

$$\int (gx+f)^2 \sqrt{a+b\ln\left(c\,(ex+d)^n\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^2*(a+b*ln(c*(e*x+d)^n))^(1/2),x)
```

```
[Out] int((g*x+f)^2*(a+b*ln(c*(e*x+d)^n))^(1/2),x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2*(a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="maxima")
```

```
[Out] integrate((g*x + f)^2*sqrt(b*log((x*e + d)^n*c) + a), x)
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2*(a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt{a+b\log\left(c\,(d+ex)^n\right)}\,(f+gx)^2\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**2*(a+b*ln(c*(e*x+d)**n))**(1/2),x)
```

```
[Out] Integral(sqrt(a + b*log(c*(d + e*x)**n))*(f + g*x)**2, x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2*(a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="giac")
[Out] integrate((g*x + f)^2*sqrt(b*log((x*e + d)^n*c) + a), x)
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.00

$$\int (f+g\,x)^2\,\sqrt{a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)}\;dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)^2*(a + b*log(c*(d + e*x)^n))^(1/2),x)
[Out] int((f + g*x)^2*(a + b*log(c*(d + e*x)^n))^(1/2), x)
```

3.106 $\int (f+gx)\sqrt{a+b\log\left(c(d+ex)^n\right)}\,dx$

Optimal. Leaf size=255

$$-\frac{\sqrt{b}\,e^{-\frac{a}{bn}}(ef-dg)\sqrt{n}\,\sqrt{\pi}\,(d+ex)\left(c(d+ex)^n\right)^{-1/n}\operatorname{erfi}\left(\frac{\sqrt{a+b\log\left(c(d+ex)^n\right)}}{\sqrt{b}\,\sqrt{n}}\right)}{2e^2}-\frac{\sqrt{b}\,e^{-\frac{2a}{bn}}g\sqrt{n}\,\sqrt{\frac{\pi}{2}}}{}$$

```
[Out] -1/8*g*(e*x+d)^2*erfi(2^(1/2)*(a+b*ln(c*(e*x+d)^n))^(1/2)/b^(1/2)/n^(1/2))*
b^(1/2)*n^(1/2)*2^(1/2)*Pi^(1/2)/e^2/exp(2*a/b/n)/((c*(e*x+d)^n)^(2/n))-1/2
*(-d*g+e*f)*(e*x+d)*erfi((a+b*ln(c*(e*x+d)^n))^(1/2)/b^(1/2)/n^(1/2))*b^(1/
2)*n^(1/2)*Pi^(1/2)/e^2/exp(a/b/n)/((c*(e*x+d)^n)^(1/n))+(-d*g+e*f)*(e*x+d)
*(a+b*ln(c*(e*x+d)^n))^(1/2)/e^2+1/2*g*(e*x+d)^2*(a+b*ln(c*(e*x+d)^n))^(1/2
)/e^2
```

Rubi [A]
time = 0.26, antiderivative size = 255, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 9, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.375$, Rules used = {2448, 2436, 2333, 2337, 2211, 2235, 2437, 2342, 2347}

$$-\frac{\sqrt{\pi}\,\sqrt{b}\,\sqrt{n}\,e^{-\frac{a}{bn}}(d+ex)(ef-dg)\left(c(d+ex)^n\right)^{-1/n}\operatorname{Erfi}\left(\frac{\sqrt{a+b\log\left(c(d+ex)^n\right)}}{\sqrt{b}\,\sqrt{n}}\right)}{2e^2}-\frac{\sqrt{\frac{\pi}{2}}\,\sqrt{b}\,g\sqrt{n}\,e^{-\frac{2a}{bn}}(d+ex)^2\left(c(d+ex)^n\right)^{-2/n}\operatorname{Erfi}\left(\frac{\sqrt{2}\,\sqrt{a+b\log\left(c(d+ex)^n\right)}}{\sqrt{b}\,\sqrt{n}}\right)}{4e^2}+\frac{(d+ex)(ef-dg)\sqrt{a+b\log\left(c(d+ex)^n\right)}}{e^2}+\frac{g(d+ex)^2\sqrt{a+b\log\left(c(d+ex)^n\right)}}{2e^2}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)*Sqrt[a + b*Log[c*(d + e*x)^n]],x]
```

```
[Out] -1/2*(Sqrt[b]*(e*f - d*g)*Sqrt[n]*Sqrt[Pi]*(d + e*x)*Erfi[Sqrt[a + b*Log[c*
(d + e*x)^n]]/(Sqrt[b]*Sqrt[n])])/(e^2*E^(a/(b*n))*(c*(d + e*x)^n)^n^(-1))
- (Sqrt[b]*g*Sqrt[n]*Sqrt[Pi/2]*(d + e*x)^2*Erfi[(Sqrt[2]*Sqrt[a + b*Log[c*
(d + e*x)^n]])/(Sqrt[b]*Sqrt[n])])/(4*e^2*E^((2*a)/(b*n))*(c*(d + e*x)^n)^(
2/n)) + ((e*f - d*g)*(d + e*x)*Sqrt[a + b*Log[c*(d + e*x)^n]])/e^2 + (g*(d
+ e*x)^2*Sqrt[a + b*Log[c*(d + e*x)^n]])/(2*e^2)
```

Rule 2211

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - c*(f/d)) + f*g*(x^2/d)), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] && !TrueQ[$UseGamma]
```

Rule 2235

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[F^a*Sqrt
[Pi]*(Erfi[(c + d*x)*Rt[b*Log[F], 2]]/(2*d*Rt[b*Log[F], 2])), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2333

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2337

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2342

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_.)*(x_))^(m_.), x_Symbo
l] :> Simp[(d*x)^(m + 1)*((a + b*Log[c*x^n])^p/(d*(m + 1))), x] - Dist[b*n*
(p/(m + 1)), Int[(d*x)^m*(a + b*Log[c*x^n])^(p - 1), x], x] /; FreeQ[{a, b,
 c, d, m, n}, x] && NeQ[m, -1] && GtQ[p, 0]
```

Rule 2347

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_)*((d_.)*(x_))^(m_.), x_Symbol
] :> Dist[(d*x)^(m + 1)/(d*n*(c*x^n)^((m + 1)/n)), Subst[Int[E^(((m + 1)/n)
*x)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b, c, d, m, n, p}, x]
```

Rule 2436

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2437

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[(f*(x/d))^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2448

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q*(a + b*Log[c*(d
 + e*x)^n])^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f -
 d*g, 0] && IGtQ[q, 0]
```

Rubi steps

$$\int (f+gx)\sqrt{a+b\log\left(c(d+ex)^n\right)}\,dx = \int \left(\frac{(ef-dg)\sqrt{a+b\log\left(c(d+ex)^n\right)}}{e}+\frac{g(d+ex)\sqrt{a+b\log\left(c(\right.}}{e}\right.$$

$$=\frac{g\int (d+ex)\sqrt{a+b\log\left(c(d+ex)^n\right)}\,dx}{e}+\frac{(ef-dg)\int\sqrt{a+b\log}}{e}$$

$$=\frac{g\text{Subst}\left(\int x\sqrt{a+b\log\left(cx^n\right)}\,dx,x,d+ex\right)}{e^2}+\frac{(ef-dg)\text{Subst}\left(\int\right.}{}$$

$$=\frac{(ef-dg)(d+ex)\sqrt{a+b\log\left(c(d+ex)^n\right)}}{e^2}+\frac{g(d+ex)^2\sqrt{a+b\,\mathrm{lo}}}{2e^2}$$

$$=\frac{(ef-dg)(d+ex)\sqrt{a+b\log\left(c(d+ex)^n\right)}}{e^2}+\frac{g(d+ex)^2\sqrt{a+b\,\mathrm{lo}}}{2e^2}$$

$$=\frac{(ef-dg)(d+ex)\sqrt{a+b\log\left(c(d+ex)^n\right)}}{e^2}+\frac{g(d+ex)^2\sqrt{a+b\,\mathrm{lo}}}{2e^2}$$

$$=-\frac{\sqrt{b}\,e^{-\frac{a}{bn}}(ef-dg)\sqrt{n}\sqrt{\pi}\,(d+ex)\left(c(d+ex)^n\right)^{-1/n}\operatorname{erfi}\left(\frac{\sqrt{a+}}{}\right.}{2e^2}$$

Mathematica [A]
time = 0.20, size = 235, normalized size = 0.92

$$-\frac{e^{-\frac{2a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-2/n}\left(4\sqrt{b}\,e^{\frac{a}{bn}}(ef-dg)\sqrt{n}\sqrt{\pi}\left(c(d+ex)^n\right)^{\frac{1}{n}}\operatorname{erfi}\left(\frac{\sqrt{a+b\log\left(c(d+ex)^n\right)}}{\sqrt{b}\sqrt{n}}\right)+\sqrt{b}\,g\sqrt{n}\sqrt{2\pi}\,(d+ex)\operatorname{erfi}\left(\frac{\sqrt{2}\sqrt{a+b\log\left(c(d+ex)^n\right)}}{\sqrt{b}\sqrt{n}}\right)-4e^{\frac{2a}{bn}}\left(c(d+ex)^n\right)^{2/n}(2ef-dg+egx)\sqrt{a+b\log\left(c(d+ex)^n\right)}\right)}{8e^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)*Sqrt[a + b*Log[c*(d + e*x)^n]],x]
```

```
[Out] -1/8*((d + e*x)*(4*Sqrt[b]*E^(a/(b*n))*(e*f - d*g)*Sqrt[n]*Sqrt[Pi]*(c*(d +
 e*x)^n)^n^(-1)*Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]]/(Sqrt[b]*Sqrt[n])] + Sq
rt[b]*g*Sqrt[n]*Sqrt[2*Pi]*(d + e*x)*Erfi[(Sqrt[2]*Sqrt[a + b*Log[c*(d + e*
x)^n]])/(Sqrt[b]*Sqrt[n])] - 4*E^((2*a)/(b*n))*(c*(d + e*x)^n)^(2/n)*(2*e*f
 - d*g + e*g*x)*Sqrt[a + b*Log[c*(d + e*x)^n]]))/(e^2*E^((2*a)/(b*n))*(c*(d
 + e*x)^n)^(2/n))
```

Maple [F]
time = 0.02, size = 0, normalized size = 0.00

$$\int (gx+f)\sqrt{a+b\ln\left(c\,(ex+d)^n\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(a+b*ln(c*(e*x+d)^n))^(1/2),x)
```

```
[Out] int((g*x+f)*(a+b*ln(c*(e*x+d)^n))^(1/2),x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="maxima")
```

```
[Out] integrate((g*x + f)*sqrt(b*log((x*e + d)^n*c) + a), x)
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt{a + b\log\left(c\left(d + ex\right)^{n}\right)}\left(f + gx\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*ln(c*(e*x+d)**n))**(1/2),x)
```

```
[Out] Integral(sqrt(a + b*log(c*(d + e*x)**n))*(f + g*x), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="giac")
```

```
[Out] integrate((g*x + f)*sqrt(b*log((x*e + d)^n*c) + a), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int (f+g\,x)\,\sqrt{a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)*(a + b*log(c*(d + e*x)^n))^(1/2),x)
[Out] int((f + g*x)*(a + b*log(c*(d + e*x)^n))^(1/2), x)
```

3.107 $\int \sqrt{a+b\log\left(c(d+ex)^n\right)}\,dx$

Optimal. Leaf size=111

$$-\frac{\sqrt{b}\,e^{-\frac{a}{bn}}\sqrt{n}\,\sqrt{\pi}\,(d+ex)\left(c(d+ex)^n\right)^{-1/n}\operatorname{erfi}\left(\frac{\sqrt{a+b\log\left(c(d+ex)^n\right)}}{\sqrt{b}\,\sqrt{n}}\right)}{2e}+\frac{(d+ex)\sqrt{a+b\log\left(c(d+e$$

```
[Out] -1/2*(e*x+d)*erfi((a+b*ln(c*(e*x+d)^n))^(1/2)/b^(1/2)/n^(1/2))*b^(1/2)*n^(1
/2)*Pi^(1/2)/e/exp(a/b/n)/((c*(e*x+d)^n)^(1/n))+(e*x+d)*(a+b*ln(c*(e*x+d)^n
))^(1/2)/e
```

Rubi [A]
time = 0.07, antiderivative size = 111, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}} = 0.278$, Rules used = {2436, 2333, 2337, 2211, 2235}

$$\frac{(d+ex)\sqrt{a+b\log\left(c(d+ex)^n\right)}}{e}-\frac{\sqrt{\pi}\,\sqrt{b}\,\sqrt{n}\,e^{-\frac{a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\operatorname{Erfi}\left(\frac{\sqrt{a+b\log\left(c(d+ex)^n\right)}}{\sqrt{b}\,\sqrt{n}}\right)}{2e}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[a + b*Log[c*(d + e*x)^n]],x]
```

```
[Out] -1/2*(Sqrt[b]*Sqrt[n]*Sqrt[Pi]*(d + e*x)*Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]
]/(Sqrt[b]*Sqrt[n])])/(e*E^(a/(b*n))*(c*(d + e*x)^n)^n^(-1)) + ((d + e*x)*S
qrt[a + b*Log[c*(d + e*x)^n]])/e
```

Rule 2211

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - c*(f/d)) + f*g*(x^2/d)), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !TrueQ[$UseGamma]
```

Rule 2235

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[F^a*Sqrt
[Pi]*(Erfi[(c + d*x)*Rt[b*Log[F], 2]]/(2*d*Rt[b*Log[F], 2])), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2333

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2337

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2436

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rubi steps

$$\int \sqrt{a+b\log\left(c(d+ex)^n\right)}\,dx = \frac{\text{Subst}\left(\int \sqrt{a+b\log\left(cx^n\right)}\,dx, x, d+ex\right)}{e}$$

$$= \frac{(d+ex)\sqrt{a+b\log\left(c(d+ex)^n\right)}}{e} - \frac{(bn)\text{Subst}\left(\int \frac{1}{\sqrt{a+b\log\left(cx^n\right)}}\,dx, x,\right.}{2e}$$

$$= \frac{(d+ex)\sqrt{a+b\log\left(c(d+ex)^n\right)}}{e} - \frac{\left(b(d+ex)\left(c(d+ex)^n\right)^{-1/n}\right)\text{Subst}\left(\int\right.}{2e}$$

$$= \frac{(d+ex)\sqrt{a+b\log\left(c(d+ex)^n\right)}}{e} - \frac{\left((d+ex)\left(c(d+ex)^n\right)^{-1/n}\right)\text{Subst}\left(\int \right.}{}$$

$$= -\frac{\sqrt{b}\,e^{-\frac{a}{bn}}\sqrt{n}\,\sqrt{\pi}\,(d+ex)\left(c(d+ex)^n\right)^{-1/n}\text{erfi}\left(\frac{\sqrt{a+b\log\left(c(d+ex)^n\right)}}{\sqrt{b}\,\sqrt{n}}\right.}{2e}$$

Mathematica [A]
time = 0.03, size = 106, normalized size = 0.95

$$\frac{(d+ex)\left(-\sqrt{b}\,e^{-\frac{a}{bn}}\sqrt{n}\,\sqrt{\pi}\left(c(d+ex)^n\right)^{-1/n}\text{erfi}\left(\frac{\sqrt{a+b\log\left(c(d+ex)^n\right)}}{\sqrt{b}\,\sqrt{n}}\right)+2\sqrt{a+b\log\left(c(d+ex)^n\right)}\right)}{2e}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[a + b*Log[c*(d + e*x)^n]],x]
```

```
[Out] ((d + e*x)*(-((Sqrt[b]*Sqrt[n]*Sqrt[Pi]*Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]]
/(Sqrt[b]*Sqrt[n])])/(E^(a/(b*n))*(c*(d + e*x)^n)^n^(-1))) + 2*Sqrt[a + b*L
og[c*(d + e*x)^n]]))/(2*e)
```

Maple [F]
time = 0.02, size = 0, normalized size = 0.00

$$\int \sqrt{a+b\ln \left(c \left(e x+d\right)^{n}\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))^(1/2),x)
[Out] int((a+b*ln(c*(e*x+d)^n))^(1/2),x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="maxima")
[Out] integrate(sqrt(b*log((x*e + d)^n*c) + a), x)
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="fricas")
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt{a + b \log{\left(c \left(d + e x\right)^{n} \right)}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**(1/2),x)
[Out] Integral(sqrt(a + b*log(c*(d + e*x)**n)), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="giac")
```

```
[Out] integrate(sqrt(b*log((x*e + d)^n*c) + a), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int \sqrt{a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))^(1/2),x)
```

```
[Out] int((a + b*log(c*(d + e*x)^n))^(1/2), x)
```

3.108 $\int \frac{\sqrt{a+b\log(c(d+ex)^n)}}{f+gx}\,dx$

Optimal. Leaf size=29

$$\text{Int}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{f+gx},x\right)$$

[Out] Unintegrable((a+b*ln(c*(e*x+d)^n))^(1/2)/(g*x+f),x)

Rubi [A]
time = 0.03, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int \frac{\sqrt{a+b\log(c(d+ex)^n)}}{f+gx}\,dx$$

Verification is not applicable to the result.

[In] Int[Sqrt[a + b*Log[c*(d + e*x)^n]]/(f + g*x),x]

[Out] Defer[Int][Sqrt[a + b*Log[c*(d + e*x)^n]]/(f + g*x), x]

Rubi steps

$$\int \frac{\sqrt{a+b\log(c(d+ex)^n)}}{f+gx}\,dx = \int \frac{\sqrt{a+b\log(c(d+ex)^n)}}{f+gx}\,dx$$

Mathematica [A]
time = 1.94, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{a+b\log(c(d+ex)^n)}}{f+gx}\,dx$$

Verification is not applicable to the result.

[In] Integrate[Sqrt[a + b*Log[c*(d + e*x)^n]]/(f + g*x),x]

[Out] Integrate[Sqrt[a + b*Log[c*(d + e*x)^n]]/(f + g*x), x]

Maple [A]
time = 0.17, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{a+b\ln(c(ex+d)^n)}}{gx+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))^(1/2)/(g*x+f),x)
```

```
[Out] int((a+b*ln(c*(e*x+d)^n))^(1/2)/(g*x+f),x)
```

Maxima [A]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(1/2)/(g*x+f),x, algorithm="maxima")
```

```
[Out] integrate(sqrt(b*log((x*e + d)^n*c) + a)/(g*x + f), x)
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(1/2)/(g*x+f),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [A]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{a + b\log\left(c\left(d + ex\right)^{n}\right)}}{f + gx}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**(1/2)/(g*x+f),x)
```

```
[Out] Integral(sqrt(a + b*log(c*(d + e*x)**n))/(f + g*x), x)
```

Giac [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(1/2)/(g*x+f),x, algorithm="giac")
```

```
[Out] integrate(sqrt(b*log((x*e + d)^n*c) + a)/(g*x + f), x)
```

Mupad [A]
time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{\sqrt{a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)}}{f+g\,x} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))^(1/2)/(f + g*x),x)
[Out] int((a + b*log(c*(d + e*x)^n))^(1/2)/(f + g*x), x)
```

3.109 $\int \frac{\sqrt{a+b\log\left(c(d+ex)^n\right)}}{(f+gx)^2}\,dx$

Optimal. Leaf size=88

$$\frac{(d+ex)\sqrt{a+b\log\left(c(d+ex)^n\right)}}{(ef-dg)(f+gx)}-\frac{ben\mathrm{Int}\left(\frac{1}{(f+gx)\sqrt{a+b\log\left(c(d+ex)^n\right)}},x\right)}{2(ef-dg)}$$

```
[Out] (e*x+d)*(a+b*ln(c*(e*x+d)^n))^(1/2)/(-d*g+e*f)/(g*x+f)-1/2*b*e*n*Unintegrab
le(1/(g*x+f)/(a+b*ln(c*(e*x+d)^n))^(1/2),x)/(-d*g+e*f)
```

Rubi [A]
time = 0.07, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}=0.000$, Rules used = {}

$$\int \frac{\sqrt{a+b\log\left(c(d+ex)^n\right)}}{(f+gx)^2}\,dx$$

Verification is not applicable to the result.

```
[In] Int[Sqrt[a + b*Log[c*(d + e*x)^n]]/(f + g*x)^2,x]
```

```
[Out] ((d + e*x)*Sqrt[a + b*Log[c*(d + e*x)^n]])/((e*f - d*g)*(f + g*x)) - (b*e*n
*Defer[Int][1/((f + g*x)*Sqrt[a + b*Log[c*(d + e*x)^n]]), x])/(2*(e*f - d*g
))
```

Rubi steps

$$\int \frac{\sqrt{a+b\log\left(c(d+ex)^n\right)}}{(f+gx)^2}\,dx=\frac{(d+ex)\sqrt{a+b\log\left(c(d+ex)^n\right)}}{(ef-dg)(f+gx)}-\frac{(ben)\int \frac{1}{(f+gx)\sqrt{a+b\log\left(c(d+ex)^n\right)}}}{2(ef-dg)}$$

Mathematica [A]
time = 0.19, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{a+b\log\left(c(d+ex)^n\right)}}{(f+gx)^2}\,dx$$

Verification is not applicable to the result.

```
[In] Integrate[Sqrt[a + b*Log[c*(d + e*x)^n]]/(f + g*x)^2,x]
```

```
[Out] Integrate[Sqrt[a + b*Log[c*(d + e*x)^n]]/(f + g*x)^2, x]
```

Maple [A]
time = 0.18, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{a+b\ln\left(c\left(ex+d\right)^{n}\right)}}{\left(gx+f\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))^(1/2)/(g*x+f)^2,x)
[Out] int((a+b*ln(c*(e*x+d)^n))^(1/2)/(g*x+f)^2,x)
```

Maxima [A]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(1/2)/(g*x+f)^2,x, algorithm="maxima")
[Out] integrate(sqrt(b*log((x*e + d)^n*c) + a)/(g*x + f)^2, x)
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(1/2)/(g*x+f)^2,x, algorithm="fricas")
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [A]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{a+b\log\left(c\left(d+ex\right)^{n}\right)}}{\left(f+gx\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**(1/2)/(g*x+f)**2,x)
[Out] Integral(sqrt(a + b*log(c*(d + e*x)**n))/(f + g*x)**2, x)
```

Giac [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(1/2)/(g*x+f)^2,x, algorithm="giac")
```

```
[Out] integrate(sqrt(b*log((x*e + d)^n*c) + a)/(g*x + f)^2, x)
```

Mupad [A]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\sqrt{a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)}}{{\left(f+g\,x\right)}^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))^(1/2)/(f + g*x)^2,x)
```

```
[Out] int((a + b*log(c*(d + e*x)^n))^(1/2)/(f + g*x)^2, x)
```

3.110 $\int \frac{\sqrt{a+b\log\left(c(d+ex)^n\right)}}{(f+gx)^3}\,dx$

Optimal. Leaf size=79

$$-\frac{\sqrt{a+b\log\left(c(d+ex)^n\right)}}{2g(f+gx)^2}+\frac{ben\text{Int}\left(\frac{1}{(d+ex)(f+gx)^2\sqrt{a+b\log\left(c(d+ex)^n\right)}},x\right)}{4g}$$

```
[Out] -1/2*(a+b*ln(c*(e*x+d)^n))^(1/2)/g/(g*x+f)^2+1/4*b*e*n*Unintegrable(1/(e*x+
d)/(g*x+f)^2/(a+b*ln(c*(e*x+d)^n))^(1/2),x)/g
```

Rubi [A]
time = 0.15, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int \frac{\sqrt{a+b\log\left(c(d+ex)^n\right)}}{(f+gx)^3}\,dx$$

Verification is not applicable to the result.

```
[In] Int[Sqrt[a + b*Log[c*(d + e*x)^n]]/(f + g*x)^3,x]
```

```
[Out] -1/2*Sqrt[a + b*Log[c*(d + e*x)^n]]/(g*(f + g*x)^2) + (b*e*n*Defer[Int][1/(
(d + e*x)*(f + g*x)^2*Sqrt[a + b*Log[c*(d + e*x)^n]]), x])/(4*g)
```

Rubi steps

$$\int \frac{\sqrt{a+b\log\left(c(d+ex)^n\right)}}{(f+gx)^3}\,dx=-\frac{\sqrt{a+b\log\left(c(d+ex)^n\right)}}{2g(f+gx)^2}+\frac{(ben)\int\frac{1}{(d+ex)(f+gx)^2\sqrt{a+b\log\left(c(d+ex)^n\right)}}\,dx}{4g}$$

Mathematica [A]
time = 0.20, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{a+b\log\left(c(d+ex)^n\right)}}{(f+gx)^3}\,dx$$

Verification is not applicable to the result.

```
[In] Integrate[Sqrt[a + b*Log[c*(d + e*x)^n]]/(f + g*x)^3,x]
```

```
[Out] Integrate[Sqrt[a + b*Log[c*(d + e*x)^n]]/(f + g*x)^3, x]
```

Maple [A]
time = 0.18, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{a+b\ln\left(c\left(ex+d\right)^{n}\right)}}{\left(gx+f\right)^{3}}dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))^(1/2)/(g*x+f)^3,x)
[Out] int((a+b*ln(c*(e*x+d)^n))^(1/2)/(g*x+f)^3,x)
```

Maxima [A]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(1/2)/(g*x+f)^3,x, algorithm="maxima")
[Out] integrate(sqrt(b*log((x*e + d)^n*c) + a)/(g*x + f)^3, x)
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(1/2)/(g*x+f)^3,x, algorithm="fricas")
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [A]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{a+b\log\left(c\left(d+ex\right)^{n}\right)}}{\left(f+gx\right)^{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**(1/2)/(g*x+f)**3,x)
[Out] Integral(sqrt(a + b*log(c*(d + e*x)**n))/(f + g*x)**3, x)
```

Giac [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(1/2)/(g*x+f)^3,x, algorithm="giac")
```

```
[Out] integrate(sqrt(b*log((x*e + d)^n*c) + a)/(g*x + f)^3, x)
```

Mupad [A]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\sqrt{a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)}}{{\left(f+g\,x\right)}^3} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))^(1/2)/(f + g*x)^3,x)
```

```
[Out] int((a + b*log(c*(d + e*x)^n))^(1/2)/(f + g*x)^3, x)
```

3.111 $\int (f+gx)^2 \left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}\,dx$

Optimal. Leaf size=526

$$\frac{3b^{3/2}e^{-\frac{a}{bn}}(ef-dg)^2n^{3/2}\sqrt{\pi}\,(d+ex)\left(c(d+ex)^n\right)^{-1/n}\operatorname{erfi}\left(\frac{\sqrt{a+b\log\left(c(d+ex)^n\right)}}{\sqrt{b}\,\sqrt{n}}\right)}{4e^3}+\frac{3b^{3/2}e^{-\frac{2a}{bn}}g(ef-dg)}{}$$

```
[Out] (-d*g+e*f)^2*(e*x+d)*(a+b*ln(c*(e*x+d)^n))^(3/2)/e^3+g*(-d*g+e*f)*(e*x+d)^2
*(a+b*ln(c*(e*x+d)^n))^(3/2)/e^3+1/3*g^2*(e*x+d)^3*(a+b*ln(c*(e*x+d)^n))^(3
/2)/e^3+1/36*b^(3/2)*g^2*n^(3/2)*(e*x+d)^3*erfi(3^(1/2)*(a+b*ln(c*(e*x+d)^n
))^(1/2)/b^(1/2)/n^(1/2))*3^(1/2)*Pi^(1/2)/e^3/exp(3*a/b/n)/((c*(e*x+d)^n)^
(3/n))+3/16*b^(3/2)*g*(-d*g+e*f)*n^(3/2)*(e*x+d)^2*erfi(2^(1/2)*(a+b*ln(c*(
e*x+d)^n))^(1/2)/b^(1/2)/n^(1/2))*2^(1/2)*Pi^(1/2)/e^3/exp(2*a/b/n)/((c*(e*
x+d)^n)^(2/n))+3/4*b^(3/2)*(-d*g+e*f)^2*n^(3/2)*(e*x+d)*erfi((a+b*ln(c*(e*x
+d)^n))^(1/2)/b^(1/2)/n^(1/2))*Pi^(1/2)/e^3/exp(a/b/n)/((c*(e*x+d)^n)^(1/n)
)-3/2*b*(-d*g+e*f)^2*n*(e*x+d)*(a+b*ln(c*(e*x+d)^n))^(1/2)/e^3-3/4*b*g*(-d*
g+e*f)*n*(e*x+d)^2*(a+b*ln(c*(e*x+d)^n))^(1/2)/e^3-1/6*b*g^2*n*(e*x+d)^3*(a
+b*ln(c*(e*x+d)^n))^(1/2)/e^3
```

Rubi [A]

time = 0.59, antiderivative size = 526, normalized size of antiderivative = 1.00, number of steps used = 20, number of rules used = 9, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.346$, Rules used = {2448, 2436, 2333, 2337, 2211, 2235, 2437, 2342, 2347}

$$\frac{3\sqrt{\frac{\pi}{2}}\,b^{3/2}gn^{3/2}e^{-\frac{2a}{bn}}(d+ex)^2(ef-dg)\left(c(d+ex)^n\right)^{-2/n}\operatorname{Erfi}\left(\frac{\sqrt{2}\,\sqrt{a+b\log\left(c(d+ex)^n\right)}}{\sqrt{b}\,\sqrt{n}}\right)}{8e^3}+\frac{3\sqrt{\pi}\,b^{3/2}n^{3/2}e^{-\frac{a}{bn}}(d+ex)(ef-dg)^2\left(c(d+ex)^n\right)^{-1/n}\operatorname{Erfi}\left(\frac{\sqrt{a+b\log\left(c(d+ex)^n\right)}}{\sqrt{b}\,\sqrt{n}}\right)}{4e^3}+\frac{\sqrt{\frac{\pi}{3}}\,b^{3/2}g^2n^{3/2}e^{-\frac{3a}{bn}}(d+ex)^3\left(c(d+ex)^n\right)^{-3/n}\operatorname{Erfi}\left(\frac{\sqrt{3}\,\sqrt{a+b\log\left(c(d+ex)^n\right)}}{\sqrt{b}\,\sqrt{n}}\right)}{12e^3}+\frac{g(d+ex)^2(ef-dg)\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}}{e^3}+\frac{(d+ex)(ef-dg)^2\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}}{e^3}-\frac{3bgn(d+ex)^2(ef-dg)\sqrt{a+b\log\left(c(d+ex)^n\right)}}{4e^3}-\frac{3bn(d+ex)(ef-dg)^2\sqrt{a+b\log\left(c(d+ex)^n\right)}}{2e^3}+\frac{g^2(d+ex)^3\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}}{3e^3}-\frac{bg^2n(d+ex)^3\sqrt{a+b\log\left(c(d+ex)^n\right)}}{6e^3}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)^2*(a + b*Log[c*(d + e*x)^n])^(3/2),x]
```

```
[Out] (3*b^(3/2)*(e*f - d*g)^2*n^(3/2)*Sqrt[Pi]*(d + e*x)*Erfi[Sqrt[a + b*Log[c*(
d + e*x)^n]]/(Sqrt[b]*Sqrt[n])])/(4*e^3*E^(a/(b*n))*(c*(d + e*x)^n)^n^(-1))
 + (3*b^(3/2)*g*(e*f - d*g)*n^(3/2)*Sqrt[Pi/2]*(d + e*x)^2*Erfi[(Sqrt[2]*Sq
rt[a + b*Log[c*(d + e*x)^n]])/(Sqrt[b]*Sqrt[n])])/(8*e^3*E^((2*a)/(b*n))*(c
*(d + e*x)^n)^(2/n)) + (b^(3/2)*g^2*n^(3/2)*Sqrt[Pi/3]*(d + e*x)^3*Erfi[(Sq
rt[3]*Sqrt[a + b*Log[c*(d + e*x)^n]])/(Sqrt[b]*Sqrt[n])])/(12*e^3*E^((3*a)/
(b*n))*(c*(d + e*x)^n)^(3/n)) - (3*b*(e*f - d*g)^2*n*(d + e*x)*Sqrt[a + b*L
og[c*(d + e*x)^n]])/(2*e^3) - (3*b*g*(e*f - d*g)*n*(d + e*x)^2*Sqrt[a + b*L
og[c*(d + e*x)^n]])/(4*e^3) - (b*g^2*n*(d + e*x)^3*Sqrt[a + b*Log[c*(d + e*
x)^n]])/(6*e^3) + ((e*f - d*g)^2*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^(3/2)
)/e^3 + (g*(e*f - d*g)*(d + e*x)^2*(a + b*Log[c*(d + e*x)^n])^(3/2))/e^3 +
(g^2*(d + e*x)^3*(a + b*Log[c*(d + e*x)^n])^(3/2))/(3*e^3)
```

Rule 2211

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - c*(f/d)) + f*g*(x^2/d)), x], x, Sqrt[c + d*
```

```
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !TrueQ[$UseGamma]
```

Rule 2235

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[F^a*Sqrt
[Pi]*(Erfi[(c + d*x)*Rt[b*Log[F], 2]]/(2*d*Rt[b*Log[F], 2])), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2333

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2337

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2342

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_.)*(x_))^(m_.), x_Symbo
l] :> Simp[(d*x)^(m + 1)*((a + b*Log[c*x^n])^p/(d*(m + 1))), x] - Dist[b*n*
(p/(m + 1)), Int[(d*x)^m*(a + b*Log[c*x^n])^(p - 1), x], x] /; FreeQ[{a, b,
 c, d, m, n}, x] && NeQ[m, -1] && GtQ[p, 0]
```

Rule 2347

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_)*((d_.)*(x_))^(m_.), x_Symbol
] :> Dist[(d*x)^(m + 1)/(d*n*(c*x^n)^((m + 1)/n)), Subst[Int[E^(((m + 1)/n)
*x)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b, c, d, m, n, p}, x]
```

Rule 2436

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2437

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[(f*(x/d))^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2448

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q*(a + b*Log[c*(d
 + e*x)^n])^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f -
 d*g, 0] && IGtQ[q, 0]
```

Rubi steps

$$\int (f+gx)^2 \left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}\,dx = \int \left(\frac{(ef-dg)^2\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}}{e^2} + \frac{2g(ef-dg)(d+e\right.$$

$$= \frac{g^2\int (d+ex)^2\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}\,dx}{e^2} + \frac{(2g(ef-dg))\int(\right.}{}$$

$$= \frac{g^2\text{Subst}\left(\int x^2(a+b\log(cx^n))^{3/2}\,dx, x, d+ex\right)}{e^3} + \frac{(2g(ef-dg)}{}$$

$$= \frac{(ef-dg)^2(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}}{e^3} + \frac{g(ef-dg)(d+}{}$$

$$= -\frac{3b(ef-dg)^2n(d+ex)\sqrt{a+b\log\left(c(d+ex)^n\right)}}{2e^3} - \frac{3bg(ef-d}{}$$

$$= -\frac{3b(ef-dg)^2n(d+ex)\sqrt{a+b\log\left(c(d+ex)^n\right)}}{2e^3} - \frac{3bg(ef-d}{}$$

$$= -\frac{3b(ef-dg)^2n(d+ex)\sqrt{a+b\log\left(c(d+ex)^n\right)}}{2e^3} - \frac{3bg(ef-d}{}$$

$$= \frac{3b^{3/2}e^{-\frac{a}{bn}}(ef-dg)^2n^{3/2}\sqrt{\pi}\,(d+ex)\left(c(d+ex)^n\right)^{-1/n}\text{erfi}\left(\frac{\sqrt{a}}{}\right.}{4e^3}$$

Mathematica [A]
time = 0.70, size = 446, normalized size = 0.85

$$\frac{(d+ex)\left(144(ef-dg)^2\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}+144g(ef-dg)(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}+48g^2(d+ex)^2\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}+4bg^2n(d+ex)^2\left(\sqrt{b}\,e^{-\frac{3a}{bn}}\sqrt{n}\sqrt{3\pi}\left(c(d+ex)^n\right)^{-3/n}\text{erfi}\left(\frac{\sqrt{3}\sqrt{a+b\log\left(c(d+ex)^n\right)}}{\sqrt{b}\sqrt{n}}\right)-6\sqrt{a+b\log\left(c(d+ex)^n\right)}\right)+27bg(ef-dg)n(d+ex)\left(\sqrt{b}\,e^{-\frac{2a}{bn}}\sqrt{n}\sqrt{2\pi}\left(c(d+ex)^n\right)^{-2/n}\text{erfi}\left(\frac{\sqrt{2}\sqrt{a+b\log\left(c(d+ex)^n\right)}}{\sqrt{b}\sqrt{n}}\right)-4\sqrt{a+b\log\left(c(d+ex)^n\right)}\right)+108b(ef-dg)^2n\left(\sqrt{b}\,e^{-\frac{a}{bn}}\sqrt{n}\sqrt{\pi}\left(c(d+ex)^n\right)^{-1/n}\text{erfi}\left(\frac{\sqrt{a+b\log\left(c(d+ex)^n\right)}}{\sqrt{b}\sqrt{n}}\right)-2\sqrt{a+b\log\left(c(d+ex)^n\right)}\right)\right)}{144e^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)^2*(a + b*Log[c*(d + e*x)^n])^(3/2),x]
```

```
[Out] ((d + e*x)*(144*(e*f - d*g)^2*(a + b*Log[c*(d + e*x)^n])^(3/2) + 144*g*(e*f
 - d*g)*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^(3/2) + 48*g^2*(d + e*x)^2*(a
```

```
+ b*Log[c*(d + e*x)^n])^(3/2) + 4*b*g^2*n*(d + e*x)^2*((Sqrt[b]*Sqrt[n]*Sqr
t[3*Pi]*Erfi[(Sqrt[3]*Sqrt[a + b*Log[c*(d + e*x)^n]])/(Sqrt[b]*Sqrt[n])])/(
E^((3*a)/(b*n))*(c*(d + e*x)^n)^(3/n)) - 6*Sqrt[a + b*Log[c*(d + e*x)^n]])
+ 27*b*g*(e*f - d*g)*n*(d + e*x)*((Sqrt[b]*Sqrt[n]*Sqrt[2*Pi]*Erfi[(Sqrt[2]
*Sqrt[a + b*Log[c*(d + e*x)^n]])/(Sqrt[b]*Sqrt[n])])/(E^((2*a)/(b*n))*(c*(d
 + e*x)^n)^(2/n)) - 4*Sqrt[a + b*Log[c*(d + e*x)^n]]) + 108*b*(e*f - d*g)^2
*n*((Sqrt[b]*Sqrt[n]*Sqrt[Pi]*Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]]/(Sqrt[b]*
Sqrt[n])])/(E^(a/(b*n))*(c*(d + e*x)^n)^n^(-1)) - 2*Sqrt[a + b*Log[c*(d + e
*x)^n]])))/(144*e^3)
```

Maple [F]
time = 0.16, size = 0, normalized size = 0.00

$$\int (gx+f)^2 \left(a+b\ln \left(c(ex+d)^n\right)\right)^{\frac{3}{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^2*(a+b*ln(c*(e*x+d)^n))^(3/2),x)
[Out] int((g*x+f)^2*(a+b*ln(c*(e*x+d)^n))^(3/2),x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2*(a+b*log(c*(e*x+d)^n))^(3/2),x, algorithm="maxima")
[Out] integrate((g*x + f)^2*(b*log((x*e + d)^n*c) + a)^(3/2), x)
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2*(a+b*log(c*(e*x+d)^n))^(3/2),x, algorithm="fricas")
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \left(a+b\log \left(c(d+ex)^n\right)\right)^{\frac{3}{2}} (f+gx)^2\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**2*(a+b*ln(c*(e*x+d)**n))**(3/2),x)
```

```
[Out] Integral((a + b*log(c*(d + e*x)**n))**(3/2)*(f + g*x)**2, x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2*(a+b*log(c*(e*x+d)^n))^(3/2),x, algorithm="giac")
```

```
[Out] integrate((g*x + f)^2*(b*log((x*e + d)^n*c) + a)^(3/2), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int (f+g\,x)^2\,\left(a+b\,\ln\left(c\,{(d+e\,x)}^n\right)\right)^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)^2*(a + b*log(c*(d + e*x)^n))^(3/2),x)
```

```
[Out] int((f + g*x)^2*(a + b*log(c*(d + e*x)^n))^(3/2), x)
```

3.112 $\int (f+gx) (a+b\log (c(d+ex)^n))^{3/2} \, dx$

Optimal. Leaf size=330

$$\frac{3b^{3/2}e^{-\frac{a}{bn}}(ef-dg)n^{3/2}\sqrt{\pi}\,(d+ex)\,(c(d+ex)^n)^{-1/n}\operatorname{erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\,\sqrt{n}}\right)}{4e^2}+\frac{3b^{3/2}e^{-\frac{2a}{bn}}gn^{3/2}\sqrt{\frac{\pi}{2}}$$

```
[Out] (-d*g+e*f)*(e*x+d)*(a+b*ln(c*(e*x+d)^n))^(3/2)/e^2+1/2*g*(e*x+d)^2*(a+b*ln(
c*(e*x+d)^n))^(3/2)/e^2+3/32*b^(3/2)*g*n^(3/2)*(e*x+d)^2*erfi(2^(1/2)*(a+b*
ln(c*(e*x+d)^n))^(1/2)/b^(1/2)/n^(1/2))*2^(1/2)*Pi^(1/2)/e^2/exp(2*a/b/n)/(
(c*(e*x+d)^n)^(2/n))+3/4*b^(3/2)*(-d*g+e*f)*n^(3/2)*(e*x+d)*erfi((a+b*ln(c*
(e*x+d)^n))^(1/2)/b^(1/2)/n^(1/2))*Pi^(1/2)/e^2/exp(a/b/n)/((c*(e*x+d)^n)^(
1/n))-3/2*b*(-d*g+e*f)*n*(e*x+d)*(a+b*ln(c*(e*x+d)^n))^(1/2)/e^2-3/8*b*g*n*
(e*x+d)^2*(a+b*ln(c*(e*x+d)^n))^(1/2)/e^2
```

Rubi [A]

time = 0.32, antiderivative size = 330, normalized size of antiderivative = 1.00, number of steps used = 14, number of rules used = 9, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.375$, Rules used = {2448, 2436, 2333, 2337, 2211, 2235, 2437, 2342, 2347}

$$\frac{3\sqrt{\pi}\,b^{3/2}n^{3/2}e^{-\frac{a}{bn}}(d+ex)(ef-dg)\,(c(d+ex)^n)^{-1/n}\operatorname{Erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\,\sqrt{n}}\right)}{4e^2}+\frac{3\sqrt{\frac{\pi}{2}}\,b^{3/2}gn^{3/2}e^{-\frac{2a}{bn}}(d+ex)^2\,(c(d+ex)^n)^{-2/n}\operatorname{Erfi}\left(\frac{\sqrt{2}\,\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\,\sqrt{n}}\right)}{16e^2}+\frac{(d+ex)(ef-dg)\,(a+b\log(c(d+ex)^n))^{3/2}}{e^2}-\frac{3bn(d+ex)(ef-dg)\sqrt{a+b\log(c(d+ex)^n)}}{2e^2}+\frac{g(d+ex)^2\,(a+b\log(c(d+ex)^n))^{3/2}}{2e^2}-\frac{3bgn(d+ex)^2\sqrt{a+b\log(c(d+ex)^n)}}{8e^2}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)*(a + b*Log[c*(d + e*x)^n])^(3/2),x]
```

```
[Out] (3*b^(3/2)*(e*f - d*g)*n^(3/2)*Sqrt[Pi]*(d + e*x)*Erfi[Sqrt[a + b*Log[c*(d
+ e*x)^n]]/(Sqrt[b]*Sqrt[n])])/(4*e^2*E^(a/(b*n))*(c*(d + e*x)^n)^n^(-1)) +
 (3*b^(3/2)*g*n^(3/2)*Sqrt[Pi/2]*(d + e*x)^2*Erfi[(Sqrt[2]*Sqrt[a + b*Log[c
*(d + e*x)^n]])/(Sqrt[b]*Sqrt[n])])/(16*e^2*E^((2*a)/(b*n))*(c*(d + e*x)^n)
^(2/n)) - (3*b*(e*f - d*g)*n*(d + e*x)*Sqrt[a + b*Log[c*(d + e*x)^n]])/(2*e
^2) - (3*b*g*n*(d + e*x)^2*Sqrt[a + b*Log[c*(d + e*x)^n]])/(8*e^2) + ((e*f
- d*g)*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^(3/2))/e^2 + (g*(d + e*x)^2*(a
+ b*Log[c*(d + e*x)^n])^(3/2))/(2*e^2)
```

Rule 2211

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - c*(f/d)) + f*g*(x^2/d)), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !TrueQ[$UseGamma]
```

Rule 2235

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[F^a*Sqrt
[Pi]*(Erfi[(c + d*x)*Rt[b*Log[F], 2]]/(2*d*Rt[b*Log[F], 2])), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2333

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2337

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2342

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_.)*(x_))^(m_.), x_Symbo
l] :> Simp[(d*x)^(m + 1)*((a + b*Log[c*x^n])^p/(d*(m + 1))), x] - Dist[b*n*
(p/(m + 1)), Int[(d*x)^m*(a + b*Log[c*x^n])^(p - 1), x], x] /; FreeQ[{a, b,
 c, d, m, n}, x] && NeQ[m, -1] && GtQ[p, 0]
```

Rule 2347

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_)*((d_.)*(x_))^(m_.), x_Symbol
] :> Dist[(d*x)^(m + 1)/(d*n*(c*x^n)^((m + 1)/n)), Subst[Int[E^(((m + 1)/n)
*x)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b, c, d, m, n, p}, x]
```

Rule 2436

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2437

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[(f*(x/d))^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2448

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q*(a + b*Log[c*(d
 + e*x)^n])^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f -
 d*g, 0] && IGtQ[q, 0]
```

Rubi steps

$$
\begin{aligned}
\int (f+gx)\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}\,dx &= \int \left(\frac{(ef-dg)\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}}{e}+\frac{g(d+ex)\left(a+b\log\right.}{e}\right. \\
&= \frac{g\int (d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}\,dx}{e}+\frac{(ef-dg)\int (a+b}{} \\
&= \frac{g\text{Subst}\left(\int x\left(a+b\log\left(cx^n\right)\right)^{3/2}\,dx,x,d+ex\right)}{e^2}+\frac{(ef-dg)\text{Subs}}{} \\
&= \frac{(ef-dg)(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}}{e^2}+\frac{g(d+ex)^2\left(a+\right.}{} \\
&= -\frac{3b(ef-dg)n(d+ex)\sqrt{a+b\log\left(c(d+ex)^n\right)}}{2e^2}-\frac{3bgn(d+e}{} \\
&= -\frac{3b(ef-dg)n(d+ex)\sqrt{a+b\log\left(c(d+ex)^n\right)}}{2e^2}-\frac{3bgn(d+e}{} \\
&= -\frac{3b(ef-dg)n(d+ex)\sqrt{a+b\log\left(c(d+ex)^n\right)}}{2e^2}-\frac{3bgn(d+e}{} \\
&= \frac{3b^{3/2}e^{-\frac{a}{bn}}(ef-dg)n^{3/2}\sqrt{\pi}\,(d+ex)\left(c(d+ex)^n\right)^{-1/n}\text{erfi}\left(\frac{\sqrt{a}}{}\right.}{4e^2}
\end{aligned}
$$

Mathematica [A]
time = 0.29, size = 282, normalized size = 0.85

$$\frac{(d+ex)\left(32(ef-dg)\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}+16g(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}+3bgn(d+ex)\left(\sqrt{b}\,e^{-\frac{2a}{bn}}\sqrt{n}\sqrt{2\pi}\left(c(d+ex)^n\right)^{-2/n}\text{erfi}\left(\frac{\sqrt{2}\sqrt{a+b\log\left(c(d+ex)^n\right)}}{\sqrt{b}\sqrt{n}}\right)-4\sqrt{a+b\log\left(c(d+ex)^n\right)}\right)+24b(ef-dg)n\left(\sqrt{b}\,e^{-\frac{a}{bn}}\sqrt{n}\sqrt{\pi}\left(c(d+ex)^n\right)^{-1/n}\text{erfi}\left(\frac{\sqrt{a+b\log\left(c(d+ex)^n\right)}}{\sqrt{b}\sqrt{n}}\right)-2\sqrt{a+b\log\left(c(d+ex)^n\right)}\right)\right)}{32e^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)*(a + b*Log[c*(d + e*x)^n])^(3/2),x]
```

```
[Out] ((d + e*x)*(32*(e*f - d*g)*(a + b*Log[c*(d + e*x)^n])^(3/2) + 16*g*(d + e*x
)*(a + b*Log[c*(d + e*x)^n])^(3/2) + 3*b*g*n*(d + e*x)*((Sqrt[b]*Sqrt[n]*Sq
rt[2*Pi]*Erfi[(Sqrt[2]*Sqrt[a + b*Log[c*(d + e*x)^n]])/(Sqrt[b]*Sqrt[n])]])/
(E^((2*a)/(b*n))*(c*(d + e*x)^n)^(2/n)) - 4*Sqrt[a + b*Log[c*(d + e*x)^n]])
 + 24*b*(e*f - d*g)*n*((Sqrt[b]*Sqrt[n]*Sqrt[Pi]*Erfi[Sqrt[a + b*Log[c*(d +
 e*x)^n]]/(Sqrt[b]*Sqrt[n])]])/(E^(a/(b*n))*(c*(d + e*x)^n)^n^(-1)) - 2*Sqrt
[a + b*Log[c*(d + e*x)^n]])))/(32*e^2)
```

Maple [F]
time = 0.03, size = 0, normalized size = 0.00

$$\int (gx+f)\left(a+b\ln\left(c(ex+d)^n\right)\right)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(a+b*ln(c*(e*x+d)^n))^(3/2),x)
```

```
[Out] int((g*x+f)*(a+b*ln(c*(e*x+d)^n))^(3/2),x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*log(c*(e*x+d)^n))^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((g*x + f)*(b*log((x*e + d)^n*c) + a)^(3/2), x)
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*log(c*(e*x+d)^n))^(3/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \left(a + b \log \left(c(d + ex)^{n}\right)\right)^{\frac{3}{2}} \left(f + gx\right)\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*ln(c*(e*x+d)**n))**(3/2),x)
```

```
[Out] Integral((a + b*log(c*(d + e*x)**n))**(3/2)*(f + g*x), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*log(c*(e*x+d)^n))^(3/2),x, algorithm="giac")
```

```
[Out] integrate((g*x + f)*(b*log((x*e + d)^n*c) + a)^(3/2), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int (f+g\,x)\,\left(a+b\ln\left(c\,(d+e\,x)^n\right)\right)^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)*(a + b*log(c*(d + e*x)^n))^(3/2),x)
[Out] int((f + g*x)*(a + b*log(c*(d + e*x)^n))^(3/2), x)
```

3.113 $\int (a+b\log (c(d+ex)^n))^{3/2}\,dx$

Optimal. Leaf size=143

$$\frac{3b^{3/2}e^{-\frac{a}{bn}}n^{3/2}\sqrt{\pi}\,(d+ex)\,(c(d+ex)^n)^{-1/n}\operatorname{erfi}\left(\frac{\sqrt{a+b\log (c(d+ex)^n)}}{\sqrt{b}\,\sqrt{n}}\right)}{4e}-\frac{3bn(d+ex)\sqrt{a+b\log (c(d+}{2e}$$

[Out] (e*x+d)*(a+b*ln(c*(e*x+d)^n))^(3/2)/e+3/4*b^(3/2)*n^(3/2)*(e*x+d)*erfi((a+b*ln(c*(e*x+d)^n))^(1/2)/b^(1/2)/n^(1/2))*Pi^(1/2)/e/exp(a/b/n)/((c*(e*x+d)^n)^(1/n))-3/2*b*n*(e*x+d)*(a+b*ln(c*(e*x+d)^n))^(1/2)/e

Rubi [A]
time = 0.09, antiderivative size = 143, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}} = 0.278$, Rules used = {2436, 2333, 2337, 2211, 2235}

$$\frac{3\sqrt{\pi}\,b^{3/2}n^{3/2}e^{-\frac{a}{bn}}(d+ex)\,(c(d+ex)^n)^{-1/n}\operatorname{Erfi}\left(\frac{\sqrt{a+b\log (c(d+ex)^n)}}{\sqrt{b}\,\sqrt{n}}\right)}{4e}+\frac{(d+ex)\,(a+b\log (c(d+ex)^n))^{3/2}}{e}-\frac{3bn(d+ex)\sqrt{a+b\log (c(d+ex)^n)}}{2e}$$

Antiderivative was successfully verified.

[In] Int[(a + b*Log[c*(d + e*x)^n])^(3/2),x]

[Out] (3*b^(3/2)*n^(3/2)*Sqrt[Pi]*(d + e*x)*Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]]/(Sqrt[b]*Sqrt[n])])/(4*e*E^(a/(b*n))*(c*(d + e*x)^n)^n^(-1)) - (3*b*n*(d + e*x)*Sqrt[a + b*Log[c*(d + e*x)^n]])/(2*e) + ((d + e*x)*(a + b*Log[c*(d + e*x)^n])^(3/2))/e

Rule 2211

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - c*(f/d)) + f*g*(x^2/d)), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !TrueQ[$UseGamma]
```

Rule 2235

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[F^a*Sqrt
[Pi]*(Erfi[(c + d*x)*Rt[b*Log[F], 2]]/(2*d*Rt[b*Log[F], 2])), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2333

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2337

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2436

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rubi steps

$$\int (a+b\log(c(d+ex)^n))^{3/2}\,dx = \frac{\text{Subst}\left(\int (a+b\log(cx^n))^{3/2}\,dx, x, d+ex\right)}{e}$$

$$= \frac{(d+ex)(a+b\log(c(d+ex)^n))^{3/2}}{e} - \frac{(3bn)\text{Subst}\left(\int \sqrt{a+b\log(cx^n)}\,d\right.}{2e}$$

$$= -\frac{3bn(d+ex)\sqrt{a+b\log(c(d+ex)^n)}}{2e} + \frac{(d+ex)(a+b\log(c(d+ex)^n}{e}$$

$$= -\frac{3bn(d+ex)\sqrt{a+b\log(c(d+ex)^n)}}{2e} + \frac{(d+ex)(a+b\log(c(d+ex)^n}{e}$$

$$= -\frac{3bn(d+ex)\sqrt{a+b\log(c(d+ex)^n)}}{2e} + \frac{(d+ex)(a+b\log(c(d+ex)^n}{e}$$

$$= \frac{3b^{3/2}e^{-\frac{a}{bn}}n^{3/2}\sqrt{\pi}(d+ex)(c(d+ex)^n)^{-1/n}\text{erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n}}{\sqrt{b}\sqrt{n}}\right.}{4e}$$

Mathematica [A]
time = 0.01, size = 127, normalized size = 0.89

$$\frac{(d+ex)\left(3b^{3/2}e^{-\frac{a}{bn}}n^{3/2}\sqrt{\pi}(c(d+ex)^n)^{-1/n}\text{erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)+2\sqrt{a+b\log(c(d+ex)^n)}(2a-3bn+2b\log(c(d+ex)^n))\right)}{4e}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^(3/2),x]
```

```
[Out] ((d + e*x)*((3*b^(3/2)*n^(3/2)*Sqrt[Pi]*Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]]
/(Sqrt[b]*Sqrt[n])])/(E^(a/(b*n))*(c*(d + e*x)^n)^n^(-1)) + 2*Sqrt[a + b*Lo
g[c*(d + e*x)^n]]*(2*a - 3*b*n + 2*b*Log[c*(d + e*x)^n])))/(4*e)
```

Maple [F]
time = 0.03, size = 0, normalized size = 0.00

$$\int \left(a + b\ln\left(c(ex+d)^n\right)\right)^{\frac{3}{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))^(3/2),x)
```

```
[Out] int((a+b*ln(c*(e*x+d)^n))^(3/2),x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((b*log((x*e + d)^n*c) + a)^(3/2), x)
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(3/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \left(a + b\log\left(c(d+ex)^n\right)\right)^{\frac{3}{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**(3/2),x)
```

```
[Out] Integral((a + b*log(c*(d + e*x)**n))**(3/2), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(3/2),x, algorithm="giac")
[Out] integrate((b*log((x*e + d)^n*c) + a)^(3/2), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int (a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right))^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))^(3/2),x)
[Out] int((a + b*log(c*(d + e*x)^n))^(3/2), x)
```

3.114 $\int \frac{(a+b\log(c(d+ex)^n))^{3/2}}{f+gx}\,dx$

Optimal. Leaf size=29

$$\operatorname{Int}\left(\frac{(a+b\log\left(c(d+ex)^n\right))^{3/2}}{f+gx},x\right)$$

```
[Out] Unintegrable((a+b*ln(c*(e*x+d)^n))^(3/2)/(g*x+f),x)
```

Rubi [A]
time = 0.04, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int \frac{(a+b\log\left(c(d+ex)^n\right))^{3/2}}{f+gx}\,dx$$

Verification is not applicable to the result.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^(3/2)/(f + g*x),x]
[Out] Defer[Int][(a + b*Log[c*(d + e*x)^n])^(3/2)/(f + g*x), x]
```

Rubi steps

$$\int \frac{(a+b\log\left(c(d+ex)^n\right))^{3/2}}{f+gx}\,dx = \int \frac{(a+b\log\left(c(d+ex)^n\right))^{3/2}}{f+gx}\,dx$$

Mathematica [A]
time = 1.07, size = 0, normalized size = 0.00

$$\int \frac{(a+b\log\left(c(d+ex)^n\right))^{3/2}}{f+gx}\,dx$$

Verification is not applicable to the result.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^(3/2)/(f + g*x),x]
[Out] Integrate[(a + b*Log[c*(d + e*x)^n])^(3/2)/(f + g*x), x]
```

Maple [A]
time = 0.16, size = 0, normalized size = 0.00

$$\int \frac{(a+b\ln\left(c(ex+d)^n\right))^{\frac{3}{2}}}{gx+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))^(3/2)/(g*x+f),x)
```

```
[Out] int((a+b*ln(c*(e*x+d)^n))^(3/2)/(g*x+f),x)
```

Maxima [**A**]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(3/2)/(g*x+f),x, algorithm="maxima")
```

```
[Out] integrate((b*log((x*e + d)^n*c) + a)^(3/2)/(g*x + f), x)
```

Fricas [**F(-2)**]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(3/2)/(g*x+f),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [**A**]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a + b\log{(c(d + ex)^n)})^{\frac{3}{2}}}{f + gx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**(3/2)/(g*x+f),x)
```

```
[Out] Integral((a + b*log(c*(d + e*x)**n))**(3/2)/(f + g*x), x)
```

Giac [**A**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(3/2)/(g*x+f),x, algorithm="giac")
```

```
[Out] integrate((b*log((x*e + d)^n*c) + a)^(3/2)/(g*x + f), x)
```

Mupad [A]
time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{\left(a + b\,\ln\left(c\,{\left(d + e\,x\right)}^n\right)\right)^{3/2}}{f + g\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))^(3/2)/(f + g*x),x)
[Out] int((a + b*log(c*(d + e*x)^n))^(3/2)/(f + g*x), x)
```

3.115 $\int \frac{(a+b\log(c(d+ex)^n))^{3/2}}{(f+gx)^2}\,dx$

Optimal. Leaf size=88

$$\frac{(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}}{(ef-dg)(f+gx)}-\frac{3ben\text{Int}\left(\frac{\sqrt{a+b\log\left(c(d+ex)^n\right)}}{f+gx},x\right)}{2(ef-dg)}$$

```
[Out] (e*x+d)*(a+b*ln(c*(e*x+d)^n))^(3/2)/(-d*g+e*f)/(g*x+f)-3/2*b*e*n*Unintegrab
le((a+b*ln(c*(e*x+d)^n))^(1/2)/(g*x+f),x)/(-d*g+e*f)
```

Rubi [A]
time = 0.07, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}=0.000$, Rules used = {}

$$\int\frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}}{(f+gx)^2}\,dx$$

Verification is not applicable to the result.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^(3/2)/(f + g*x)^2,x]
```

```
[Out] ((d + e*x)*(a + b*Log[c*(d + e*x)^n])^(3/2))/((e*f - d*g)*(f + g*x)) - (3*b
*e*n*Defer[Int][Sqrt[a + b*Log[c*(d + e*x)^n]]/(f + g*x), x])/(2*(e*f - d*g
))
```

Rubi steps

$$\int\frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}}{(f+gx)^2}\,dx=\frac{(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}}{(ef-dg)(f+gx)}-\frac{(3ben)\int\frac{\sqrt{a+b\log\left(c(d+ex)^n\right)}}{f+gx}}{2(ef-dg)}$$

Mathematica [A]
time = 0.57, size = 0, normalized size = 0.00

$$\int\frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}}{(f+gx)^2}\,dx$$

Verification is not applicable to the result.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^(3/2)/(f + g*x)^2,x]
```

```
[Out] Integrate[(a + b*Log[c*(d + e*x)^n])^(3/2)/(f + g*x)^2, x]
```

Maple [A]
time = 0.16, size = 0, normalized size = 0.00

$$\int \frac{(a+b\ln(c(ex+d)^n))^{\frac{3}{2}}}{(gx+f)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))^(3/2)/(g*x+f)^2,x)
[Out] int((a+b*ln(c*(e*x+d)^n))^(3/2)/(g*x+f)^2,x)
```

Maxima [A]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(3/2)/(g*x+f)^2,x, algorithm="maxima")
[Out] integrate((b*log((x*e + d)^n*c) + a)^(3/2)/(g*x + f)^2, x)
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(3/2)/(g*x+f)^2,x, algorithm="fricas")
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: HeuristicGCDFailed

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**(3/2)/(g*x+f)**2,x)
[Out] Exception raised: HeuristicGCDFailed >> no luck
```

Giac [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(3/2)/(g*x+f)^2,x, algorithm="giac")
```

```
[Out] integrate((b*log((x*e + d)^n*c) + a)^(3/2)/(g*x + f)^2, x)
```

Mupad [A]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{{\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)}^{3/2}}{{\left(f+g\,x\right)}^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))^(3/2)/(f + g*x)^2,x)
```

```
[Out] int((a + b*log(c*(d + e*x)^n))^(3/2)/(f + g*x)^2, x)
```

3.116 $\int \frac{(a+b\log(c(d+ex)^n))^{3/2}}{(f+gx)^3} dx$

Optimal. Leaf size=79

$$-\frac{(a+b\log(c(d+ex)^n))^{3/2}}{2g(f+gx)^2}+\frac{3ben\text{Int}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{(d+ex)(f+gx)^2},x\right)}{4g}$$

```
[Out] -1/2*(a+b*ln(c*(e*x+d)^n))^(3/2)/g/(g*x+f)^2+3/4*b*e*n*Unintegrable((a+b*ln
(c*(e*x+d)^n))^(1/2)/(e*x+d)/(g*x+f)^2,x)/g
```

Rubi [A]
time = 0.14, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int \frac{(a+b\log(c(d+ex)^n))^{3/2}}{(f+gx)^3} dx$$

Verification is not applicable to the result.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^(3/2)/(f + g*x)^3,x]
```

```
[Out] -1/2*(a + b*Log[c*(d + e*x)^n])^(3/2)/(g*(f + g*x)^2) + (3*b*e*n*Defer[Int]
[Sqrt[a + b*Log[c*(d + e*x)^n]]/((d + e*x)*(f + g*x)^2), x])/(4*g)
```

Rubi steps

$$\int \frac{(a+b\log(c(d+ex)^n))^{3/2}}{(f+gx)^3} dx = -\frac{(a+b\log(c(d+ex)^n))^{3/2}}{2g(f+gx)^2}+\frac{(3ben)\int \frac{\sqrt{a+b\log(c(d+ex)^n)}}{(d+ex)(f+gx)^2} dx}{4g}$$

Mathematica [A]
time = 0.55, size = 0, normalized size = 0.00

$$\int \frac{(a+b\log(c(d+ex)^n))^{3/2}}{(f+gx)^3} dx$$

Verification is not applicable to the result.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^(3/2)/(f + g*x)^3,x]
```

```
[Out] Integrate[(a + b*Log[c*(d + e*x)^n])^(3/2)/(f + g*x)^3, x]
```

Maple [A]
time = 0.18, size = 0, normalized size = 0.00

$$\int \frac{\left(a+b\ln\left(c\left(ex+d\right)^{n}\right)\right)^{\frac{3}{2}}}{\left(gx+f\right)^{3}}dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))^(3/2)/(g*x+f)^3,x)
[Out] int((a+b*ln(c*(e*x+d)^n))^(3/2)/(g*x+f)^3,x)
```

Maxima [A]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(3/2)/(g*x+f)^3,x, algorithm="maxima")
[Out] integrate((b*log((x*e + d)^n*c) + a)^(3/2)/(g*x + f)^3, x)
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(3/2)/(g*x+f)^3,x, algorithm="fricas")
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [A]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(a+b\log\left(c\left(d+ex\right)^{n}\right)\right)^{\frac{3}{2}}}{\left(f+gx\right)^{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**(3/2)/(g*x+f)**3,x)
[Out] Integral((a + b*log(c*(d + e*x)**n))**(3/2)/(f + g*x)**3, x)
```

Giac [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(3/2)/(g*x+f)^3,x, algorithm="giac")
[Out] integrate((b*log((x*e + d)^n*c) + a)^(3/2)/(g*x + f)^3, x)
```

Mupad [A]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)^{3/2}}{{\left(f+g\,x\right)}^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))^(3/2)/(f + g*x)^3,x)
[Out] int((a + b*log(c*(d + e*x)^n))^(3/2)/(f + g*x)^3, x)
```

3.117 $\int (f+gx)^2 (a+b\log(c(d+ex)^n))^{5/2}\,dx$

Optimal. Leaf size=660

$$-\frac{15b^{5/2}e^{-\frac{a}{bn}}(ef-dg)^2n^{5/2}\sqrt{\pi}\,(d+ex)\,(c(d+ex)^n)^{-1/n}\,\mathrm{erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\,\sqrt{n}}\right)}{8e^3}-\frac{15b^{5/2}e^{-\frac{2a}{bn}}g(ef}{}$$

```
[Out] -5/2*b*(-d*g+e*f)^2*n*(e*x+d)*(a+b*ln(c*(e*x+d)^n))^(3/2)/e^3-5/4*b*g*(-d*g
+e*f)*n*(e*x+d)^2*(a+b*ln(c*(e*x+d)^n))^(3/2)/e^3-5/18*b*g^2*n*(e*x+d)^3*(a
+b*ln(c*(e*x+d)^n))^(3/2)/e^3+(-d*g+e*f)^2*(e*x+d)*(a+b*ln(c*(e*x+d)^n))^(5
/2)/e^3+g*(-d*g+e*f)*(e*x+d)^2*(a+b*ln(c*(e*x+d)^n))^(5/2)/e^3+1/3*g^2*(e*x
+d)^3*(a+b*ln(c*(e*x+d)^n))^(5/2)/e^3-5/216*b^(5/2)*g^2*n^(5/2)*(e*x+d)^3*e
rfi(3^(1/2)*(a+b*ln(c*(e*x+d)^n))^(1/2)/b^(1/2)/n^(1/2))*3^(1/2)*Pi^(1/2)/e
^3/exp(3*a/b/n)/((c*(e*x+d)^n)^(3/n))-15/64*b^(5/2)*g*(-d*g+e*f)*n^(5/2)*(e
*x+d)^2*erfi(2^(1/2)*(a+b*ln(c*(e*x+d)^n))^(1/2)/b^(1/2)/n^(1/2))*2^(1/2)*P
i^(1/2)/e^3/exp(2*a/b/n)/((c*(e*x+d)^n)^(2/n))-15/8*b^(5/2)*(-d*g+e*f)^2*n^
(5/2)*(e*x+d)*erfi((a+b*ln(c*(e*x+d)^n))^(1/2)/b^(1/2)/n^(1/2))*Pi^(1/2)/e^
3/exp(a/b/n)/((c*(e*x+d)^n)^(1/n))+15/4*b^2*(-d*g+e*f)^2*n^2*(e*x+d)*(a+b*l
n(c*(e*x+d)^n))^(1/2)/e^3+15/16*b^2*g*(-d*g+e*f)*n^2*(e*x+d)^2*(a+b*ln(c*(e
*x+d)^n))^(1/2)/e^3+5/36*b^2*g^2*n^2*(e*x+d)^3*(a+b*ln(c*(e*x+d)^n))^(1/2)/
e^3
```

Rubi [A]
time = 0.71, antiderivative size = 660, normalized size of antiderivative = 1.00, number of steps used = 23, number of rules used = 9, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.346$, Rules used = {2448, 2436, 2333, 2337, 2211, 2235, 2437, 2342, 2347}

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)^2*(a + b*Log[c*(d + e*x)^n])^(5/2),x]
```

```
[Out] (-15*b^(5/2)*(e*f - d*g)^2*n^(5/2)*Sqrt[Pi]*(d + e*x)*Erfi[Sqrt[a + b*Log[c
*(d + e*x)^n]]/(Sqrt[b]*Sqrt[n])])/(8*e^3*E^(a/(b*n))*(c*(d + e*x)^n)^n^(-1
)) - (15*b^(5/2)*g*(e*f - d*g)*n^(5/2)*Sqrt[Pi/2]*(d + e*x)^2*Erfi[(Sqrt[2]
*Sqrt[a + b*Log[c*(d + e*x)^n]])/(Sqrt[b]*Sqrt[n])])/(32*e^3*E^((2*a)/(b*n)
)*(c*(d + e*x)^n)^(2/n)) - (5*b^(5/2)*g^2*n^(5/2)*Sqrt[Pi/3]*(d + e*x)^3*Er
fi[(Sqrt[3]*Sqrt[a + b*Log[c*(d + e*x)^n]])/(Sqrt[b]*Sqrt[n])])/(72*e^3*E^(
(3*a)/(b*n))*(c*(d + e*x)^n)^(3/n)) + (15*b^2*(e*f - d*g)^2*n^2*(d + e*x)*S
qrt[a + b*Log[c*(d + e*x)^n]])/(4*e^3) + (15*b^2*g*(e*f - d*g)*n^2*(d + e*x
)^2*Sqrt[a + b*Log[c*(d + e*x)^n]])/(16*e^3) + (5*b^2*g^2*n^2*(d + e*x)^3*S
qrt[a + b*Log[c*(d + e*x)^n]])/(36*e^3) - (5*b*(e*f - d*g)^2*n*(d + e*x)*(a
 + b*Log[c*(d + e*x)^n])^(3/2))/(2*e^3) - (5*b*g*(e*f - d*g)*n*(d + e*x)^2*
(a + b*Log[c*(d + e*x)^n])^(3/2))/(4*e^3) - (5*b*g^2*n*(d + e*x)^3*(a + b*L
```

```
og[c*(d + e*x)^n])^(3/2))/(18*e^3) + ((e*f - d*g)^2*(d + e*x)*(a + b*Log[c*
(d + e*x)^n])^(5/2))/e^3 + (g*(e*f - d*g)*(d + e*x)^2*(a + b*Log[c*(d + e*x
)^n])^(5/2))/e^3 + (g^2*(d + e*x)^3*(a + b*Log[c*(d + e*x)^n])^(5/2))/(3*e^
3)
```

Rule 2211

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - c*(f/d)) + f*g*(x^2/d)), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !TrueQ[$UseGamma]
```

Rule 2235

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[F^a*Sqrt
[Pi]*(Erfi[(c + d*x)*Rt[b*Log[F], 2]]/(2*d*Rt[b*Log[F], 2])), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2333

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2337

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2342

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_.)*(x_))^(m_.), x_Symbo
l] :> Simp[(d*x)^(m + 1)*((a + b*Log[c*x^n])^p/(d*(m + 1))), x] - Dist[b*n*
(p/(m + 1)), Int[(d*x)^m*(a + b*Log[c*x^n])^(p - 1), x], x] /; FreeQ[{a, b,
 c, d, m, n}, x] && NeQ[m, -1] && GtQ[p, 0]
```

Rule 2347

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_)*((d_.)*(x_))^(m_.), x_Symbol
] :> Dist[(d*x)^(m + 1)/(d*n*(c*x^n)^((m + 1)/n)), Subst[Int[E^(((m + 1)/n)
*x)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b, c, d, m, n, p}, x]
```

Rule 2436

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2437

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[(f*(x/d))^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2448

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q*(a + b*Log[c*(d
 + e*x)^n])^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f -
 d*g, 0] && IGtQ[q, 0]
```

Rubi steps

$$\int (f+gx)^2 \left(a+b\log \left(c(d+ex)^n\right)\right)^{5/2} \, dx = \int \left(\frac{(ef-dg)^2 \left(a+b\log \left(c(d+ex)^n\right)\right)^{5/2}}{e^2} + \frac{2g(ef-dg)(d+\right.$$

$$= \frac{g^2 \int (d+ex)^2 \left(a+b\log \left(c(d+ex)^n\right)\right)^{5/2} \, dx}{e^2} + \frac{(2g(ef-dg)) \int}{}$$

$$= \frac{g^2 \text{Subst}\left(\int x^2 (a+b\log (cx^n))^{5/2} \, dx, x, d+ex\right)}{e^3} + \frac{(2g(ef-dg}{}$$

$$= \frac{(ef-dg)^2 (d+ex) \left(a+b\log \left(c(d+ex)^n\right)\right)^{5/2}}{e^3} + \frac{g(ef-dg)(d}{}$$

$$= -\frac{5b(ef-dg)^2 n(d+ex) \left(a+b\log \left(c(d+ex)^n\right)\right)^{3/2}}{2e^3} - \frac{5bg(ef-}{}$$

$$= \frac{15b^2(ef-dg)^2 n^2 (d+ex) \sqrt{a+b\log \left(c(d+ex)^n\right)}}{4e^3} + \frac{15b^2 g(ef}{}$$

$$= \frac{15b^2(ef-dg)^2 n^2 (d+ex) \sqrt{a+b\log \left(c(d+ex)^n\right)}}{4e^3} + \frac{15b^2 g(ef}{}$$

$$= \frac{15b^2(ef-dg)^2 n^2 (d+ex) \sqrt{a+b\log \left(c(d+ex)^n\right)}}{4e^3} + \frac{15b^2 g(ef}{}$$

$$= -\frac{15b^{5/2} e^{-\frac{a}{bn}} (ef-dg)^2 n^{5/2} \sqrt{\pi} \, (d+ex) \left(c(d+ex)^n\right)^{-1/n} \text{erfi}\left(\right.}{8e^3}$$

Mathematica [A]

time = 1.13, size = 511, normalized size = 0.77

$$\frac{(d+ex)\left(1728(ef-dg)^2(a+b\log(c(d+ex)^n))^{5/2}+1728g(ef-dg)(d+ex)(a+b\log(c(d+ex)^n))^{5/2}+576g^2(d+ex)^2(a+b\log(c(d+ex)^n))^{5/2}-1080b(ef-dg)^2n\left(3b^{3/2}e^{-\frac{a}{bn}}n^{3/2}\sqrt{\pi}(c(d+ex)^n)^{-1/n}\operatorname{erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)+2\sqrt{a+b\log(c(d+ex)^n)}(2a-3bn+2b\log(c(d+ex)^n))\right)-40bg^2n(d+ex)^2\left(b^{3/2}e^{-\frac{3a}{bn}}n^{3/2}\sqrt{3\pi}(c(d+ex)^n)^{-3/n}\operatorname{erfi}\left(\frac{\sqrt{3}\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)+6\sqrt{a+b\log(c(d+ex)^n)}(2a-bn+2b\log(c(d+ex)^n))\right)-135bg(ef-dg)n(d+ex)\left(3b^{3/2}e^{-\frac{2a}{bn}}n^{3/2}\sqrt{2\pi}(c(d+ex)^n)^{-2/n}\operatorname{erfi}\left(\frac{\sqrt{2}\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)+4\sqrt{a+b\log(c(d+ex)^n)}(4a-3bn+4b\log(c(d+ex)^n))\right)\right)}{1728e^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)^2*(a + b*Log[c*(d + e*x)^n])^(5/2),x]
```

```
[Out] ((d + e*x)*(1728*(e*f - d*g)^2*(a + b*Log[c*(d + e*x)^n])^(5/2) + 1728*g*(e
*f - d*g)*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^(5/2) + 576*g^2*(d + e*x)^2*
(a + b*Log[c*(d + e*x)^n])^(5/2) - 1080*b*(e*f - d*g)^2*n*((3*b^(3/2)*n^(3/
2)*Sqrt[Pi]*Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]]/(Sqrt[b]*Sqrt[n])])/(E^(a/(
b*n))*(c*(d + e*x)^n)^n^(-1)) + 2*Sqrt[a + b*Log[c*(d + e*x)^n]]*(2*a - 3*b
*n + 2*b*Log[c*(d + e*x)^n])) - 40*b*g^2*n*(d + e*x)^2*((b^(3/2)*n^(3/2)*Sq
rt[3*Pi]*Erfi[(Sqrt[3]*Sqrt[a + b*Log[c*(d + e*x)^n]])/(Sqrt[b]*Sqrt[n])])/
(E^((3*a)/(b*n))*(c*(d + e*x)^n)^(3/n)) + 6*Sqrt[a + b*Log[c*(d + e*x)^n]]*
(2*a - b*n + 2*b*Log[c*(d + e*x)^n])) - 135*b*g*(e*f - d*g)*n*(d + e*x)*((3
*b^(3/2)*n^(3/2)*Sqrt[2*Pi]*Erfi[(Sqrt[2]*Sqrt[a + b*Log[c*(d + e*x)^n]])/(
Sqrt[b]*Sqrt[n])])/(E^((2*a)/(b*n))*(c*(d + e*x)^n)^(2/n)) + 4*Sqrt[a + b*L
og[c*(d + e*x)^n]]*(4*a - 3*b*n + 4*b*Log[c*(d + e*x)^n]))))/(1728*e^3)
```

Maple [F]
time = 0.15, size = 0, normalized size = 0.00

$$\int (gx+f)^2 (a+b\ln(c(ex+d)^n))^{\frac{5}{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^2*(a+b*ln(c*(e*x+d)^n))^(5/2),x)
```

```
[Out] int((g*x+f)^2*(a+b*ln(c*(e*x+d)^n))^(5/2),x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2*(a+b*log(c*(e*x+d)^n))^(5/2),x, algorithm="maxima")
```

```
[Out] integrate((g*x + f)^2*(b*log((x*e + d)^n*c) + a)^(5/2), x)
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2*(a+b*log(c*(e*x+d)^n))^(5/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \left(a+b\log\left(c(d+ex)^{n}\right)\right)^{\frac{5}{2}}\left(f+gx\right)^{2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**2*(a+b*ln(c*(e*x+d)**n))**(5/2),x)
```

```
[Out] Integral((a + b*log(c*(d + e*x)**n))**(5/2)*(f + g*x)**2, x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2*(a+b*log(c*(e*x+d)^n))^(5/2),x, algorithm="giac")
```

```
[Out] integrate((g*x + f)^2*(b*log((x*e + d)^n*c) + a)^(5/2), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int {\left(f+g\,x\right)}^2\,{\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)}^{5/2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)^2*(a + b*log(c*(d + e*x)^n))^(5/2),x)
```

```
[Out] int((f + g*x)^2*(a + b*log(c*(d + e*x)^n))^(5/2), x)
```

3.118 $\int (f+gx) (a+b\log (c(d+ex)^n))^{5/2} \, dx$

Optimal. Leaf size=413

$$-\frac{15b^{5/2}e^{-\frac{a}{bn}}(ef-dg)n^{5/2}\sqrt{\pi}\,(d+ex)\,(c(d+ex)^n)^{-1/n}\operatorname{erfi}\left(\frac{\sqrt{a+b\log\left(c(d+ex)^n\right)}}{\sqrt{b}\,\sqrt{n}}\right)}{8e^2}-\frac{15b^{5/2}e^{-\frac{2a}{bn}}gn^{5/2}\sqrt{}}{}$$

```
[Out] -5/2*b*(-d*g+e*f)*n*(e*x+d)*(a+b*ln(c*(e*x+d)^n))^(3/2)/e^2-5/8*b*g*n*(e*x+
d)^2*(a+b*ln(c*(e*x+d)^n))^(3/2)/e^2+(-d*g+e*f)*(e*x+d)*(a+b*ln(c*(e*x+d)^n
))^(5/2)/e^2+1/2*g*(e*x+d)^2*(a+b*ln(c*(e*x+d)^n))^(5/2)/e^2-15/128*b^(5/2)
*g*n^(5/2)*(e*x+d)^2*erfi(2^(1/2)*(a+b*ln(c*(e*x+d)^n))^(1/2)/b^(1/2)/n^(1/
2))*2^(1/2)*Pi^(1/2)/e^2/exp(2*a/b/n)/((c*(e*x+d)^n)^(2/n))-15/8*b^(5/2)*(-
d*g+e*f)*n^(5/2)*(e*x+d)*erfi((a+b*ln(c*(e*x+d)^n))^(1/2)/b^(1/2)/n^(1/2))*
Pi^(1/2)/e^2/exp(a/b/n)/((c*(e*x+d)^n)^(1/n))+15/4*b^2*(-d*g+e*f)*n^2*(e*x+
d)*(a+b*ln(c*(e*x+d)^n))^(1/2)/e^2+15/32*b^2*g*n^2*(e*x+d)^2*(a+b*ln(c*(e*x
+d)^n))^(1/2)/e^2
```

Rubi [A]
time = 0.38, antiderivative size = 413, normalized size of antiderivative = 1.00, number of steps used = 16, number of rules used = 9, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.375$, Rules used = {2448, 2436, 2333, 2337, 2211, 2235, 2437, 2342, 2347}

$$-\frac{15\sqrt{\pi}\,b^{5/2}n^{5/2}e^{-\frac{a}{bn}}(d+ex)(ef-dg)\,(c(d+ex)^n)^{-1/n}\operatorname{Erfi}\left(\frac{\sqrt{a+b\log\left(c(d+ex)^n\right)}}{\sqrt{b}\,\sqrt{n}}\right)}{8e^2}-\frac{15\sqrt{\frac{\pi}{2}}\,b^{5/2}gn^{5/2}e^{-\frac{2a}{bn}}(d+ex)^2\,(c(d+ex)^n)^{-2/n}\operatorname{Erfi}\left(\frac{\sqrt{2}\,\sqrt{a+b\log\left(c(d+ex)^n\right)}}{\sqrt{b}\,\sqrt{n}}\right)}{64e^2}+\frac{15b^2n^2(d+ex)(ef-dg)\sqrt{a+b\log\left(c(d+ex)^n\right)}}{4e^2}+\frac{15b^2gn^2(d+ex)^2\sqrt{a+b\log\left(c(d+ex)^n\right)}}{32e^2}+\frac{(d+ex)(ef-dg)\left(a+b\log\left(c(d+ex)^n\right)\right)^{5/2}}{e^2}-\frac{5bn(d+ex)(ef-dg)\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}}{2e^2}+\frac{g(d+ex)^2\left(a+b\log\left(c(d+ex)^n\right)\right)^{5/2}}{2e^2}-\frac{5bgn(d+ex)^2\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}}{8e^2}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)*(a + b*Log[c*(d + e*x)^n])^(5/2),x]
```

```
[Out] (-15*b^(5/2)*(e*f - d*g)*n^(5/2)*Sqrt[Pi]*(d + e*x)*Erfi[Sqrt[a + b*Log[c*(
d + e*x)^n]]/(Sqrt[b]*Sqrt[n])])/(8*e^2*E^(a/(b*n))*(c*(d + e*x)^n)^n^(-1))
 - (15*b^(5/2)*g*n^(5/2)*Sqrt[Pi/2]*(d + e*x)^2*Erfi[(Sqrt[2]*Sqrt[a + b*Lo
g[c*(d + e*x)^n]])/(Sqrt[b]*Sqrt[n])])/(64*e^2*E^((2*a)/(b*n))*(c*(d + e*x)
^n)^(2/n)) + (15*b^2*(e*f - d*g)*n^2*(d + e*x)*Sqrt[a + b*Log[c*(d + e*x)^n
]])/(4*e^2) + (15*b^2*g*n^2*(d + e*x)^2*Sqrt[a + b*Log[c*(d + e*x)^n]])/(32
*e^2) - (5*b*(e*f - d*g)*n*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^(3/2))/(2*e
^2) - (5*b*g*n*(d + e*x)^2*(a + b*Log[c*(d + e*x)^n])^(3/2))/(8*e^2) + ((e*
f - d*g)*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^(5/2))/e^2 + (g*(d + e*x)^2*(
a + b*Log[c*(d + e*x)^n])^(5/2))/(2*e^2)
```

Rule 2211

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - c*(f/d)) + f*g*(x^2/d)), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !TrueQ[$UseGamma]
```

Rule 2235

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[F^a*Sqrt
[Pi]*(Erfi[(c + d*x)*Rt[b*Log[F], 2]]/(2*d*Rt[b*Log[F], 2])), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2333

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2337

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2342

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_.)*(x_))^(m_.), x_Symbo
l] :> Simp[(d*x)^(m + 1)*((a + b*Log[c*x^n])^p/(d*(m + 1))), x] - Dist[b*n*
(p/(m + 1)), Int[(d*x)^m*(a + b*Log[c*x^n])^(p - 1), x], x] /; FreeQ[{a, b,
 c, d, m, n}, x] && NeQ[m, -1] && GtQ[p, 0]
```

Rule 2347

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_)*((d_.)*(x_))^(m_.), x_Symbol
] :> Dist[(d*x)^(m + 1)/(d*n*(c*x^n)^((m + 1)/n)), Subst[Int[E^(((m + 1)/n)
*x)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b, c, d, m, n, p}, x]
```

Rule 2436

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2437

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[(f*(x/d))^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2448

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q*(a + b*Log[c*(d
```

```
+ e*x)^n])^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f -
d*g, 0] && IGtQ[q, 0]
```

Rubi steps

$$
\begin{aligned}
\int (f+gx)\left(a+b\log\left(c(d+ex)^n\right)\right)^{5/2}\,dx &= \int \left(\frac{(ef-dg)\left(a+b\log\left(c(d+ex)^n\right)\right)^{5/2}}{e}+\frac{g(d+ex)\left(a+b\log\left(\right.\right.}{e}\right.\\
&= \frac{g\int (d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^{5/2}\,dx}{e}+\frac{(ef-dg)\int\left(a+b\log\right.}{}\\
&= \frac{g\text{Subst}\left(\int x\left(a+b\log\left(cx^n\right)\right)^{5/2}\,dx,x,d+ex\right)}{e^2}+\frac{(ef-dg)\text{Subst}}{}\\
&= \frac{(ef-dg)(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^{5/2}}{e^2}+\frac{g(d+ex)^2\left(a+b\right.}{}\\
&= -\frac{5b(ef-dg)n(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}}{2e^2}-\frac{5bgn(d+ex}{}\\
&= \frac{15b^2(ef-dg)n^2(d+ex)\sqrt{a+b\log\left(c(d+ex)^n\right)}}{4e^2}+\frac{15b^2gn^2(d+}{}\\
&= \frac{15b^2(ef-dg)n^2(d+ex)\sqrt{a+b\log\left(c(d+ex)^n\right)}}{4e^2}+\frac{15b^2gn^2(d+}{}\\
&= \frac{15b^2(ef-dg)n^2(d+ex)\sqrt{a+b\log\left(c(d+ex)^n\right)}}{4e^2}+\frac{15b^2gn^2(d+}{}\\
&= -\frac{15b^{5/2}e^{-\frac{a}{bn}}(ef-dg)n^{5/2}\sqrt{\pi}\,(d+ex)\left(c(d+ex)^n\right)^{-1/n}\operatorname{erfi}\left(\frac{\sqrt{}}{}\right.}{8e^2}
\end{aligned}
$$

Mathematica [A]
time = 0.45, size = 326, normalized size = 0.79

$$\frac{(d+ex)\left(128(ef-dg)\left(a+b\log\left(c(d+ex)^n\right)\right)^{5/2}+64g(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^{5/2}-80b(ef-dg)n\left(3b^{3/2}e^{-\frac{a}{bn}}n^{3/2}\sqrt{\pi}\left(c(d+ex)^n\right)^{-1/n}\operatorname{erfi}\left(\frac{\sqrt{a+b\log\left(c(d+ex)^n\right)}}{\sqrt{b}\sqrt{n}}\right)+2\sqrt{a+b\log\left(c(d+ex)^n\right)}\left(2a-3bn+2b\log\left(c(d+ex)^n\right)\right)\right)-5bgn(d+ex)\left(3b^{3/2}e^{-\frac{2a}{bn}}n^{3/2}\sqrt{2\pi}\left(c(d+ex)^n\right)^{-2/n}\operatorname{erfi}\left(\frac{\sqrt{2}\sqrt{a+b\log\left(c(d+ex)^n\right)}}{\sqrt{b}\sqrt{n}}\right)+4\sqrt{a+b\log\left(c(d+ex)^n\right)}\left(4a-3bn+4b\log\left(c(d+ex)^n\right)\right)\right)\right)}{128e^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)*(a + b*Log[c*(d + e*x)^n])^(5/2),x]
```

```
[Out] ((d + e*x)*(128*(e*f - d*g)*(a + b*Log[c*(d + e*x)^n])^(5/2) + 64*g*(d + e*
x)*(a + b*Log[c*(d + e*x)^n])^(5/2) - 80*b*(e*f - d*g)*n*((3*b^(3/2)*n^(3/2
)*Sqrt[Pi]*Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]]/(Sqrt[b]*Sqrt[n])])/(E^(a/(b
```

```
*n))*(c*(d + e*x)^n)^n^(-1)) + 2*Sqrt[a + b*Log[c*(d + e*x)^n]]*(2*a - 3*b*
n + 2*b*Log[c*(d + e*x)^n])) - 5*b*g*n*(d + e*x)*((3*b^(3/2)*n^(3/2)*Sqrt[2
*Pi]*Erfi[(Sqrt[2]*Sqrt[a + b*Log[c*(d + e*x)^n]])/(Sqrt[b]*Sqrt[n])])/(E^(
(2*a)/(b*n))*(c*(d + e*x)^n)^(2/n)) + 4*Sqrt[a + b*Log[c*(d + e*x)^n]]*(4*a
 - 3*b*n + 4*b*Log[c*(d + e*x)^n]))))/(128*e^2)
```

Maple [F]
time = 0.02, size = 0, normalized size = 0.00

$$\int (gx + f) (a + b \ln (c(ex + d)^n))^{\frac{5}{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(a+b*ln(c*(e*x+d)^n))^(5/2),x)
```

```
[Out] int((g*x+f)*(a+b*ln(c*(e*x+d)^n))^(5/2),x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*log(c*(e*x+d)^n))^(5/2),x, algorithm="maxima")
```

```
[Out] integrate((g*x + f)*(b*log((x*e + d)^n*c) + a)^(5/2), x)
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*log(c*(e*x+d)^n))^(5/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int (a + b \log (c(d + ex)^n))^{\frac{5}{2}} (f + gx)\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*ln(c*(e*x+d)**n))**(5/2),x)
```

```
[Out] Integral((a + b*log(c*(d + e*x)**n))**(5/2)*(f + g*x), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*log(c*(e*x+d)^n))^(5/2),x, algorithm="giac")
[Out] integrate((g*x + f)*(b*log((x*e + d)^n*c) + a)^(5/2), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int (f+g\,x)\,\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)*(a + b*log(c*(d + e*x)^n))^(5/2),x)
[Out] int((f + g*x)*(a + b*log(c*(d + e*x)^n))^(5/2), x)
```

3.119 $\int (a+b\log(c(d+ex)^n))^{5/2}\,dx$

Optimal. Leaf size=179

$$-\frac{15b^{5/2}e^{-\frac{a}{bn}}n^{5/2}\sqrt{\pi}\,(d+ex)\,(c(d+ex)^n)^{-1/n}\operatorname{erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{8e}+\frac{15b^2n^2(d+ex)\sqrt{a+b\log}}{4e}$$

[Out] -5/2*b*n*(e*x+d)*(a+b*ln(c*(e*x+d)^n))^(3/2)/e+(e*x+d)*(a+b*ln(c*(e*x+d)^n))^(5/2)/e-15/8*b^(5/2)*n^(5/2)*(e*x+d)*erfi((a+b*ln(c*(e*x+d)^n))^(1/2)/b^(1/2)/n^(1/2))*Pi^(1/2)/e/exp(a/b/n)/((c*(e*x+d)^n)^(1/n))+15/4*b^2*n^2*(e*x+d)*(a+b*ln(c*(e*x+d)^n))^(1/2)/e

Rubi [A]

time = 0.10, antiderivative size = 179, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}} = 0.278$, Rules used = {2436, 2333, 2337, 2211, 2235}

$$-\frac{15\sqrt{\pi}\,b^{5/2}n^{5/2}e^{-\frac{a}{bn}}(d+ex)\,(c(d+ex)^n)^{-1/n}\operatorname{Erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{8e}+\frac{15b^2n^2(d+ex)\sqrt{a+b\log(c(d+ex)^n)}}{4e}+\frac{(d+ex)\,(a+b\log(c(d+ex)^n))^{5/2}}{e}-\frac{5bn(d+ex)\,(a+b\log(c(d+ex)^n))^{3/2}}{2e}$$

Antiderivative was successfully verified.

[In] Int[(a + b*Log[c*(d + e*x)^n])^(5/2),x]

[Out] (-15*b^(5/2)*n^(5/2)*Sqrt[Pi]*(d + e*x)*Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]]/(Sqrt[b]*Sqrt[n])])/(8*e*E^(a/(b*n))*(c*(d + e*x)^n)^n^(-1)) + (15*b^2*n^2*(d + e*x)*Sqrt[a + b*Log[c*(d + e*x)^n]])/(4*e) - (5*b*n*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^(3/2))/(2*e) + ((d + e*x)*(a + b*Log[c*(d + e*x)^n])^(5/2))/e

Rule 2211

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d, Subst[Int[F^(g*(e - c*(f/d)) + f*g*(x^2/d)), x], x, Sqrt[c + d*x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !TrueQ[$UseGamma]
```

Rule 2235

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[F^a*Sqrt[Pi]*(Erfi[(c + d*x)*Rt[b*Log[F], 2]]/(2*d*Rt[b*Log[F], 2])), x] /; FreeQ[{F, a, b, c, d}, x] && PosQ[b]
```

Rule 2333

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
```

```
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2337

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2436

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rubi steps

$$\int (a+b\log(c(d+ex)^n))^{5/2}\,dx = \frac{\text{Subst}\left(\int (a+b\log(cx^n))^{5/2}\,dx, x, d+ex\right)}{e}$$

$$= \frac{(d+ex)(a+b\log(c(d+ex)^n))^{5/2}}{e} - \frac{(5bn)\text{Subst}\left(\int (a+b\log(cx^n))^{3/2}\,d\right.}{2e}$$

$$= -\frac{5bn(d+ex)(a+b\log(c(d+ex)^n))^{3/2}}{2e} + \frac{(d+ex)(a+b\log(c(d+ex)^n}{e}$$

$$= \frac{15b^2n^2(d+ex)\sqrt{a+b\log(c(d+ex)^n)}}{4e} - \frac{5bn(d+ex)(a+b\log(c(d+e}{2e}$$

$$= \frac{15b^2n^2(d+ex)\sqrt{a+b\log(c(d+ex)^n)}}{4e} - \frac{5bn(d+ex)(a+b\log(c(d+e}{2e}$$

$$= \frac{15b^2n^2(d+ex)\sqrt{a+b\log(c(d+ex)^n)}}{4e} - \frac{5bn(d+ex)(a+b\log(c(d+e}{2e}$$

$$= -\frac{15b^{5/2}e^{-\frac{a}{bn}}n^{5/2}\sqrt{\pi}(d+ex)(c(d+ex)^n)^{-1/n}\operatorname{erfi}\left(\frac{\sqrt{a+b\log(c(d+ex}}{\sqrt{b}\sqrt{n}}\right.}{8e}$$

Mathematica [A]
time = 0.12, size = 152, normalized size = 0.85

$$\frac{(d+ex)\left(8(a+b\log(c(d+ex)^n))^{5/2}-5bn\left(3b^{3/2}e^{-\frac{a}{bn}}n^{3/2}\sqrt{\pi}(c(d+ex)^n)^{-1/n}\operatorname{erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)+2\sqrt{a+b\log(c(d+ex)^n)}(2a-3bn+2b\log(c(d+ex)^n))\right)\right)}{8e}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^(5/2),x]
```

```
[Out] ((d + e*x)*(8*(a + b*Log[c*(d + e*x)^n])^(5/2) - 5*b*n*((3*b^(3/2)*n^(3/2)*
Sqrt[Pi]*Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]]/(Sqrt[b]*Sqrt[n])])/(E^(a/(b*n
))*(c*(d + e*x)^n)^n^(-1)) + 2*Sqrt[a + b*Log[c*(d + e*x)^n]]*(2*a - 3*b*n
+ 2*b*Log[c*(d + e*x)^n]))))/(8*e)
```

Maple [**F**]
time = 0.02, size = 0, normalized size = 0.00

$$\int \left(a+b\ln\left(c(ex+d)^{n}\right)\right)^{\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))^(5/2),x)
```

```
[Out] int((a+b*ln(c*(e*x+d)^n))^(5/2),x)
```

Maxima [**F**]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(5/2),x, algorithm="maxima")
```

```
[Out] integrate((b*log((x*e + d)^n*c) + a)^(5/2), x)
```

Fricas [**F(-2)**]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(5/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [**F**]
time = 0.00, size = 0, normalized size = 0.00

$$\int \left(a+b\log\left(c(d+ex)^{n}\right)\right)^{\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**(5/2),x)
```

```
[Out] Integral((a + b*log(c*(d + e*x)**n))**(5/2), x)
```

Giac [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(5/2),x, algorithm="giac")
```

```
[Out] integrate((b*log((x*e + d)^n*c) + a)^(5/2), x)
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.01

$$\int (a + b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right))^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))^(5/2),x)
```

```
[Out] int((a + b*log(c*(d + e*x)^n))^(5/2), x)
```

3.120 $\int \frac{(a+b\log(c(d+ex)^n))^{5/2}}{f+gx}\,dx$

Optimal. Leaf size=29

$$\mathrm{Int}\left(\frac{(a+b\log(c(d+ex)^n))^{5/2}}{f+gx},x\right)$$

```
[Out] Unintegrable((a+b*ln(c*(e*x+d)^n))^(5/2)/(g*x+f),x)
```

Rubi [A]
time = 0.04, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int \frac{(a+b\log(c(d+ex)^n))^{5/2}}{f+gx}\,dx$$

Verification is not applicable to the result.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^(5/2)/(f + g*x),x]
```

```
[Out] Defer[Int][(a + b*Log[c*(d + e*x)^n])^(5/2)/(f + g*x), x]
```

Rubi steps

$$\int \frac{(a+b\log(c(d+ex)^n))^{5/2}}{f+gx}\,dx = \int \frac{(a+b\log(c(d+ex)^n))^{5/2}}{f+gx}\,dx$$

Mathematica [A]
time = 1.05, size = 0, normalized size = 0.00

$$\int \frac{(a+b\log(c(d+ex)^n))^{5/2}}{f+gx}\,dx$$

Verification is not applicable to the result.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^(5/2)/(f + g*x),x]
```

```
[Out] Integrate[(a + b*Log[c*(d + e*x)^n])^(5/2)/(f + g*x), x]
```

Maple [A]
time = 0.17, size = 0, normalized size = 0.00

$$\int \frac{(a+b\ln(c(ex+d)^n))^{\frac{5}{2}}}{gx+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))^(5/2)/(g*x+f),x)
```

```
[Out] int((a+b*ln(c*(e*x+d)^n))^(5/2)/(g*x+f),x)
```

Maxima [**A**]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(5/2)/(g*x+f),x, algorithm="maxima")
```

```
[Out] integrate((b*log((x*e + d)^n*c) + a)^(5/2)/(g*x + f), x)
```

Fricas [**F(-2)**]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(5/2)/(g*x+f),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [**F(-1)**] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**(5/2)/(g*x+f),x)
```

```
[Out] Timed out
```

Giac [**A**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(5/2)/(g*x+f),x, algorithm="giac")
```

```
[Out] integrate((b*log((x*e + d)^n*c) + a)^(5/2)/(g*x + f), x)
```

Mupad [A]
time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)^{5/2}}{f+g\,x} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))^(5/2)/(f + g*x),x)
[Out] int((a + b*log(c*(d + e*x)^n))^(5/2)/(f + g*x), x)
```

3.121 $\int \frac{(a+b\log(c(d+ex)^n))^{5/2}}{(f+gx)^2}\,dx$

Optimal. Leaf size=88

$$\frac{(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^{5/2}}{(ef-dg)(f+gx)}-\frac{5ben\text{Int}\left(\frac{(a+b\log(c(d+ex)^n))^{3/2}}{f+gx},x\right)}{2(ef-dg)}$$

```
[Out] (e*x+d)*(a+b*ln(c*(e*x+d)^n))^(5/2)/(-d*g+e*f)/(g*x+f)-5/2*b*e*n*Unintegrab
le((a+b*ln(c*(e*x+d)^n))^(3/2)/(g*x+f),x)/(-d*g+e*f)
```

Rubi [A]
time = 0.08, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^{5/2}}{(f+gx)^2}\,dx$$

Verification is not applicable to the result.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^(5/2)/(f + g*x)^2,x]
```

```
[Out] ((d + e*x)*(a + b*Log[c*(d + e*x)^n])^(5/2))/((e*f - d*g)*(f + g*x)) - (5*b
*e*n*Defer[Int][(a + b*Log[c*(d + e*x)^n])^(3/2)/(f + g*x), x])/(2*(e*f - d
*g))
```

Rubi steps

$$\int \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^{5/2}}{(f+gx)^2}\,dx=\frac{(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^{5/2}}{(ef-dg)(f+gx)}-\frac{(5ben)\int \frac{(a+b\log(c(d+ex)^n))^{3/2}}{f+gx}\,dx}{2(ef-dg)}$$

Mathematica [A]
time = 4.19, size = 0, normalized size = 0.00

$$\int \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^{5/2}}{(f+gx)^2}\,dx$$

Verification is not applicable to the result.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^(5/2)/(f + g*x)^2,x]
```

```
[Out] Integrate[(a + b*Log[c*(d + e*x)^n])^(5/2)/(f + g*x)^2, x]
```

Maple [A]
time = 0.17, size = 0, normalized size = 0.00

$$\int \frac{\left(a+b\ln\left(c(ex+d)^{n}\right)\right)^{\frac{5}{2}}}{\left(gx+f\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))^(5/2)/(g*x+f)^2,x)
[Out] int((a+b*ln(c*(e*x+d)^n))^(5/2)/(g*x+f)^2,x)
```

Maxima [A]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(5/2)/(g*x+f)^2,x, algorithm="maxima")
[Out] integrate((b*log((x*e + d)^n*c) + a)^(5/2)/(g*x + f)^2, x)
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(5/2)/(g*x+f)^2,x, algorithm="fricas")
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [F(-1)] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**(5/2)/(g*x+f)**2,x)
[Out] Timed out
```

Giac [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(5/2)/(g*x+f)^2,x, algorithm="giac")
```

```
[Out] integrate((b*log((x*e + d)^n*c) + a)^(5/2)/(g*x + f)^2, x)
```

Mupad [A]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)^{5/2}}{{\left(f+g\,x\right)}^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))^(5/2)/(f + g*x)^2,x)
```

```
[Out] int((a + b*log(c*(d + e*x)^n))^(5/2)/(f + g*x)^2, x)
```

3.122 $\int \frac{(a+b\log(c(d+ex)^n))^{5/2}}{(f+gx)^3} dx$

Optimal. Leaf size=79

$$-\frac{(a+b\log(c(d+ex)^n))^{5/2}}{2g(f+gx)^2}+\frac{5ben\mathrm{Int}\left(\frac{(a+b\log(c(d+ex)^n))^{3/2}}{(d+ex)(f+gx)^2},x\right)}{4g}$$

```
[Out] -1/2*(a+b*ln(c*(e*x+d)^n))^(5/2)/g/(g*x+f)^2+5/4*b*e*n*Unintegrable((a+b*ln
(c*(e*x+d)^n))^(3/2)/(e*x+d)/(g*x+f)^2,x)/g
```

Rubi [A]
time = 0.16, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int \frac{(a+b\log(c(d+ex)^n))^{5/2}}{(f+gx)^3} dx$$

Verification is not applicable to the result.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^(5/2)/(f + g*x)^3,x]
```

```
[Out] -1/2*(a + b*Log[c*(d + e*x)^n])^(5/2)/(g*(f + g*x)^2) + (5*b*e*n*Defer[Int]
[(a + b*Log[c*(d + e*x)^n])^(3/2)/((d + e*x)*(f + g*x)^2), x])/(4*g)
```

Rubi steps

$$\int \frac{(a+b\log(c(d+ex)^n))^{5/2}}{(f+gx)^3} dx = -\frac{(a+b\log(c(d+ex)^n))^{5/2}}{2g(f+gx)^2}+\frac{(5ben)\int \frac{(a+b\log(c(d+ex)^n))^{3/2}}{(d+ex)(f+gx)^2} dx}{4g}$$

Mathematica [A]
time = 3.74, size = 0, normalized size = 0.00

$$\int \frac{(a+b\log(c(d+ex)^n))^{5/2}}{(f+gx)^3} dx$$

Verification is not applicable to the result.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^(5/2)/(f + g*x)^3,x]
```

```
[Out] Integrate[(a + b*Log[c*(d + e*x)^n])^(5/2)/(f + g*x)^3, x]
```

Maple [A]
time = 0.17, size = 0, normalized size = 0.00

$$\int \frac{\left(a+b\ln \left(c(ex+d)^{n}\right)\right)^{\frac{5}{2}}}{\left(gx+f\right)^{3}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))^(5/2)/(g*x+f)^3,x)
```

```
[Out] int((a+b*ln(c*(e*x+d)^n))^(5/2)/(g*x+f)^3,x)
```

Maxima [A]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(5/2)/(g*x+f)^3,x, algorithm="maxima")
```

```
[Out] integrate((b*log((x*e + d)^n*c) + a)^(5/2)/(g*x + f)^3, x)
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(5/2)/(g*x+f)^3,x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [F(-1)] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**(5/2)/(g*x+f)**3,x)
```

```
[Out] Timed out
```

Giac [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(5/2)/(g*x+f)^3,x, algorithm="giac")
```

```
[Out] integrate((b*log((x*e + d)^n*c) + a)^(5/2)/(g*x + f)^3, x)
```

Mupad [A]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)^{5/2}}{{\left(f+g\,x\right)}^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))^(5/2)/(f + g*x)^3,x)
```

```
[Out] int((a + b*log(c*(d + e*x)^n))^(5/2)/(f + g*x)^3, x)
```

3.123 $\int \frac{(f+gx)^3}{\sqrt{a+b\log\left(c(d+ex)^n\right)}}\,dx$

Optimal. Leaf size=383

$$\frac{e^{-\frac{a}{bn}}(ef-dg)^3\sqrt{\pi}\,(d+ex)\left(c(d+ex)^n\right)^{-1/n}\operatorname{erfi}\left(\frac{\sqrt{a+b\log\left(c(d+ex)^n\right)}}{\sqrt{b}\,\sqrt{n}}\right)}{\sqrt{b}\,e^4\sqrt{n}}+\frac{e^{-\frac{4a}{bn}}g^3\sqrt{\pi}\,(d+ex)^4\left(c(d+e\right.}{}$$

```
[Out] 3/2*g*(-d*g+e*f)^2*(e*x+d)^2*erfi(2^(1/2)*(a+b*ln(c*(e*x+d)^n))^(1/2)/b^(1/
2)/n^(1/2))*2^(1/2)*Pi^(1/2)/e^4/exp(2*a/b/n)/((c*(e*x+d)^n)^(2/n))/b^(1/2)
/n^(1/2)+(-d*g+e*f)^3*(e*x+d)*erfi((a+b*ln(c*(e*x+d)^n))^(1/2)/b^(1/2)/n^(1
/2))*Pi^(1/2)/e^4/exp(a/b/n)/((c*(e*x+d)^n)^(1/n))/b^(1/2)/n^(1/2)+1/2*g^3*
(e*x+d)^4*erfi(2*(a+b*ln(c*(e*x+d)^n))^(1/2)/b^(1/2)/n^(1/2))*Pi^(1/2)/e^4/
exp(4*a/b/n)/((c*(e*x+d)^n)^(4/n))/b^(1/2)/n^(1/2)+g^2*(-d*g+e*f)*(e*x+d)^3
*erfi(3^(1/2)*(a+b*ln(c*(e*x+d)^n))^(1/2)/b^(1/2)/n^(1/2))*3^(1/2)*Pi^(1/2)
/e^4/exp(3*a/b/n)/((c*(e*x+d)^n)^(3/n))/b^(1/2)/n^(1/2)
```

Rubi [A]
time = 0.53, antiderivative size = 383, normalized size of antiderivative = 1.00, number of steps used = 18, number of rules used = 7, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.269$, Rules used = {2448, 2436, 2337, 2211, 2235, 2437, 2347}

$$\frac{\sqrt{3\pi}\,g^2e^{-\frac{3a}{bn}}(d+ex)^3(ef-dg)\left(c(d+ex)^n\right)^{-3/n}\operatorname{Erfi}\left(\frac{\sqrt{3}\,\sqrt{a+b\log\left(c(d+ex)^n\right)}}{\sqrt{b}\,\sqrt{n}}\right)}{\sqrt{b}\,e^4\sqrt{n}}+\frac{3\sqrt{\frac{\pi}{2}}\,ge^{-\frac{2a}{bn}}(d+ex)^2(ef-dg)^2\left(c(d+ex)^n\right)^{-2/n}\operatorname{Erfi}\left(\frac{\sqrt{2}\,\sqrt{a+b\log\left(c(d+ex)^n\right)}}{\sqrt{b}\,\sqrt{n}}\right)}{\sqrt{b}\,e^4\sqrt{n}}+\frac{\sqrt{\pi}\,e^{-\frac{a}{bn}}(d+ex)(ef-dg)^3\left(c(d+ex)^n\right)^{-1/n}\operatorname{Erfi}\left(\frac{\sqrt{a+b\log\left(c(d+ex)^n\right)}}{\sqrt{b}\,\sqrt{n}}\right)}{\sqrt{b}\,e^4\sqrt{n}}+\frac{\sqrt{\pi}\,g^3e^{-\frac{4a}{bn}}(d+ex)^4\left(c(d+ex)^n\right)^{-4/n}\operatorname{Erfi}\left(\frac{2\sqrt{a+b\log\left(c(d+ex)^n\right)}}{\sqrt{b}\,\sqrt{n}}\right)}{2\sqrt{b}\,e^4\sqrt{n}}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)^3/Sqrt[a + b*Log[c*(d + e*x)^n]],x]
```

```
[Out] ((e*f - d*g)^3*Sqrt[Pi]*(d + e*x)*Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]]/(Sqrt
[b]*Sqrt[n])])/(Sqrt[b]*e^4*E^(a/(b*n))*Sqrt[n]*(c*(d + e*x)^n)^n^(-1)) + (
g^3*Sqrt[Pi]*(d + e*x)^4*Erfi[(2*Sqrt[a + b*Log[c*(d + e*x)^n]])/(Sqrt[b]*S
qrt[n])])/(2*Sqrt[b]*e^4*E^((4*a)/(b*n))*Sqrt[n]*(c*(d + e*x)^n)^(4/n)) + (
3*g*(e*f - d*g)^2*Sqrt[Pi/2]*(d + e*x)^2*Erfi[(Sqrt[2]*Sqrt[a + b*Log[c*(d
+ e*x)^n]])/(Sqrt[b]*Sqrt[n])])/(Sqrt[b]*e^4*E^((2*a)/(b*n))*Sqrt[n]*(c*(d
+ e*x)^n)^(2/n)) + (g^2*(e*f - d*g)*Sqrt[3*Pi]*(d + e*x)^3*Erfi[(Sqrt[3]*Sq
rt[a + b*Log[c*(d + e*x)^n]])/(Sqrt[b]*Sqrt[n])])/(Sqrt[b]*e^4*E^((3*a)/(b*
n))*Sqrt[n]*(c*(d + e*x)^n)^(3/n))
```

Rule 2211

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - c*(f/d)) + f*g*(x^2/d)), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !TrueQ[$UseGamma]
```

Rule 2235

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[F^a*Sqrt
[Pi]*(Erfi[(c + d*x)*Rt[b*Log[F], 2]]/(2*d*Rt[b*Log[F], 2])), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2337

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2347

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_)*((d_.)*(x_))^(m_.), x_Symbol
] :> Dist[(d*x)^(m + 1)/(d*n*(c*x^n)^((m + 1)/n)), Subst[Int[E^(((m + 1)/n)
*x)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b, c, d, m, n, p}, x]
```

Rule 2436

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2437

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[(f*(x/d))^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2448

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q*(a + b*Log[c*(d
 + e*x)^n])^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f -
 d*g, 0] && IGtQ[q, 0]
```

Rubi steps

$$\int \frac{(f+gx)^3}{\sqrt{a+b\log(c(d+ex)^n)}}\,dx = \int \left(\frac{(ef-dg)^3}{e^3\sqrt{a+b\log(c(d+ex)^n)}} + \frac{3g(ef-dg)^2(d+ex)}{e^3\sqrt{a+b\log(c(d+ex)^n)}} + \frac{3g^2(ef}{e^3\sqrt{a+b}}\right.$$

$$= \frac{g^3\int \frac{(d+ex)^3}{\sqrt{a+b\log(c(d+ex)^n)}}\,dx}{e^3} + \frac{(3g^2(ef-dg))\int \frac{(d+ex)^2}{\sqrt{a+b\log(c(d+ex}}}{e^3}$$

$$= \frac{g^3\text{Subst}\left(\int \frac{x^3}{\sqrt{a+b\log(cx^n)}}\,dx, x, d+ex\right)}{e^4} + \frac{(3g^2(ef-dg))\,\text{Subst}\left(\int -\right.}{}$$

$$= \frac{\left(g^3(d+ex)^4\,(c(d+ex)^n)^{-4/n}\right)\text{Subst}\left(\int \frac{e^{\frac{4x}{n}}}{\sqrt{a+bx}}\,dx, x, \log(c(d+ex)^n)\right)}{e^4 n}$$

$$= \frac{\left(2g^3(d+ex)^4\,(c(d+ex)^n)^{-4/n}\right)\text{Subst}\left(\int e^{-\frac{4a}{bn}+\frac{4x^2}{bn}}\,dx, x, \sqrt{a+b\log(c(d-}\right.}{be^4 n}$$

$$= \frac{e^{-\frac{a}{bn}}(ef-dg)^3\sqrt{\pi}\,(d+ex)\,(c(d+ex)^n)^{-1/n}\,\text{erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\,\sqrt{n}}\right.}{\sqrt{b}\,e^4\sqrt{n}}$$

Mathematica [A]
time = 0.29, size = 331, normalized size = 0.86

$$\frac{e^{-\frac{4a}{bn}}\sqrt{\pi}\,(d+ex)\,(c(d+ex)^n)^{-4/n}\left(2e^{\frac{3a}{bn}}(ef-dg)^3\,(c(d+ex)^n)^{3/n}\,\text{erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\,\sqrt{n}}\right)+g^3(d+ex)^3\text{erfi}\left(\frac{2\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\,\sqrt{n}}\right)+3\sqrt{2}\,e^{\frac{2a}{bn}}g(ef-dg)^2(d+ex)\,(c(d+ex)^n)^{2/n}\,\text{erfi}\left(\frac{\sqrt{2}\,\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\,\sqrt{n}}\right)+2\sqrt{3}\,e^{\frac{a}{bn}}g^2(ef-dg)(d+ex)^2\,(c(d+ex)^n)^{\frac{1}{n}}\,\text{erfi}\left(\frac{\sqrt{3}\,\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\,\sqrt{n}}\right)\right)}{2\sqrt{b}\,e^4\sqrt{n}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)^3/Sqrt[a + b*Log[c*(d + e*x)^n]],x]
```

```
[Out] (Sqrt[Pi]*(d + e*x)*(2*E^((3*a)/(b*n))*(e*f - d*g)^3*(c*(d + e*x)^n)^(3/n)*
Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]]/(Sqrt[b]*Sqrt[n])] + g^3*(d + e*x)^3*Er
fi[(2*Sqrt[a + b*Log[c*(d + e*x)^n]])/(Sqrt[b]*Sqrt[n])] + 3*Sqrt[2]*E^((2*
a)/(b*n))*g*(e*f - d*g)^2*(d + e*x)*(c*(d + e*x)^n)^(2/n)*Erfi[(Sqrt[2]*Sqr
t[a + b*Log[c*(d + e*x)^n]])/(Sqrt[b]*Sqrt[n])] + 2*Sqrt[3]*E^(a/(b*n))*g^2
*(e*f - d*g)*(d + e*x)^2*(c*(d + e*x)^n)^n^(-1)*Erfi[(Sqrt[3]*Sqrt[a + b*Lo
g[c*(d + e*x)^n]])/(Sqrt[b]*Sqrt[n])]))/(2*Sqrt[b]*e^4*E^((4*a)/(b*n))*Sqrt
[n]*(c*(d + e*x)^n)^(4/n))
```

Maple [F]
time = 0.12, size = 0, normalized size = 0.00

$$\int \frac{(gx+f)^3}{\sqrt{a+b\ln\left(c\,(ex+d)^n\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^3/(a+b*ln(c*(e*x+d)^n))^(1/2),x)
[Out] int((g*x+f)^3/(a+b*ln(c*(e*x+d)^n))^(1/2),x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^3/(a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="maxima")
[Out] integrate((g*x + f)^3/sqrt(b*log((x*e + d)^n*c) + a), x)
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^3/(a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="fricas")
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(f+gx)^3}{\sqrt{a+b\log\left(c\left(d+ex\right)^n\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**3/(a+b*ln(c*(e*x+d)**n))**(1/2),x)
[Out] Integral((f + g*x)**3/sqrt(a + b*log(c*(d + e*x)**n)), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^3/(a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="giac")
[Out] integrate((g*x + f)^3/sqrt(b*log((x*e + d)^n*c) + a), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(f+g\,x)^3}{\sqrt{a+b\,\ln\left(c\,(d+e\,x)^n\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)^3/(a + b*log(c*(d + e*x)^n))^(1/2),x)
[Out] int((f + g*x)^3/(a + b*log(c*(d + e*x)^n))^(1/2), x)
```

3.124 $\int \frac{(f+gx)^2}{\sqrt{a+b\log\left(c(d+ex)^n\right)}}\,dx$

Optimal. Leaf size=283

$$\frac{e^{-\frac{a}{bn}}(ef-dg)^2\sqrt{\pi}\,(d+ex)\left(c(d+ex)^n\right)^{-1/n}\operatorname{erfi}\left(\frac{\sqrt{a+b\log\left(c(d+ex)^n\right)}}{\sqrt{b}\,\sqrt{n}}\right)}{\sqrt{b}\,e^3\sqrt{n}}+\frac{e^{-\frac{2a}{bn}}g(ef-dg)\sqrt{2\pi}\,(d+e$$

```
[Out] 1/3*g^2*(e*x+d)^3*erfi(3^(1/2)*(a+b*ln(c*(e*x+d)^n))^(1/2)/b^(1/2)/n^(1/2))
*3^(1/2)*Pi^(1/2)/e^3/exp(3*a/b/n)/((c*(e*x+d)^n)^(3/n))/b^(1/2)/n^(1/2)+(-
d*g+e*f)^2*(e*x+d)*erfi((a+b*ln(c*(e*x+d)^n))^(1/2)/b^(1/2)/n^(1/2))*Pi^(1/
2)/e^3/exp(a/b/n)/((c*(e*x+d)^n)^(1/n))/b^(1/2)/n^(1/2)+g*(-d*g+e*f)*(e*x+d
)^2*erfi(2^(1/2)*(a+b*ln(c*(e*x+d)^n))^(1/2)/b^(1/2)/n^(1/2))*2^(1/2)*Pi^(1
/2)/e^3/exp(2*a/b/n)/((c*(e*x+d)^n)^(2/n))/b^(1/2)/n^(1/2)
```

Rubi [A]
time = 0.38, antiderivative size = 283, normalized size of antiderivative = 1.00, number of steps used = 14, number of rules used = 7, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.269$, Rules used = {2448, 2436, 2337, 2211, 2235, 2437, 2347}

$$\frac{\sqrt{2\pi}\,g e^{-\frac{2a}{bn}}(d+ex)^2(ef-dg)\left(c(d+ex)^n\right)^{-2/n}\operatorname{Erfi}\left(\frac{\sqrt{2}\,\sqrt{a+b\log\left(c(d+ex)^n\right)}}{\sqrt{b}\,\sqrt{n}}\right)}{\sqrt{b}\,e^3\sqrt{n}}+\frac{\sqrt{\pi}\,e^{-\frac{a}{bn}}(d+ex)(ef-dg)^2\left(c(d+ex)^n\right)^{-1/n}\operatorname{Erfi}\left(\frac{\sqrt{a+b\log\left(c(d+ex)^n\right)}}{\sqrt{b}\,\sqrt{n}}\right)}{\sqrt{b}\,e^3\sqrt{n}}+\frac{\sqrt{\frac{\pi}{3}}\,g^2e^{-\frac{3a}{bn}}(d+ex)^3\left(c(d+ex)^n\right)^{-3/n}\operatorname{Erfi}\left(\frac{\sqrt{3}\,\sqrt{a+b\log\left(c(d+ex)^n\right)}}{\sqrt{b}\,\sqrt{n}}\right)}{\sqrt{b}\,e^3\sqrt{n}}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)^2/Sqrt[a + b*Log[c*(d + e*x)^n]],x]
```

```
[Out] ((e*f - d*g)^2*Sqrt[Pi]*(d + e*x)*Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]]/(Sqrt
[b]*Sqrt[n])])/(Sqrt[b]*e^3*E^(a/(b*n))*Sqrt[n]*(c*(d + e*x)^n)^n^(-1)) + (
g*(e*f - d*g)*Sqrt[2*Pi]*(d + e*x)^2*Erfi[(Sqrt[2]*Sqrt[a + b*Log[c*(d + e*
x)^n]])/(Sqrt[b]*Sqrt[n])])/(Sqrt[b]*e^3*E^((2*a)/(b*n))*Sqrt[n]*(c*(d + e*
x)^n)^(2/n)) + (g^2*Sqrt[Pi/3]*(d + e*x)^3*Erfi[(Sqrt[3]*Sqrt[a + b*Log[c*(
d + e*x)^n]])/(Sqrt[b]*Sqrt[n])])/(Sqrt[b]*e^3*E^((3*a)/(b*n))*Sqrt[n]*(c*(
d + e*x)^n)^(3/n))
```

Rule 2211

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - c*(f/d)) + f*g*(x^2/d)), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !TrueQ[$UseGamma]
```

Rule 2235

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[F^a*Sqrt
[Pi]*(Erfi[(c + d*x)*Rt[b*Log[F], 2]]/(2*d*Rt[b*Log[F], 2])), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2337

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2347

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_)*((d_.)*(x_))^(m_.), x_Symbol
] :> Dist[(d*x)^(m + 1)/(d*n*(c*x^n)^((m + 1)/n)), Subst[Int[E^(((m + 1)/n)
*x)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b, c, d, m, n, p}, x]
```

Rule 2436

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2437

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[(f*(x/d))^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2448

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q*(a + b*Log[c*(d
 + e*x)^n])^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f -
 d*g, 0] && IGtQ[q, 0]
```

Rubi steps

$$\int \frac{(f+gx)^2}{\sqrt{a+b\log\left(c(d+ex)^n\right)}}\,dx = \int \left(\frac{(ef-dg)^2}{e^2\sqrt{a+b\log\left(c(d+ex)^n\right)}} + \frac{2g(ef-dg)(d+ex)}{e^2\sqrt{a+b\log\left(c(d+ex)^n\right)}} + \frac{}{e^2\sqrt{a+}}\right.$$

$$= \frac{g^2\int\frac{(d+ex)^2}{\sqrt{a+b\log\left(c(d+ex)^n\right)}}\,dx}{e^2} + \frac{(2g(ef-dg))\int\frac{d+ex}{\sqrt{a+b\log\left(c(d+e\right.}}}{e^2}$$

$$= \frac{g^2\text{Subst}\left(\int\frac{x^2}{\sqrt{a+b\log\left(cx^n\right)}}\,dx,x,d+ex\right)}{e^3} + \frac{(2g(ef-dg))\text{Subst}\left(\int -\right.}{}$$

$$= \frac{\left(g^2(d+ex)^3\left(c(d+ex)^n\right)^{-3/n}\right)\text{Subst}\left(\int\frac{e^{\frac{3x}{n}}}{\sqrt{a+bx}}\,dx,x,\log\left(c(d+ex)^n\right)\right.}{e^3n}$$

$$= \frac{\left(2g^2(d+ex)^3\left(c(d+ex)^n\right)^{-3/n}\right)\text{Subst}\left(\int e^{-\frac{3a}{bn}+\frac{3x^2}{bn}}\,dx,x,\sqrt{a+b\log\left(c(d\right.}\right.}{be^3n}$$

$$= \frac{e^{-\frac{a}{bn}}(ef-dg)^2\sqrt{\pi}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\text{erfi}\left(\frac{\sqrt{a+b\log\left(c(d+ex)\right.}}{\sqrt{b}\sqrt{n}}\right.}{\sqrt{b}\,e^3\sqrt{n}}$$

Mathematica [A]
time = 0.17, size = 252, normalized size = 0.89

$$\frac{e^{-\frac{3a}{bn}}\sqrt{\pi}(d+ex)\left(c(d+ex)^n\right)^{-3/n}\left(3e^{\frac{2a}{bn}}(ef-dg)^2\left(c(d+ex)^n\right)^{2/n}\text{erfi}\left(\frac{\sqrt{a+b\log\left(c(d+ex)^n\right)}}{\sqrt{b}\sqrt{n}}\right)+3\sqrt{2}e^{\frac{a}{bn}}g(ef-dg)(d+ex)\left(c(d+ex)^n\right)^{\frac{1}{n}}\text{erfi}\left(\frac{\sqrt{2}\sqrt{a+b\log\left(c(d+ex)^n\right)}}{\sqrt{b}\sqrt{n}}\right)+\sqrt{3}g^2(d+ex)^2\text{erfi}\left(\frac{\sqrt{3}\sqrt{a+b\log\left(c(d+ex)^n\right)}}{\sqrt{b}\sqrt{n}}\right)\right)}{3\sqrt{b}\,e^3\sqrt{n}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)^2/Sqrt[a + b*Log[c*(d + e*x)^n]],x]
```

```
[Out] (Sqrt[Pi]*(d + e*x)*(3*E^((2*a)/(b*n))*(e*f - d*g)^2*(c*(d + e*x)^n)^(2/n)*
Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]]/(Sqrt[b]*Sqrt[n])] + 3*Sqrt[2]*E^(a/(b*
n))*g*(e*f - d*g)*(d + e*x)*(c*(d + e*x)^n)^n^(-1)*Erfi[(Sqrt[2]*Sqrt[a + b
*Log[c*(d + e*x)^n]])/(Sqrt[b]*Sqrt[n])] + Sqrt[3]*g^2*(d + e*x)^2*Erfi[(Sq
rt[3]*Sqrt[a + b*Log[c*(d + e*x)^n]])/(Sqrt[b]*Sqrt[n])]))/(3*Sqrt[b]*e^3*E
^((3*a)/(b*n))*Sqrt[n]*(c*(d + e*x)^n)^(3/n))
```

Maple [F]
time = 0.18, size = 0, normalized size = 0.00

$$\int \frac{(gx+f)^2}{\sqrt{a+b\ln\left(c\,(ex+d)^n\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^2/(a+b*ln(c*(e*x+d)^n))^(1/2),x)
```

```
[Out] int((g*x+f)^2/(a+b*ln(c*(e*x+d)^n))^(1/2),x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2/(a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="maxima")
```

```
[Out] integrate((g*x + f)^2/sqrt(b*log((x*e + d)^n*c) + a), x)
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2/(a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(f+gx)^2}{\sqrt{a+b\log\left(c\left(d+ex\right)^n\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**2/(a+b*ln(c*(e*x+d)**n))**(1/2),x)
```

```
[Out] Integral((f + g*x)**2/sqrt(a + b*log(c*(d + e*x)**n)), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2/(a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="giac")
```

```
[Out] integrate((g*x + f)^2/sqrt(b*log((x*e + d)^n*c) + a), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(f+g\,x)^2}{\sqrt{a+b\,\ln\left(c\,(d+e\,x)^n\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)^2/(a + b*log(c*(d + e*x)^n))^(1/2),x)
[Out] int((f + g*x)^2/(a + b*log(c*(d + e*x)^n))^(1/2), x)
```

3.125 $\int \frac{f+gx}{\sqrt{a+b\log(c(d+ex)^n)}}\,dx$

Optimal. Leaf size=181

$$\frac{e^{-\frac{a}{bn}}(ef-dg)\sqrt{\pi}\,(d+ex)\,(c(d+ex)^n)^{-1/n}\operatorname{erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{\sqrt{b}\,e^2\sqrt{n}}+\frac{e^{-\frac{2a}{bn}}g\sqrt{\frac{\pi}{2}}\,(d+ex)^2\,(c(d+ex$$

```
[Out] 1/2*g*(e*x+d)^2*erfi(2^(1/2)*(a+b*ln(c*(e*x+d)^n))^(1/2)/b^(1/2)/n^(1/2))*2
^(1/2)*Pi^(1/2)/e^2/exp(2*a/b/n)/((c*(e*x+d)^n)^(2/n))/b^(1/2)/n^(1/2)+(-d*
g+e*f)*(e*x+d)*erfi((a+b*ln(c*(e*x+d)^n))^(1/2)/b^(1/2)/n^(1/2))*Pi^(1/2)/e
^2/exp(a/b/n)/((c*(e*x+d)^n)^(1/n))/b^(1/2)/n^(1/2)
```

Rubi [A]
time = 0.21, antiderivative size = 181, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 7, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.292$, Rules used = {2448, 2436, 2337, 2211, 2235, 2437, 2347}

$$\frac{\sqrt{\pi}\,e^{-\frac{a}{bn}}(d+ex)(ef-dg)\,(c(d+ex)^n)^{-1/n}\operatorname{Erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{\sqrt{b}\,e^2\sqrt{n}}+\frac{\sqrt{\frac{\pi}{2}}\,ge^{-\frac{2a}{bn}}(d+ex)^2\,(c(d+ex)^n)^{-2/n}\operatorname{Erfi}\left(\frac{\sqrt{2}\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{\sqrt{b}\,e^2\sqrt{n}}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)/Sqrt[a + b*Log[c*(d + e*x)^n]],x]
```

```
[Out] ((e*f - d*g)*Sqrt[Pi]*(d + e*x)*Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]]/(Sqrt[b
]*Sqrt[n])])/(Sqrt[b]*e^2*E^(a/(b*n))*Sqrt[n]*(c*(d + e*x)^n)^n^(-1)) + (g*
Sqrt[Pi/2]*(d + e*x)^2*Erfi[(Sqrt[2]*Sqrt[a + b*Log[c*(d + e*x)^n]])/(Sqrt[
b]*Sqrt[n])])/(Sqrt[b]*e^2*E^((2*a)/(b*n))*Sqrt[n]*(c*(d + e*x)^n)^(2/n))
```

Rule 2211

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - c*(f/d)) + f*g*(x^2/d)), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !TrueQ[$UseGamma]
```

Rule 2235

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[F^a*Sqrt
[Pi]*(Erfi[(c + d*x)*Rt[b*Log[F], 2]]/(2*d*Rt[b*Log[F], 2])), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2337

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
```

```
{a, b, c, n, p}, x]
```

Rule 2347

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_)*((d_.)*(x_))^(m_.), x_Symbol
] :> Dist[(d*x)^(m + 1)/(d*n*(c*x^n)^((m + 1)/n)), Subst[Int[E^(((m + 1)/n)
*x)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b, c, d, m, n, p}, x]
```

Rule 2436

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2437

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[(f*(x/d))^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2448

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q*(a + b*Log[c*(d
 + e*x)^n])^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f -
 d*g, 0] && IGtQ[q, 0]
```

Rubi steps

$$\int \frac{f+gx}{\sqrt{a+b\log\left(c(d+ex)^n\right)}}\,dx = \int \left(\frac{ef-dg}{e\sqrt{a+b\log\left(c(d+ex)^n\right)}} + \frac{g(d+ex)}{e\sqrt{a+b\log\left(c(d+ex)^n\right)}}\right)dx$$

$$= \frac{g\int \frac{d+ex}{\sqrt{a+b\log\left(c(d+ex)^n\right)}}\,dx}{e} + \frac{(ef-dg)\int \frac{1}{\sqrt{a+b\log\left(c(d+ex)^n\right)}}\,d}{e}$$

$$= \frac{g\text{Subst}\left(\int \frac{x}{\sqrt{a+b\log\left(cx^n\right)}}\,dx, x, d+ex\right)}{e^2} + \frac{(ef-dg)\text{Subst}\left(\int \frac{}{\sqrt{a+b}}\right.}{e^2}$$

$$= \frac{\left(g(d+ex)^2\left(c(d+ex)^n\right)^{-2/n}\right)\text{Subst}\left(\int \frac{e^{\frac{2x}{n}}}{\sqrt{a+bx}}\,dx, x, \log\left(c(d+ex)^n\right)\right)}{e^2n}$$

$$= \frac{\left(2g(d+ex)^2\left(c(d+ex)^n\right)^{-2/n}\right)\text{Subst}\left(\int e^{-\frac{2a}{bn}+\frac{2x^2}{bn}}\,dx, x, \sqrt{a+b\log\left(c(d+\right.}\right.}{be^2n}$$

$$= \frac{e^{-\frac{a}{bn}}(ef-dg)\sqrt{\pi}\,(d+ex)\left(c(d+ex)^n\right)^{-1/n}\text{erfi}\left(\frac{\sqrt{a+b\log\left(c(d+ex)^n\right)}}{\sqrt{b}\sqrt{n}}\right.}{\sqrt{b}\,e^2\sqrt{n}}$$

Mathematica [A]
time = 0.10, size = 164, normalized size = 0.91

$$\frac{e^{-\frac{2a}{bn}}\sqrt{\pi}\,(d+ex)\left(c(d+ex)^n\right)^{-2/n}\left(2e^{\frac{a}{bn}}(ef-dg)\left(c(d+ex)^n\right)^{\frac{1}{n}}\text{erfi}\left(\frac{\sqrt{a+b\log\left(c(d+ex)^n\right)}}{\sqrt{b}\sqrt{n}}\right)+\sqrt{2}\,g(d+ex)\text{erfi}\left(\frac{\sqrt{2}\sqrt{a+b\log\left(c(d+ex)^n\right)}}{\sqrt{b}\sqrt{n}}\right)\right)}{2\sqrt{b}\,e^2\sqrt{n}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)/Sqrt[a + b*Log[c*(d + e*x)^n]],x]
```

```
[Out] (Sqrt[Pi]*(d + e*x)*(2*E^(a/(b*n))*(e*f - d*g)*(c*(d + e*x)^n)^n^(-1)*Erfi[
Sqrt[a + b*Log[c*(d + e*x)^n]]/(Sqrt[b]*Sqrt[n])] + Sqrt[2]*g*(d + e*x)*Erf
i[(Sqrt[2]*Sqrt[a + b*Log[c*(d + e*x)^n]])/(Sqrt[b]*Sqrt[n])]))/(2*Sqrt[b]*
e^2*E^((2*a)/(b*n))*Sqrt[n]*(c*(d + e*x)^n)^(2/n))
```

Maple [F]
time = 0.04, size = 0, normalized size = 0.00

$$\int \frac{gx+f}{\sqrt{a+b\ln\left(c\left(ex+d\right)^n\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)/(a+b*ln(c*(e*x+d)^n))^(1/2),x)
```

```
[Out] int((g*x+f)/(a+b*ln(c*(e*x+d)^n))^(1/2),x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="maxima")
[Out] integrate((g*x + f)/sqrt(b*log((x*e + d)^n*c) + a), x)
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="fricas")
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{f + gx}{\sqrt{a + b\log\left(c\left(d + ex\right)^{n}\right)}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(a+b*ln(c*(e*x+d)**n))**(1/2),x)
[Out] Integral((f + g*x)/sqrt(a + b*log(c*(d + e*x)**n)), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="giac")
[Out] integrate((g*x + f)/sqrt(b*log((x*e + d)^n*c) + a), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{f+g\,x}{\sqrt{a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)/(a + b*log(c*(d + e*x)^n))^(1/2),x)
[Out] int((f + g*x)/(a + b*log(c*(d + e*x)^n))^(1/2), x)
```

3.126 $\int \frac{1}{\sqrt{a+b\log\left(c(d+ex)^n\right)}}\,dx$

Optimal. Leaf size=80

$$\frac{e^{-\frac{a}{bn}}\sqrt{\pi}\,(d+ex)\left(c(d+ex)^n\right)^{-1/n}\operatorname{erfi}\left(\frac{\sqrt{a+b\log\left(c(d+ex)^n\right)}}{\sqrt{b}\,\sqrt{n}}\right)}{\sqrt{b}\,e\sqrt{n}}$$

```
[Out] (e*x+d)*erfi((a+b*ln(c*(e*x+d)^n))^(1/2)/b^(1/2)/n^(1/2))*Pi^(1/2)/e/exp(a/
b/n)/((c*(e*x+d)^n)^(1/n))/b^(1/2)/n^(1/2)
```

Rubi [A]
time = 0.06, antiderivative size = 80, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}} = 0.222$, Rules used = {2436, 2337, 2211, 2235}

$$\frac{\sqrt{\pi}\,e^{-\frac{a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\operatorname{Erfi}\left(\frac{\sqrt{a+b\log\left(c(d+ex)^n\right)}}{\sqrt{b}\,\sqrt{n}}\right)}{\sqrt{b}\,e\sqrt{n}}$$

Antiderivative was successfully verified.

```
[In] Int[1/Sqrt[a + b*Log[c*(d + e*x)^n]],x]
```

```
[Out] (Sqrt[Pi]*(d + e*x)*Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]]/(Sqrt[b]*Sqrt[n])])
/(Sqrt[b]*e*E^(a/(b*n))*Sqrt[n]*(c*(d + e*x)^n)^n^(-1))
```

Rule 2211

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - c*(f/d)) + f*g*(x^2/d)), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !TrueQ[$UseGamma]
```

Rule 2235

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[F^a*Sqrt
[Pi]*(Erfi[(c + d*x)*Rt[b*Log[F], 2]]/(2*d*Rt[b*Log[F], 2])), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2337

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2436

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rubi steps

$$\begin{aligned}
\int \frac{1}{\sqrt{a+b\log\left(c(d+ex)^n\right)}}\,dx &= \frac{\text{Subst}\left(\int \frac{1}{\sqrt{a+b\log\left(cx^n\right)}}\,dx, x, d+ex\right)}{e}\\
&= \frac{\left((d+ex)\left(c(d+ex)^n\right)^{-1/n}\right)\text{Subst}\left(\int \frac{e^{\frac{x}{n}}}{\sqrt{a+bx}}\,dx, x, \log\left(c(d+ex)^n\right)\right)}{en}\\
&= \frac{\left(2(d+ex)\left(c(d+ex)^n\right)^{-1/n}\right)\text{Subst}\left(\int e^{-\frac{a}{bn}+\frac{x^2}{bn}}\,dx, x, \sqrt{a+b\log\left(c(d+ex\right.}\right.}{ben}\\
&= \frac{e^{-\frac{a}{bn}}\sqrt{\pi}\,(d+ex)\left(c(d+ex)^n\right)^{-1/n}\operatorname{erfi}\left(\frac{\sqrt{a+b\log\left(c(d+ex)^n\right)}}{\sqrt{b}\sqrt{n}}\right)}{\sqrt{b}\,e\sqrt{n}}
\end{aligned}$$

Mathematica [A]
time = 0.01, size = 80, normalized size = 1.00

$$\frac{e^{-\frac{a}{bn}}\sqrt{\pi}\,(d+ex)\left(c(d+ex)^n\right)^{-1/n}\operatorname{erfi}\left(\frac{\sqrt{a+b\log\left(c(d+ex)^n\right)}}{\sqrt{b}\sqrt{n}}\right)}{\sqrt{b}\,e\sqrt{n}}$$

Antiderivative was successfully verified.

```
[In] Integrate[1/Sqrt[a + b*Log[c*(d + e*x)^n]],x]
```

```
[Out] (Sqrt[Pi]*(d + e*x)*Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]]/(Sqrt[b]*Sqrt[n])])
/(Sqrt[b]*e*E^(a/(b*n))*Sqrt[n]*(c*(d + e*x)^n)^n^(-1))
```

Maple [F]
time = 0.02, size = 0, normalized size = 0.00

$$\int \frac{1}{\sqrt{a+b\ln\left(c\left(ex+d\right)^{n}\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+b*ln(c*(e*x+d)^n))^(1/2),x)
```

```
[Out] int(1/(a+b*ln(c*(e*x+d)^n))^(1/2),x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="maxima")
[Out] integrate(1/sqrt(b*log((x*e + d)^n*c) + a), x)
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="fricas")
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\sqrt{a + b \log \left(c \left(d + ex\right)^{n}\right)}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*ln(c*(e*x+d)**n))**(1/2),x)
[Out] Integral(1/sqrt(a + b*log(c*(d + e*x)**n)), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="giac")
[Out] integrate(1/sqrt(b*log((x*e + d)^n*c) + a), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{1}{\sqrt{a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a + b*log(c*(d + e*x)^n))^(1/2),x)
[Out] int(1/(a + b*log(c*(d + e*x)^n))^(1/2), x)
```

3.127 $\int \frac{1}{(f+gx)\sqrt{a+b\log(c(d+ex)^n)}}\,dx$

Optimal. Leaf size=29

$$\text{Int}\left(\frac{1}{(f+gx)\sqrt{a+b\log(c(d+ex)^n)}},x\right)$$

```
[Out] Unintegrable(1/(g*x+f)/(a+b*ln(c*(e*x+d)^n))^(1/2),x)
```

Rubi [A]
time = 0.03, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{1}{(f+gx)\sqrt{a+b\log(c(d+ex)^n)}}\,dx$$

Verification is not applicable to the result.

```
[In] Int[1/((f + g*x)*Sqrt[a + b*Log[c*(d + e*x)^n]]),x]
[Out] Defer[Int][1/((f + g*x)*Sqrt[a + b*Log[c*(d + e*x)^n]]), x]
```

Rubi steps

$$\int \frac{1}{(f+gx)\sqrt{a+b\log(c(d+ex)^n)}}\,dx=\int \frac{1}{(f+gx)\sqrt{a+b\log(c(d+ex)^n)}}\,dx$$

Mathematica [A]
time = 0.06, size = 0, normalized size = 0.00

$$\int \frac{1}{(f+gx)\sqrt{a+b\log(c(d+ex)^n)}}\,dx$$

Verification is not applicable to the result.

```
[In] Integrate[1/((f + g*x)*Sqrt[a + b*Log[c*(d + e*x)^n]]),x]
[Out] Integrate[1/((f + g*x)*Sqrt[a + b*Log[c*(d + e*x)^n]]), x]
```

Maple [A]
time = 0.16, size = 0, normalized size = 0.00

$$\int \frac{1}{(gx+f)\sqrt{a+b\ln\left(c\left(ex+d\right)^{n}\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(g*x+f)/(a+b*ln(c*(e*x+d)^n))^(1/2),x)
```

```
[Out] int(1/(g*x+f)/(a+b*ln(c*(e*x+d)^n))^(1/2),x)
```

Maxima [A]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="maxima")
```

```
[Out] integrate(1/((g*x + f)*sqrt(b*log((x*e + d)^n*c) + a)), x)
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [A]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\sqrt{a + b \log{\left(c \left(d + e x\right)^{n} \right)}} \left(f + g x\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(a+b*ln(c*(e*x+d)**n))**(1/2),x)
```

```
[Out] Integral(1/(sqrt(a + b*log(c*(d + e*x)**n))*(f + g*x)), x)
```

Giac [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="giac")
```

```
[Out] integrate(1/((g*x + f)*sqrt(b*log((x*e + d)^n*c) + a)), x)
```

Mupad [A]
time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{1}{(f+gx)\sqrt{a+b\ln\left(c\left(d+ex\right)^n\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((f + g*x)*(a + b*log(c*(d + e*x)^n))^(1/2)),x)
[Out] int(1/((f + g*x)*(a + b*log(c*(d + e*x)^n))^(1/2)), x)
```

3.128 $\int \frac{(f+gx)^3}{(a+b\log(c(d+ex)^n))^{3/2}} \, dx$

Optimal. Leaf size=422

$$\frac{2e^{-\frac{a}{bn}}(ef-dg)^3\sqrt{\pi}\,(d+ex)\,(c(d+ex)^n)^{-1/n}\,\mathrm{erfi}\left(\frac{\sqrt{a+b\log\left(c(d+ex)^n\right)}}{\sqrt{b}\,\sqrt{n}}\right)}{b^{3/2}e^4n^{3/2}}+\frac{4e^{-\frac{4a}{bn}}g^3\sqrt{\pi}\,(d+ex)^4\,(c(d+$$

```
[Out] 2*(-d*g+e*f)^3*(e*x+d)*erfi((a+b*ln(c*(e*x+d)^n))^(1/2)/b^(1/2)/n^(1/2))*Pi
^(1/2)/b^(3/2)/e^4/exp(a/b/n)/n^(3/2)/((c*(e*x+d)^n)^(1/n))+4*g^3*(e*x+d)^4
*erfi(2*(a+b*ln(c*(e*x+d)^n))^(1/2)/b^(1/2)/n^(1/2))*Pi^(1/2)/b^(3/2)/e^4/e
xp(4*a/b/n)/n^(3/2)/((c*(e*x+d)^n)^(4/n))+6*g*(-d*g+e*f)^2*(e*x+d)^2*erfi(2
^(1/2)*(a+b*ln(c*(e*x+d)^n))^(1/2)/b^(1/2)/n^(1/2))*2^(1/2)*Pi^(1/2)/b^(3/2
)/e^4/exp(2*a/b/n)/n^(3/2)/((c*(e*x+d)^n)^(2/n))+6*g^2*(-d*g+e*f)*(e*x+d)^3
*erfi(3^(1/2)*(a+b*ln(c*(e*x+d)^n))^(1/2)/b^(1/2)/n^(1/2))*3^(1/2)*Pi^(1/2)
/b^(3/2)/e^4/exp(3*a/b/n)/n^(3/2)/((c*(e*x+d)^n)^(3/n))-2*(e*x+d)*(g*x+f)^3
/b/e/n/(a+b*ln(c*(e*x+d)^n))^(1/2)
```

Rubi [A]
time = 0.96, antiderivative size = 422, normalized size of antiderivative = 1.00, number of steps used = 33, number of rules used = 8, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.308$, Rules used = {2447, 2448, 2436, 2337, 2211, 2235, 2437, 2347}

$$\frac{6\sqrt{3\pi}\,g^2e^{-\frac{3a}{bn}}(d+ex)^3(ef-dg)\,(c(d+ex)^n)^{-3/n}\,\mathrm{Erfi}\left(\frac{\sqrt{3}\,\sqrt{a+b\log\left(c(d+ex)^n\right)}}{\sqrt{b}\,\sqrt{n}}\right)}{b^{3/2}e^4n^{3/2}}+\frac{6\sqrt{2\pi}\,ge^{-\frac{2a}{bn}}(d+ex)^2(ef-dg)^2\,(c(d+ex)^n)^{-2/n}\,\mathrm{Erfi}\left(\frac{\sqrt{2}\,\sqrt{a+b\log\left(c(d+ex)^n\right)}}{\sqrt{b}\,\sqrt{n}}\right)}{b^{3/2}e^4n^{3/2}}+\frac{2\sqrt{\pi}\,e^{-\frac{a}{bn}}(d+ex)(ef-dg)^3\,(c(d+ex)^n)^{-1/n}\,\mathrm{Erfi}\left(\frac{\sqrt{a+b\log\left(c(d+ex)^n\right)}}{\sqrt{b}\,\sqrt{n}}\right)}{b^{3/2}e^4n^{3/2}}+\frac{4\sqrt{\pi}\,g^3e^{-\frac{4a}{bn}}(d+ex)^4\,(c(d+ex)^n)^{-4/n}\,\mathrm{Erfi}\left(\frac{2\sqrt{a+b\log\left(c(d+ex)^n\right)}}{\sqrt{b}\,\sqrt{n}}\right)}{b^{3/2}e^4n^{3/2}}-\frac{2(d+ex)(f+gx)^3}{ben\sqrt{a+b\log\left(c(d+ex)^n\right)}}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)^3/(a + b*Log[c*(d + e*x)^n])^(3/2),x]
```

```
[Out] (2*(e*f - d*g)^3*Sqrt[Pi]*(d + e*x)*Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]]/(Sq
rt[b]*Sqrt[n])])/(b^(3/2)*e^4*E^(a/(b*n))*n^(3/2)*(c*(d + e*x)^n)^n^(-1)) +
 (4*g^3*Sqrt[Pi]*(d + e*x)^4*Erfi[(2*Sqrt[a + b*Log[c*(d + e*x)^n]])/(Sqrt[
b]*Sqrt[n])])/(b^(3/2)*e^4*E^((4*a)/(b*n))*n^(3/2)*(c*(d + e*x)^n)^(4/n)) +
 (6*g*(e*f - d*g)^2*Sqrt[2*Pi]*(d + e*x)^2*Erfi[(Sqrt[2]*Sqrt[a + b*Log[c*(
d + e*x)^n]])/(Sqrt[b]*Sqrt[n])])/(b^(3/2)*e^4*E^((2*a)/(b*n))*n^(3/2)*(c*(
d + e*x)^n)^(2/n)) + (6*g^2*(e*f - d*g)*Sqrt[3*Pi]*(d + e*x)^3*Erfi[(Sqrt[3
]*Sqrt[a + b*Log[c*(d + e*x)^n]])/(Sqrt[b]*Sqrt[n])])/(b^(3/2)*e^4*E^((3*a)
/(b*n))*n^(3/2)*(c*(d + e*x)^n)^(3/n)) - (2*(d + e*x)*(f + g*x)^3)/(b*e*n*S
qrt[a + b*Log[c*(d + e*x)^n]])
```

Rule 2211

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - c*(f/d)) + f*g*(x^2/d)), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !TrueQ[$UseGamma]
```

Rule 2235

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[F^a*Sqrt
[Pi]*(Erfi[(c + d*x)*Rt[b*Log[F], 2]]/(2*d*Rt[b*Log[F], 2])), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2337

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2347

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_)*((d_.)*(x_))^(m_.), x_Symbol
] :> Dist[(d*x)^(m + 1)/(d*n*(c*x^n)^((m + 1)/n)), Subst[Int[E^(((m + 1)/n)
*x)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b, c, d, m, n, p}, x]
```

Rule 2436

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2437

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[(f*(x/d))^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2447

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[(d + e*x)*(f + g*x)^q*((a + b*Log[c*(d + e
*x)^n])^(p + 1)/(b*e*n*(p + 1))), x] + (-Dist[(q + 1)/(b*n*(p + 1)), Int[(f
 + g*x)^q*(a + b*Log[c*(d + e*x)^n])^(p + 1), x], x] + Dist[q*((e*f - d*g)/
(b*e*n*(p + 1))), Int[(f + g*x)^(q - 1)*(a + b*Log[c*(d + e*x)^n])^(p + 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0] && LtQ[
p, -1] && GtQ[q, 0]
```

Rule 2448

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q*(a + b*Log[c*(d
 + e*x)^n])^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f -
```

```
d*g, 0] && IGtQ[q, 0]
```

Rubi steps

$$\int \frac{(f+gx)^3}{(a+b\log(c(d+ex)^n))^{3/2}}\,dx = -\frac{2(d+ex)(f+gx)^3}{ben\sqrt{a+b\log(c(d+ex)^n)}} + \frac{8\int \frac{(f+gx)^3}{\sqrt{a+b\log(c(d+ex)^n)}}\,dx}{bn} - \frac{(6(e$$

$$= -\frac{2(d+ex)(f+gx)^3}{ben\sqrt{a+b\log(c(d+ex)^n)}} + \frac{8\int \left(\frac{(ef-dg)^3}{e^3\sqrt{a+b\log(c(d+ex)^n)}} + \frac{}{e^3\sqrt{}}\right.}{}$$

$$= -\frac{2(d+ex)(f+gx)^3}{ben\sqrt{a+b\log(c(d+ex)^n)}} + \frac{(8g^3)\int \frac{(d+ex)^3}{\sqrt{a+b\log(c(d+ex)^n)}}\,dx}{be^3n} - $$

$$= -\frac{2(d+ex)(f+gx)^3}{ben\sqrt{a+b\log(c(d+ex)^n)}} + \frac{(8g^3)\,\mathrm{Subst}\left(\int \frac{x^3}{\sqrt{a+b\log(cx^n)}}\,dx, x, \right.}{be^4n}$$

$$= -\frac{2(d+ex)(f+gx)^3}{ben\sqrt{a+b\log(c(d+ex)^n)}} + \frac{\left(8g^3(d+ex)^4\,(c(d+ex)^n)^{-4/n}\right)\mathrm{Subst}\left(\right.}{be^4n}$$

$$= -\frac{2(d+ex)(f+gx)^3}{ben\sqrt{a+b\log(c(d+ex)^n)}} + \frac{\left(16g^3(d+ex)^4\,(c(d+ex)^n)^{-4/n}\right)\mathrm{Subst}}{b}$$

$$= \frac{2e^{-\frac{a}{bn}}(ef-dg)^3\sqrt{\pi}\,(d+ex)\,(c(d+ex)^n)^{-1/n}\,\mathrm{erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)}}{\sqrt{b}\sqrt{n}}\right.}{b^{3/2}e^4n^{3/2}}$$

Mathematica [B] Leaf count is larger than twice the leaf count of optimal. 1667 vs. $2(422) = 844$.
time = 5.48, size = 1667, normalized size = 3.95

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)^3/(a + b*Log[c*(d + e*x)^n])^(3/2),x]
```

```
[Out] (2*(d + e*x)*((-3*e*f*g^2*Sqrt[Pi]*(Sqrt[3]*(d + e*x)^2 - 3*Sqrt[2]*d*E^(a/
(b*n))*(d + e*x)*(c*(d + e*x)^n)^n^(-1) + 3*d^2*E^((2*a)/(b*n))*(c*(d + e*x
)^n)^(2/n) - 3*d^2*E^((2*a)/(b*n))*(c*(d + e*x)^n)^(2/n)*Erf[Sqrt[-((a + b*
Log[c*(d + e*x)^n])/(b*n))]] + 3*Sqrt[2]*d*E^(a/(b*n))*(d + e*x)*(c*(d + e*
```

```
x)^n)^n^(-1)*Erf[Sqrt[2]*Sqrt[-((a + b*Log[c*(d + e*x)^n])/(b*n))]] - Sqrt[
3]*(d + e*x)^2*Erf[Sqrt[3]*Sqrt[-((a + b*Log[c*(d + e*x)^n])/(b*n))]])*(a +
 b*Log[c*(d + e*x)^n]))/(E^((3*a)/(b*n))*(c*(d + e*x)^n)^(3/n)) - (d*g^3*Sq
rt[Pi]*(Sqrt[3]*(d + e*x)^2 - 3*Sqrt[2]*d*E^(a/(b*n))*(d + e*x)*(c*(d + e*x
)^n)^n^(-1) + 3*d^2*E^((2*a)/(b*n))*(c*(d + e*x)^n)^(2/n) - 3*d^2*E^((2*a)/
(b*n))*(c*(d + e*x)^n)^(2/n)*Erf[Sqrt[-((a + b*Log[c*(d + e*x)^n])/(b*n))]]
 + 3*Sqrt[2]*d*E^(a/(b*n))*(d + e*x)*(c*(d + e*x)^n)^n^(-1)*Erf[Sqrt[2]*Sqr
t[-((a + b*Log[c*(d + e*x)^n])/(b*n))]] - Sqrt[3]*(d + e*x)^2*Erf[Sqrt[3]*S
qrt[-((a + b*Log[c*(d + e*x)^n])/(b*n))]])*(a + b*Log[c*(d + e*x)^n]))/(E^(
(3*a)/(b*n))*(c*(d + e*x)^n)^(3/n)) - (2*g^3*Sqrt[Pi]*((d + e*x)^3 - 2*Sqrt
[3]*d*E^(a/(b*n))*(d + e*x)^2*(c*(d + e*x)^n)^n^(-1) + 3*Sqrt[2]*d^2*E^((2*
a)/(b*n))*(d + e*x)*(c*(d + e*x)^n)^(2/n) - 2*d^3*E^((3*a)/(b*n))*(c*(d + e
*x)^n)^(3/n) + 2*d^3*E^((3*a)/(b*n))*(c*(d + e*x)^n)^(3/n)*Erf[Sqrt[-((a +
b*Log[c*(d + e*x)^n])/(b*n))]] - (d + e*x)^3*Erf[2*Sqrt[-((a + b*Log[c*(d +
 e*x)^n])/(b*n))]] - 3*Sqrt[2]*d^2*E^((2*a)/(b*n))*(d + e*x)*(c*(d + e*x)^n
)^(2/n)*Erf[Sqrt[2]*Sqrt[-((a + b*Log[c*(d + e*x)^n])/(b*n))]] + 2*Sqrt[3]*
d*E^(a/(b*n))*(d + e*x)^2*(c*(d + e*x)^n)^n^(-1)*Erf[Sqrt[3]*Sqrt[-((a + b*
Log[c*(d + e*x)^n])/(b*n))]])*(a + b*Log[c*(d + e*x)^n]))/(E^((4*a)/(b*n))*
(c*(d + e*x)^n)^(4/n)) - (e^3*f^3*Gamma[1/2, -((a + b*Log[c*(d + e*x)^n])/(
b*n))]*(a + b*Log[c*(d + e*x)^n]))/(E^(a/(b*n))*(c*(d + e*x)^n)^n^(-1)) - (
3*d*e^2*f^2*g*Gamma[1/2, -((a + b*Log[c*(d + e*x)^n])/(b*n))]*(a + b*Log[c*
(d + e*x)^n]))/(E^(a/(b*n))*(c*(d + e*x)^n)^n^(-1)) - b*e^3*n*(f + g*x)^3*S
qrt[-((a + b*Log[c*(d + e*x)^n])/(b*n))] - (3*Sqrt[b]*d*e*f*g^2*Sqrt[n]*Sqr
t[Pi]*(2*d*E^(a/(b*n))*(c*(d + e*x)^n)^n^(-1)*Erfi[Sqrt[a + b*Log[c*(d + e*
x)^n]]/(Sqrt[b]*Sqrt[n])] - Sqrt[2]*(d + e*x)*Erfi[(Sqrt[2]*Sqrt[a + b*Log[
c*(d + e*x)^n]])/(Sqrt[b]*Sqrt[n])])*Sqrt[a + b*Log[c*(d + e*x)^n]]*Sqrt[-(
(a + b*Log[c*(d + e*x)^n])/(b*n))])/(E^((2*a)/(b*n))*(c*(d + e*x)^n)^(2/n))
 + (3*Sqrt[b]*e^2*f^2*g*Sqrt[n]*Sqrt[Pi]*(-2*d*E^(a/(b*n))*(c*(d + e*x)^n)^
n^(-1)*Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]]/(Sqrt[b]*Sqrt[n])] + Sqrt[2]*(d
+ e*x)*Erfi[(Sqrt[2]*Sqrt[a + b*Log[c*(d + e*x)^n]])/(Sqrt[b]*Sqrt[n])])*Sq
rt[a + b*Log[c*(d + e*x)^n]]*Sqrt[-((a + b*Log[c*(d + e*x)^n])/(b*n))])/(E^
((2*a)/(b*n))*(c*(d + e*x)^n)^(2/n))))/(b^2*e^4*n^2*Sqrt[a + b*Log[c*(d + e
*x)^n]]*Sqrt[-((a + b*Log[c*(d + e*x)^n])/(b*n))])
```

Maple [F]
time = 0.17, size = 0, normalized size = 0.00

$$\int \frac{(gx+f)^3}{(a+b\ln(c(ex+d)^n))^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^3/(a+b*ln(c*(e*x+d)^n))^(3/2),x)
```

```
[Out] int((g*x+f)^3/(a+b*ln(c*(e*x+d)^n))^(3/2),x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^3/(a+b*log(c*(e*x+d)^n))^(3/2),x, algorithm="maxima")
[Out] integrate((g*x + f)^3/(b*log((x*e + d)^n*c) + a)^(3/2), x)
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^3/(a+b*log(c*(e*x+d)^n))^(3/2),x, algorithm="fricas")
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(f+gx)^3}{(a+b\log(c(d+ex)^n))^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**3/(a+b*ln(c*(e*x+d)**n))**(3/2),x)
[Out] Integral((f + g*x)**3/(a + b*log(c*(d + e*x)**n))**(3/2), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^3/(a+b*log(c*(e*x+d)^n))^(3/2),x, algorithm="giac")
[Out] integrate((g*x + f)^3/(b*log((x*e + d)^n*c) + a)^(3/2), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(f+g\,x)^3}{(a+b\,\ln(c\,(d+e\,x)^n))^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)^3/(a + b*log(c*(d + e*x)^n))^(3/2),x)
[Out] int((f + g*x)^3/(a + b*log(c*(d + e*x)^n))^(3/2), x)
```

3.129 $\int \frac{(f+gx)^2}{(a+b\log(c(d+ex)^n))^{3/2}}\,dx$

Optimal. Leaf size=325

$$\frac{2e^{-\frac{a}{bn}}(ef-dg)^2\sqrt{\pi}\,(d+ex)\,(c(d+ex)^n)^{-1/n}\operatorname{erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\,\sqrt{n}}\right)}{b^{3/2}e^3n^{3/2}}+\frac{4e^{-\frac{2a}{bn}}g(ef-dg)\sqrt{2\pi}\,(d+\cdots}{}$$

```
[Out] 2*(-d*g+e*f)^2*(e*x+d)*erfi((a+b*ln(c*(e*x+d)^n))^(1/2)/b^(1/2)/n^(1/2))*Pi
^(1/2)/b^(3/2)/e^3/exp(a/b/n)/n^(3/2)/((c*(e*x+d)^n)^(1/n))+4*g*(-d*g+e*f)*
(e*x+d)^2*erfi(2^(1/2)*(a+b*ln(c*(e*x+d)^n))^(1/2)/b^(1/2)/n^(1/2))*2^(1/2)
*Pi^(1/2)/b^(3/2)/e^3/exp(2*a/b/n)/n^(3/2)/((c*(e*x+d)^n)^(2/n))+2*g^2*(e*x
+d)^3*erfi(3^(1/2)*(a+b*ln(c*(e*x+d)^n))^(1/2)/b^(1/2)/n^(1/2))*3^(1/2)*Pi^
(1/2)/b^(3/2)/e^3/exp(3*a/b/n)/n^(3/2)/((c*(e*x+d)^n)^(3/n))-2*(e*x+d)*(g*x
+f)^2/b/e/n/(a+b*ln(c*(e*x+d)^n))^(1/2)
```

Rubi [A]
time = 0.64, antiderivative size = 325, normalized size of antiderivative = 1.00, number of steps used = 25, number of rules used = 8, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.308$, Rules used = {2447, 2448, 2436, 2337, 2211, 2235, 2437, 2347}

$$\frac{4\sqrt{2\pi}\,ge^{-\frac{2a}{bn}}(d+ex)^2(ef-dg)\,(c(d+ex)^n)^{-2/n}\operatorname{Erfi}\left(\frac{\sqrt{2}\,\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\,\sqrt{n}}\right)}{b^{3/2}e^3n^{3/2}}+\frac{2\sqrt{\pi}\,e^{-\frac{a}{bn}}(d+ex)(ef-dg)^2\,(c(d+ex)^n)^{-1/n}\operatorname{Erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\,\sqrt{n}}\right)}{b^{3/2}e^3n^{3/2}}+\frac{2\sqrt{3\pi}\,g^2e^{-\frac{3a}{bn}}(d+ex)^3\,(c(d+ex)^n)^{-3/n}\operatorname{Erfi}\left(\frac{\sqrt{3}\,\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\,\sqrt{n}}\right)}{b^{3/2}e^3n^{3/2}}-\frac{2(d+ex)(f+gx)^2}{ben\sqrt{a+b\log(c(d+ex)^n)}}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)^2/(a + b*Log[c*(d + e*x)^n])^(3/2),x]
```

```
[Out] (2*(e*f - d*g)^2*Sqrt[Pi]*(d + e*x)*Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]]/(Sq
rt[b]*Sqrt[n])])/(b^(3/2)*e^3*E^(a/(b*n))*n^(3/2)*(c*(d + e*x)^n)^n^(-1)) +
 (4*g*(e*f - d*g)*Sqrt[2*Pi]*(d + e*x)^2*Erfi[(Sqrt[2]*Sqrt[a + b*Log[c*(d
+ e*x)^n]])/(Sqrt[b]*Sqrt[n])])/(b^(3/2)*e^3*E^((2*a)/(b*n))*n^(3/2)*(c*(d
+ e*x)^n)^(2/n)) + (2*g^2*Sqrt[3*Pi]*(d + e*x)^3*Erfi[(Sqrt[3]*Sqrt[a + b*L
og[c*(d + e*x)^n]])/(Sqrt[b]*Sqrt[n])])/(b^(3/2)*e^3*E^((3*a)/(b*n))*n^(3/2
)*(c*(d + e*x)^n)^(3/n)) - (2*(d + e*x)*(f + g*x)^2)/(b*e*n*Sqrt[a + b*Log[
c*(d + e*x)^n]])
```

Rule 2211

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - c*(f/d)) + f*g*(x^2/d)), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !TrueQ[$UseGamma]
```

Rule 2235

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[F^a*Sqrt
[Pi]*(Erfi[(c + d*x)*Rt[b*Log[F], 2]]/(2*d*Rt[b*Log[F], 2])), x] /; FreeQ[{
```

```
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2337

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2347

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_)*((d_.)*(x_))^(m_.), x_Symbol
] :> Dist[(d*x)^(m + 1)/(d*n*(c*x^n)^((m + 1)/n)), Subst[Int[E^(((m + 1)/n)
*x)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b, c, d, m, n, p}, x]
```

Rule 2436

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2437

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[(f*(x/d))^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2447

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[(d + e*x)*(f + g*x)^q*((a + b*Log[c*(d + e
*x)^n])^(p + 1)/(b*e*n*(p + 1))), x] + (-Dist[(q + 1)/(b*n*(p + 1)), Int[(f
 + g*x)^q*(a + b*Log[c*(d + e*x)^n])^(p + 1), x], x] + Dist[q*((e*f - d*g)/
(b*e*n*(p + 1))), Int[(f + g*x)^(q - 1)*(a + b*Log[c*(d + e*x)^n])^(p + 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0] && LtQ[
p, -1] && GtQ[q, 0]
```

Rule 2448

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q*(a + b*Log[c*(d
 + e*x)^n])^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f -
 d*g, 0] && IGtQ[q, 0]
```

Rubi steps

$$\int \frac{(f+gx)^2}{(a+b\log(c(d+ex)^n))^{3/2}}\,dx = -\frac{2(d+ex)(f+gx)^2}{ben\sqrt{a+b\log(c(d+ex)^n)}} + \frac{6\int \frac{(f+gx)^2}{\sqrt{a+b\log(c(d+ex)^n)}}\,dx}{bn} - \frac{(4(\cdots}{\cdots}$$

$$= -\frac{2(d+ex)(f+gx)^2}{ben\sqrt{a+b\log(c(d+ex)^n)}} + \frac{6\int\left(\frac{(ef-dg)^2}{e^2\sqrt{a+b\log(c(d+ex)^n)}} + \frac{\cdots}{e^2\sqrt{\cdots}}\right.}{\cdots}$$

$$= -\frac{2(d+ex)(f+gx)^2}{ben\sqrt{a+b\log(c(d+ex)^n)}} + \frac{(6g^2)\int \frac{(d+ex)^2}{\sqrt{a+b\log(c(d+ex)^n)}}\,dx}{be^2n} - \cdots$$

$$= -\frac{2(d+ex)(f+gx)^2}{ben\sqrt{a+b\log(c(d+ex)^n)}} + \frac{(6g^2)\,\mathrm{Subst}\left(\int \frac{x^2}{\sqrt{a+b\log(cx^n)}}\,dx, x\cdots\right.}{be^3n}$$

$$= -\frac{2(d+ex)(f+gx)^2}{ben\sqrt{a+b\log(c(d+ex)^n)}} + \frac{\left(6g^2(d+ex)^3\left(c(d+ex)^n\right)^{-3/n}\right)\mathrm{Subst}\cdots}{be^3\cdots}$$

$$= -\frac{2(d+ex)(f+gx)^2}{ben\sqrt{a+b\log(c(d+ex)^n)}} + \frac{\left(12g^2(d+ex)^3\left(c(d+ex)^n\right)^{-3/n}\right)\mathrm{Subs}\cdots}{\cdots}$$

$$= \frac{2e^{-\frac{a}{bn}}(ef-dg)^2\sqrt{\pi}\,(d+ex)\left(c(d+ex)^n\right)^{-1/n}\operatorname{erfi}\left(\frac{\sqrt{a+b\log(c(d+e\cdots}}{\sqrt{b}\sqrt{n}}\right.}{b^{3/2}e^3n^{3/2}}$$

Mathematica [B] Leaf count is larger than twice the leaf count of optimal. 901 vs. 2(325) = 650.

time = 2.16, size = 901, normalized size = 2.77

[illegible]

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)^2/(a + b*Log[c*(d + e*x)^n])^(3/2),x]
```

```
[Out] (2*(d + e*x)*(-((Sqrt[b]*d*g^2*Sqrt[n]*Sqrt[Pi]*(2*d*E^(a/(b*n))*(c*(d + e*
x)^n)^n^(-1)*Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]]/(Sqrt[b]*Sqrt[n])] - Sqrt[
2]*(d + e*x)*Erfi[(Sqrt[2]*Sqrt[a + b*Log[c*(d + e*x)^n]])/(Sqrt[b]*Sqrt[n]
)]))/(E^((2*a)/(b*n))*(c*(d + e*x)^n)^(2/n))) + (2*Sqrt[b]*e*f*g*Sqrt[n]*Sq
rt[Pi]*(-2*d*E^(a/(b*n))*(c*(d + e*x)^n)^n^(-1)*Erfi[Sqrt[a + b*Log[c*(d +
e*x)^n]]/(Sqrt[b]*Sqrt[n])] + Sqrt[2]*(d + e*x)*Erfi[(Sqrt[2]*Sqrt[a + b*Lo
g[c*(d + e*x)^n]])/(Sqrt[b]*Sqrt[n])]))/(E^((2*a)/(b*n))*(c*(d + e*x)^n)^(2
```

```
/n)) - (b*e^2*n*(f + g*x)^2)/Sqrt[a + b*Log[c*(d + e*x)^n]] + (g^2*Sqrt[Pi]
*(d + e*x)^2*(-Sqrt[3] + (3*Sqrt[2]*d*E^(a/(b*n))*(c*(d + e*x)^n)^n^(-1))/(
d + e*x) - (3*d^2*E^((2*a)/(b*n))*(c*(d + e*x)^n)^(2/n))/(d + e*x)^2 + (3*d
^2*E^((2*a)/(b*n))*(c*(d + e*x)^n)^(2/n)*Erf[Sqrt[-((a + b*Log[c*(d + e*x)^
n])/(b*n))]])/(d + e*x)^2 - (3*Sqrt[2]*d*E^(a/(b*n))*(c*(d + e*x)^n)^n^(-1)
*Erf[Sqrt[2]*Sqrt[-((a + b*Log[c*(d + e*x)^n])/(b*n))]])/(d + e*x) + Sqrt[3
]*Erf[Sqrt[3]*Sqrt[-((a + b*Log[c*(d + e*x)^n])/(b*n))]])*Sqrt[a + b*Log[c*
(d + e*x)^n]])/(E^((3*a)/(b*n))*(c*(d + e*x)^n)^(3/n)*Sqrt[-((a + b*Log[c*(
d + e*x)^n])/(b*n))]) - (2*d*e*f*g*Gamma[1/2, -((a + b*Log[c*(d + e*x)^n])/
(b*n))]*Sqrt[a + b*Log[c*(d + e*x)^n]])/(E^(a/(b*n))*(c*(d + e*x)^n)^n^(-1)
*Sqrt[-((a + b*Log[c*(d + e*x)^n])/(b*n))]) + (b*e^2*f^2*n*Gamma[1/2, -((a
+ b*Log[c*(d + e*x)^n])/(b*n))]*Sqrt[-((a + b*Log[c*(d + e*x)^n])/(b*n))])/
(E^(a/(b*n))*(c*(d + e*x)^n)^n^(-1)*Sqrt[a + b*Log[c*(d + e*x)^n]])))/(b^2*
e^3*n^2)
```

Maple [F]
time = 0.14, size = 0, normalized size = 0.00

$$\int \frac{(gx+f)^2}{(a+b\ln(c(ex+d)^n))^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^2/(a+b*ln(c*(e*x+d)^n))^(3/2),x)
[Out] int((g*x+f)^2/(a+b*ln(c*(e*x+d)^n))^(3/2),x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2/(a+b*log(c*(e*x+d)^n))^(3/2),x, algorithm="maxima")
[Out] integrate((g*x + f)^2/(b*log((x*e + d)^n*c) + a)^(3/2), x)
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2/(a+b*log(c*(e*x+d)^n))^(3/2),x, algorithm="fricas")
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(f+gx)^2}{(a+b\log(c(d+ex)^n))^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**2/(a+b*ln(c*(e*x+d)**n))**(3/2),x)
[Out] Integral((f + g*x)**2/(a + b*log(c*(d + e*x)**n))**(3/2), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2/(a+b*log(c*(e*x+d)^n))^(3/2),x, algorithm="giac")
[Out] integrate((g*x + f)^2/(b*log((x*e + d)^n*c) + a)^(3/2), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(f+g\,x)^2}{(a+b\,\ln(c\,(d+e\,x)^n))^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)^2/(a + b*log(c*(d + e*x)^n))^(3/2),x)
[Out] int((f + g*x)^2/(a + b*log(c*(d + e*x)^n))^(3/2), x)
```

3.130 $\int \frac{f+gx}{(a+b\log(c(d+ex)^n))^{3/2}}\,dx$

Optimal. Leaf size=220

$$\frac{2e^{-\frac{a}{bn}}(ef-dg)\sqrt{\pi}\,(d+ex)\,(c(d+ex)^n)^{-1/n}\operatorname{erfi}\left(\frac{\sqrt{a+b\log\left(c(d+ex)^n\right)}}{\sqrt{b}\sqrt{n}}\right)}{b^{3/2}e^2n^{3/2}}+\frac{2e^{-\frac{2a}{bn}}g\sqrt{2\pi}\,(d+ex)^2\,(c(d+}{}$$

```
[Out] 2*(-d*g+e*f)*(e*x+d)*erfi((a+b*ln(c*(e*x+d)^n))^(1/2)/b^(1/2)/n^(1/2))*Pi^(
1/2)/b^(3/2)/e^2/exp(a/b/n)/n^(3/2)/((c*(e*x+d)^n)^(1/n))+2*g*(e*x+d)^2*erf
i(2^(1/2)*(a+b*ln(c*(e*x+d)^n))^(1/2)/b^(1/2)/n^(1/2))*2^(1/2)*Pi^(1/2)/b^(
3/2)/e^2/exp(2*a/b/n)/n^(3/2)/((c*(e*x+d)^n)^(2/n))-2*(e*x+d)*(g*x+f)/b/e/n
/(a+b*ln(c*(e*x+d)^n))^(1/2)
```

Rubi [A]

time = 0.30, antiderivative size = 220, normalized size of antiderivative = 1.00, number of steps used = 15, number of rules used = 8, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.333$, Rules used = {2447, 2448, 2436, 2337, 2211, 2235, 2437, 2347}

$$\frac{2\sqrt{\pi}\,e^{-\frac{a}{bn}}(d+ex)(ef-dg)\,(c(d+ex)^n)^{-1/n}\operatorname{Erfi}\left(\frac{\sqrt{a+b\log\left(c(d+ex)^n\right)}}{\sqrt{b}\sqrt{n}}\right)}{b^{3/2}e^2n^{3/2}}+\frac{2\sqrt{2\pi}\,ge^{-\frac{2a}{bn}}(d+ex)^2\,(c(d+ex)^n)^{-2/n}\operatorname{Erfi}\left(\frac{\sqrt{2}\sqrt{a+b\log\left(c(d+ex)^n\right)}}{\sqrt{b}\sqrt{n}}\right)}{b^{3/2}e^2n^{3/2}}-\frac{2(d+ex)(f+gx)}{ben\sqrt{a+b\log\left(c(d+ex)^n\right)}}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)/(a + b*Log[c*(d + e*x)^n])^(3/2),x]
```

```
[Out] (2*(e*f - d*g)*Sqrt[Pi]*(d + e*x)*Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]]/(Sqrt
[b]*Sqrt[n])])/(b^(3/2)*e^2*E^(a/(b*n))*n^(3/2)*(c*(d + e*x)^n)^n^(-1)) + (
2*g*Sqrt[2*Pi]*(d + e*x)^2*Erfi[(Sqrt[2]*Sqrt[a + b*Log[c*(d + e*x)^n]])/(S
qrt[b]*Sqrt[n])])/(b^(3/2)*e^2*E^((2*a)/(b*n))*n^(3/2)*(c*(d + e*x)^n)^(2/n
)) - (2*(d + e*x)*(f + g*x))/(b*e*n*Sqrt[a + b*Log[c*(d + e*x)^n]])
```

Rule 2211

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - c*(f/d)) + f*g*(x^2/d)), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !TrueQ[$UseGamma]
```

Rule 2235

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[F^a*Sqrt
[Pi]*(Erfi[(c + d*x)*Rt[b*Log[F], 2]]/(2*d*Rt[b*Log[F], 2])), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2337

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
```

```
{a, b, c, n, p}, x]
```

Rule 2347

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_)*((d_.)*(x_))^(m_.), x_Symbol
] :> Dist[(d*x)^(m + 1)/(d*n*(c*x^n)^((m + 1)/n)), Subst[Int[E^(((m + 1)/n)
*x)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b, c, d, m, n, p}, x]
```

Rule 2436

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2437

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[(f*(x/d))^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2447

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[(d + e*x)*(f + g*x)^q*((a + b*Log[c*(d + e
*x)^n])^(p + 1)/(b*e*n*(p + 1))), x] + (-Dist[(q + 1)/(b*n*(p + 1)), Int[(f
 + g*x)^q*(a + b*Log[c*(d + e*x)^n])^(p + 1), x], x] + Dist[q*((e*f - d*g)/
(b*e*n*(p + 1))), Int[(f + g*x)^(q - 1)*(a + b*Log[c*(d + e*x)^n])^(p + 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0] && LtQ[
p, -1] && GtQ[q, 0]
```

Rule 2448

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q*(a + b*Log[c*(d
 + e*x)^n])^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f -
 d*g, 0] && IGtQ[q, 0]
```

Rubi steps

$$\int \frac{f+gx}{(a+b\log(c(d+ex)^n))^{3/2}}\,dx = -\frac{2(d+ex)(f+gx)}{ben\sqrt{a+b\log(c(d+ex)^n)}} + \frac{4\int \frac{f+gx}{\sqrt{a+b\log(c(d+ex)^n)}}\,dx}{bn} - \frac{(2(e\ldots}{\ldots}$$

$$= -\frac{2(d+ex)(f+gx)}{ben\sqrt{a+b\log(c(d+ex)^n)}} + \frac{4\int \left(\frac{ef-dg}{e\sqrt{a+b\log(c(d+ex)^n)}} + \frac{\ldots}{e\sqrt{a\ldots}}\right.}{bn}$$

$$= -\frac{2(d+ex)(f+gx)}{ben\sqrt{a+b\log(c(d+ex)^n)}} + \frac{(4g)\int \frac{d+ex}{\sqrt{a+b\log(c(d+ex)^n)}}\,dx}{ben} + \frac{(4\ldots}{\ldots}$$

$$= -\frac{2(d+ex)(f+gx)}{ben\sqrt{a+b\log(c(d+ex)^n)}} + \frac{(4g)\mathrm{Subst}\left(\int \frac{x}{\sqrt{a+b\log(cx^n)}}\,dx, x, d\ldots\right.}{be^2n}$$

$$= -\frac{2e^{-\frac{a}{bn}}(ef-dg)\sqrt{\pi}\,(d+ex)\,(c(d+ex)^n)^{-1/n}\,\mathrm{erfi}\left(\frac{\sqrt{a+b\log(c(d+ex\ldots}}{\sqrt{b}\sqrt{n}}\right.}{b^{3/2}e^2n^{3/2}}$$

$$= -\frac{2e^{-\frac{a}{bn}}(ef-dg)\sqrt{\pi}\,(d+ex)\,(c(d+ex)^n)^{-1/n}\,\mathrm{erfi}\left(\frac{\sqrt{a+b\log(c(d+ex\ldots}}{\sqrt{b}\sqrt{n}}\right.}{b^{3/2}e^2n^{3/2}}$$

$$= \frac{2e^{-\frac{a}{bn}}(ef-dg)\sqrt{\pi}\,(d+ex)\,(c(d+ex)^n)^{-1/n}\,\mathrm{erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^{\ldots}}}{\sqrt{b}\sqrt{n}}\right.}{b^{3/2}e^2n^{3/2}}$$

Mathematica [A]
time = 0.63, size = 338, normalized size = 1.54

$$\frac{2e^{-\frac{2a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-2/n}\left(-2de^{\frac{a}{bn}}g\sqrt{\pi}\left(c(d+ex)^n\right)^{\frac{1}{n}}\mathrm{erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)\sqrt{a+b\log(c(d+ex)^n)}+g\sqrt{2\pi}(d+ex)\mathrm{erfi}\left(\frac{\sqrt{2}\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)\sqrt{a+b\log(c(d+ex)^n)}+\sqrt{b}e^{\frac{a}{bn}}\sqrt{n}\left(c(d+ex)^n\right)^{\frac{1}{n}}\left(-ee^{\frac{a}{bn}}\left(c(d+ex)^n\right)^{\frac{1}{n}}(f+gx)+(ef+dg)\Gamma\left(\frac{1}{2},-\frac{a+b\log(c(d+ex)^n)}{bn}\right)\sqrt{-\frac{a+b\log(c(d+ex)^n)}{bn}}\right)\right)}{b^{3/2}e^2n^{3/2}\sqrt{a+b\log(c(d+ex)^n)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)/(a + b*Log[c*(d + e*x)^n])^(3/2),x]
```

```
[Out] (2*(d + e*x)*(-2*d*E^(a/(b*n))*g*Sqrt[Pi]*(c*(d + e*x)^n)^n^(-1)*Erfi[Sqrt[
a + b*Log[c*(d + e*x)^n]]/(Sqrt[b]*Sqrt[n])]*Sqrt[a + b*Log[c*(d + e*x)^n]]
 + g*Sqrt[2*Pi]*(d + e*x)*Erfi[(Sqrt[2]*Sqrt[a + b*Log[c*(d + e*x)^n]])/(Sq
rt[b]*Sqrt[n])]*Sqrt[a + b*Log[c*(d + e*x)^n]] + Sqrt[b]*E^(a/(b*n))*Sqrt[n
]*(c*(d + e*x)^n)^n^(-1)*(-(e*E^(a/(b*n))*(c*(d + e*x)^n)^n^(-1)*(f + g*x))
 + (e*f + d*g)*Gamma[1/2, -((a + b*Log[c*(d + e*x)^n])/(b*n))]*Sqrt[-((a +
b*Log[c*(d + e*x)^n])/(b*n))])))/(b^(3/2)*e^2*E^((2*a)/(b*n))*n^(3/2)*(c*(d
 + e*x)^n)^(2/n)*Sqrt[a + b*Log[c*(d + e*x)^n]])
```

Maple [F]
time = 0.03, size = 0, normalized size = 0.00

$$\int \frac{gx+f}{\left(a+b\ln\left(c\left(ex+d\right)^{n}\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)/(a+b*ln(c*(e*x+d)^n))^(3/2),x)
[Out] int((g*x+f)/(a+b*ln(c*(e*x+d)^n))^(3/2),x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(a+b*log(c*(e*x+d)^n))^(3/2),x, algorithm="maxima")
[Out] integrate((g*x + f)/(b*log((x*e + d)^n*c) + a)^(3/2), x)
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(a+b*log(c*(e*x+d)^n))^(3/2),x, algorithm="fricas")
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{f+gx}{\left(a+b\log\left(c\left(d+ex\right)^{n}\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(a+b*ln(c*(e*x+d)**n))**(3/2),x)
[Out] Integral((f + g*x)/(a + b*log(c*(d + e*x)**n))**(3/2), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(a+b*log(c*(e*x+d)^n))^(3/2),x, algorithm="giac")
```

```
[Out] integrate((g*x + f)/(b*log((x*e + d)^n*c) + a)^(3/2), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{f+g\,x}{{\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)/(a + b*log(c*(d + e*x)^n))^(3/2),x)
```

```
[Out] int((f + g*x)/(a + b*log(c*(d + e*x)^n))^(3/2), x)
```

3.131 $\int \frac{1}{(a+b\log(c(d+ex)^n))^{3/2}}\,dx$

Optimal. Leaf size=116

$$\frac{2e^{-\frac{a}{bn}}\sqrt{\pi}\,(d+ex)\,(c(d+ex)^n)^{-1/n}\operatorname{erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\,\sqrt{n}}\right)}{b^{3/2}en^{3/2}}-\frac{2(d+ex)}{ben\sqrt{a+b\log(c(d+ex)^n)}}$$

```
[Out] 2*(e*x+d)*erfi((a+b*ln(c*(e*x+d)^n))^(1/2)/b^(1/2)/n^(1/2))*Pi^(1/2)/b^(3/2
)/e/exp(a/b/n)/n^(3/2)/((c*(e*x+d)^n)^(1/n))-2*(e*x+d)/b/e/n/(a+b*ln(c*(e*x
+d)^n))^(1/2)
```

Rubi [A]
time = 0.07, antiderivative size = 116, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.278, Rules used = {2436, 2334, 2337, 2211, 2235}

$$\frac{2\sqrt{\pi}\,e^{-\frac{a}{bn}}(d+ex)\,(c(d+ex)^n)^{-1/n}\operatorname{Erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\,\sqrt{n}}\right)}{b^{3/2}en^{3/2}}-\frac{2(d+ex)}{ben\sqrt{a+b\log(c(d+ex)^n)}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^(-3/2),x]
```

```
[Out] (2*Sqrt[Pi]*(d + e*x)*Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]]/(Sqrt[b]*Sqrt[n])
])/(b^(3/2)*e*E^(a/(b*n))*n^(3/2)*(c*(d + e*x)^n)^n^(-1)) - (2*(d + e*x))/(
b*e*n*Sqrt[a + b*Log[c*(d + e*x)^n]])
```

Rule 2211

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - c*(f/d)) + f*g*(x^2/d)), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !TrueQ[$UseGamma]
```

Rule 2235

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[F^a*Sqrt
[Pi]*(Erfi[(c + d*x)*Rt[b*Log[F], 2]]/(2*d*Rt[b*Log[F], 2])), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2334

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Simp[x*((a + b
*Log[c*x^n])^(p + 1)/(b*n*(p + 1))), x] - Dist[1/(b*n*(p + 1)), Int[(a + b*
Log[c*x^n])^(p + 1), x], x] /; FreeQ[{a, b, c, n}, x] && LtQ[p, -1] && Inte
```

```
gerQ[2*p]
```

Rule 2337

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2436

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rubi steps

$$\int \frac{1}{(a+b\log(c(d+ex)^n))^{3/2}}\,dx = \frac{\text{Subst}\left(\int \frac{1}{(a+b\log(cx^n))^{3/2}}\,dx, x, d+ex\right)}{e}$$

$$= -\frac{2(d+ex)}{ben\sqrt{a+b\log(c(d+ex)^n)}} + \frac{2\text{Subst}\left(\int \frac{1}{\sqrt{a+b\log(cx^n)}}\,dx, x, d+\cdots\right.}{ben}$$

$$= -\frac{2(d+ex)}{ben\sqrt{a+b\log(c(d+ex)^n)}} + \frac{\left(2(d+ex)\left(c(d+ex)^n\right)^{-1/n}\right)\text{Subst}\left(\int \cdots\right.}{ben^2}$$

$$= -\frac{2(d+ex)}{ben\sqrt{a+b\log(c(d+ex)^n)}} + \frac{\left(4(d+ex)\left(c(d+ex)^n\right)^{-1/n}\right)\text{Subst}\left(\int e\cdots\right.}{b^2e\cdots}$$

$$= \frac{2e^{-\frac{a}{bn}}\sqrt{\pi}\,(d+ex)\left(c(d+ex)^n\right)^{-1/n}\text{erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{b^{3/2}en^{3/2}} - \frac{\cdots}{be\cdots}$$

Mathematica [A]
time = 0.06, size = 139, normalized size = 1.20

$$-\frac{2e^{-\frac{a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\left(e^{\frac{a}{bn}}\left(c(d+ex)^n\right)^{\frac{1}{n}}-\Gamma\left(\frac{1}{2},-\frac{a+b\log(c(d+ex)^n)}{bn}\right)\sqrt{-\frac{a+b\log(c(d+ex)^n)}{bn}}\right)}{ben\sqrt{a+b\log(c(d+ex)^n)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^(-3/2),x]
```

[Out] (-2*(d + e*x)*(E^(a/(b*n))*(c*(d + e*x)^n)^n^(-1) - Gamma[1/2, -((a + b*Log[c*(d + e*x)^n])/(b*n))]*Sqrt[-((a + b*Log[c*(d + e*x)^n])/(b*n))]))/(b*e*E^(a/(b*n))*n*(c*(d + e*x)^n)^n^(-1)*Sqrt[a + b*Log[c*(d + e*x)^n]])

Maple [F]
time = 0.02, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(a+b\ln\left(c\left(ex+d\right)^{n}\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(1/(a+b*ln(c*(e*x+d)^n))^(3/2),x)

[Out] int(1/(a+b*ln(c*(e*x+d)^n))^(3/2),x)

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(1/(a+b*log(c*(e*x+d)^n))^(3/2),x, algorithm="maxima")

[Out] integrate((b*log((x*e + d)^n*c) + a)^(-3/2), x)

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(1/(a+b*log(c*(e*x+d)^n))^(3/2),x, algorithm="fricas")

[Out] Exception raised: TypeError >> Error detected within library code: integrate: implementation incomplete (constant residues)

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(a+b\log\left(c\left(d+ex\right)^{n}\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(1/(a+b*ln(c*(e*x+d)**n))**(3/2),x)

[Out] Integral((a + b*log(c*(d + e*x)**n))**(-3/2), x)

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(e*x+d)^n))^(3/2),x, algorithm="giac")
```

```
[Out] integrate((b*log((x*e + d)^n*c) + a)^(-3/2), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{1}{\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a + b*log(c*(d + e*x)^n))^(3/2),x)
```

```
[Out] int(1/(a + b*log(c*(d + e*x)^n))^(3/2), x)
```

3.132 $\int \frac{1}{(f+gx)(a+b\log(c(d+ex)^n))^{3/2}}\,dx$

Optimal. Leaf size=29

$$\mathrm{Int}\left(\frac{1}{(f+gx)\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}},x\right)$$

```
[Out] Unintegrable(1/(g*x+f)/(a+b*ln(c*(e*x+d)^n))^(3/2),x)
```

Rubi [A]
time = 0.04, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int \frac{1}{(f+gx)\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}}\,dx$$

Verification is not applicable to the result.

```
[In] Int[1/((f + g*x)*(a + b*Log[c*(d + e*x)^n])^(3/2)),x]
[Out] Defer[Int][1/((f + g*x)*(a + b*Log[c*(d + e*x)^n])^(3/2)), x]
```

Rubi steps

$$\int \frac{1}{(f+gx)\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}}\,dx = \int \frac{1}{(f+gx)\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}}\,dx$$

Mathematica [A]
time = 0.18, size = 0, normalized size = 0.00

$$\int \frac{1}{(f+gx)\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}}\,dx$$

Verification is not applicable to the result.

```
[In] Integrate[1/((f + g*x)*(a + b*Log[c*(d + e*x)^n])^(3/2)),x]
[Out] Integrate[1/((f + g*x)*(a + b*Log[c*(d + e*x)^n])^(3/2)), x]
```

Maple [A]
time = 0.18, size = 0, normalized size = 0.00

$$\int \frac{1}{(gx+f)\left(a+b\ln\left(c\,(ex+d)^n\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(g*x+f)/(a+b*ln(c*(e*x+d)^n))^(3/2),x)
```

```
[Out] int(1/(g*x+f)/(a+b*ln(c*(e*x+d)^n))^(3/2),x)
```

Maxima [A]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(a+b*log(c*(e*x+d)^n))^(3/2),x, algorithm="maxima")
```

```
[Out] integrate(1/((g*x + f)*(b*log((x*e + d)^n*c) + a)^(3/2)), x)
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(a+b*log(c*(e*x+d)^n))^(3/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: HeuristicGCDFailed

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(a+b*ln(c*(e*x+d)**n))**(3/2),x)
```

```
[Out] Exception raised: HeuristicGCDFailed >> no luck
```

Giac [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(a+b*log(c*(e*x+d)^n))^(3/2),x, algorithm="giac")
```

```
[Out] integrate(1/((g*x + f)*(b*log((x*e + d)^n*c) + a)^(3/2)), x)
```

Mupad [A]
time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{1}{(f + g\,x)\ (a + b\,\ln\left(c\,(d + e\,x)^n\right))^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((f + g*x)*(a + b*log(c*(d + e*x)^n))^(3/2)),x)
[Out] int(1/((f + g*x)*(a + b*log(c*(d + e*x)^n))^(3/2)), x)
```

3.133 $\int \frac{(f+gx)^3}{(a+b\log(c(d+ex)^n))^{5/2}}\,dx$

Optimal. Leaf size=520

$$\frac{4e^{-\frac{a}{bn}}(ef-dg)^3\sqrt{\pi}\,(d+ex)\,(c(d+ex)^n)^{-1/n}\operatorname{erfi}\left(\frac{\sqrt{a+b\log\left(c(d+ex)^n\right)}}{\sqrt{b}\,\sqrt{n}}\right)}{3b^{5/2}e^4n^{5/2}}+\frac{32e^{-\frac{4a}{bn}}g^3\sqrt{\pi}\,(d+ex)^4\,(c(d$$

```
[Out] -2/3*(e*x+d)*(g*x+f)^3/b/e/n/(a+b*ln(c*(e*x+d)^n))^(3/2)+4/3*(-d*g+e*f)^3*(
e*x+d)*erfi((a+b*ln(c*(e*x+d)^n))^(1/2)/b^(1/2)/n^(1/2))*Pi^(1/2)/b^(5/2)/e
^4/exp(a/b/n)/n^(5/2)/((c*(e*x+d)^n)^(1/n))+32/3*g^3*(e*x+d)^4*erfi(2*(a+b*
ln(c*(e*x+d)^n))^(1/2)/b^(1/2)/n^(1/2))*Pi^(1/2)/b^(5/2)/e^4/exp(4*a/b/n)/n
^(5/2)/((c*(e*x+d)^n)^(4/n))+8*g*(-d*g+e*f)^2*(e*x+d)^2*erfi(2^(1/2)*(a+b*l
n(c*(e*x+d)^n))^(1/2)/b^(1/2)/n^(1/2))*2^(1/2)*Pi^(1/2)/b^(5/2)/e^4/exp(2*a
/b/n)/n^(5/2)/((c*(e*x+d)^n)^(2/n))+12*g^2*(-d*g+e*f)*(e*x+d)^3*erfi(3^(1/2
)*(a+b*ln(c*(e*x+d)^n))^(1/2)/b^(1/2)/n^(1/2))*3^(1/2)*Pi^(1/2)/b^(5/2)/e^4
/exp(3*a/b/n)/n^(5/2)/((c*(e*x+d)^n)^(3/n))+4*(-d*g+e*f)*(e*x+d)*(g*x+f)^2/
b^2/e^2/n^2/(a+b*ln(c*(e*x+d)^n))^(1/2)-16/3*(e*x+d)*(g*x+f)^3/b^2/e/n^2/(a
+b*ln(c*(e*x+d)^n))^(1/2)
```

Rubi [A]

time = 1.69, antiderivative size = 520, normalized size of antiderivative = 1.00, number of steps used = 59, number of rules used = 8, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.308$, Rules used = {2447, 2448, 2436, 2337, 2211, 2235, 2437, 2347}

$$\frac{12\sqrt{3\pi}\,g^2e^{-\frac{3a}{bn}}(d+ex)^3(ef-dg)\,(c(d+ex)^n)^{-3/n}\operatorname{Erfi}\left(\frac{\sqrt{3}\,\sqrt{a+b\log\left(c(d+ex)^n\right)}}{\sqrt{b}\,\sqrt{n}}\right)}{b^{5/2}e^4n^{5/2}}+\frac{8\sqrt{2\pi}\,ge^{-\frac{2a}{bn}}(d+ex)^2(ef-dg)^2\,(c(d+ex)^n)^{-2/n}\operatorname{Erfi}\left(\frac{\sqrt{2}\,\sqrt{a+b\log\left(c(d+ex)^n\right)}}{\sqrt{b}\,\sqrt{n}}\right)}{b^{5/2}e^4n^{5/2}}+\frac{4\sqrt{\pi}\,e^{-\frac{a}{bn}}(d+ex)(ef-dg)^3\,(c(d+ex)^n)^{-1/n}\operatorname{Erfi}\left(\frac{\sqrt{a+b\log\left(c(d+ex)^n\right)}}{\sqrt{b}\,\sqrt{n}}\right)}{3b^{5/2}e^4n^{5/2}}+\frac{32\sqrt{\pi}\,g^3e^{-\frac{4a}{bn}}(d+ex)^4\,(c(d+ex)^n)^{-4/n}\operatorname{Erfi}\left(\frac{2\sqrt{a+b\log\left(c(d+ex)^n\right)}}{\sqrt{b}\,\sqrt{n}}\right)}{3b^{5/2}e^4n^{5/2}}+\frac{4(d+ex)(f+gx)^2(ef-dg)}{b^2e^2n^2\sqrt{a+b\log\left(c(d+ex)^n\right)}}-\frac{16(d+ex)(f+gx)^3}{3b^2en^2\sqrt{a+b\log\left(c(d+ex)^n\right)}}-\frac{2(d+ex)(f+gx)^3}{3ben\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)^3/(a + b*Log[c*(d + e*x)^n])^(5/2),x]
```

```
[Out] (4*(e*f - d*g)^3*Sqrt[Pi]*(d + e*x)*Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]]/(Sq
rt[b]*Sqrt[n])])/(3*b^(5/2)*e^4*E^(a/(b*n))*n^(5/2)*(c*(d + e*x)^n)^n^(-1))
 + (32*g^3*Sqrt[Pi]*(d + e*x)^4*Erfi[(2*Sqrt[a + b*Log[c*(d + e*x)^n]])/(Sq
rt[b]*Sqrt[n])])/(3*b^(5/2)*e^4*E^((4*a)/(b*n))*n^(5/2)*(c*(d + e*x)^n)^(4/
n)) + (8*g*(e*f - d*g)^2*Sqrt[2*Pi]*(d + e*x)^2*Erfi[(Sqrt[2]*Sqrt[a + b*Lo
g[c*(d + e*x)^n]])/(Sqrt[b]*Sqrt[n])])/(b^(5/2)*e^4*E^((2*a)/(b*n))*n^(5/2)
*(c*(d + e*x)^n)^(2/n)) + (12*g^2*(e*f - d*g)*Sqrt[3*Pi]*(d + e*x)^3*Erfi[(
Sqrt[3]*Sqrt[a + b*Log[c*(d + e*x)^n]])/(Sqrt[b]*Sqrt[n])])/(b^(5/2)*e^4*E^
((3*a)/(b*n))*n^(5/2)*(c*(d + e*x)^n)^(3/n)) - (2*(d + e*x)*(f + g*x)^3)/(3
*b*e*n*(a + b*Log[c*(d + e*x)^n])^(3/2)) + (4*(e*f - d*g)*(d + e*x)*(f + g*
x)^2)/(b^2*e^2*n^2*Sqrt[a + b*Log[c*(d + e*x)^n]]) - (16*(d + e*x)*(f + g*x
)^3)/(3*b^2*e*n^2*Sqrt[a + b*Log[c*(d + e*x)^n]])
```

Rule 2211

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - c*(f/d)) + f*g*(x^2/d)), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !TrueQ[$UseGamma]
```

Rule 2235

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[F^a*Sqrt
[Pi]*(Erfi[(c + d*x)*Rt[b*Log[F], 2]]/(2*d*Rt[b*Log[F], 2])), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2337

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2347

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_)*((d_.)*(x_))^(m_.), x_Symbol
] :> Dist[(d*x)^(m + 1)/(d*n*(c*x^n)^((m + 1)/n)), Subst[Int[E^(((m + 1)/n)
*x)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b, c, d, m, n, p}, x]
```

Rule 2436

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2437

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[(f*(x/d))^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2447

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[(d + e*x)*(f + g*x)^q*((a + b*Log[c*(d + e
*x)^n])^(p + 1)/(b*e*n*(p + 1))), x] + (-Dist[(q + 1)/(b*n*(p + 1)), Int[(f
 + g*x)^q*(a + b*Log[c*(d + e*x)^n])^(p + 1), x], x] + Dist[q*((e*f - d*g)/
(b*e*n*(p + 1))), Int[(f + g*x)^(q - 1)*(a + b*Log[c*(d + e*x)^n])^(p + 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0] && LtQ[
p, -1] && GtQ[q, 0]
```

Rule 2448

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q*(a + b*Log[c*(d
 + e*x)^n])^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f -
 d*g, 0] && IGtQ[q, 0]
```

Rubi steps

$$\int \frac{(f+gx)^3}{(a+b\log(c(d+ex)^n))^{5/2}}\,dx = -\frac{2(d+ex)(f+gx)^3}{3ben\,(a+b\log(c(d+ex)^n))^{3/2}} + \frac{8\int \frac{(f+gx)^3}{(a+b\log(c(d+ex)^n))^{3/2}}\,dx}{3bn} - \frac{(2(ef-c}{}$$

$$= -\frac{2(d+ex)(f+gx)^3}{3ben\,(a+b\log(c(d+ex)^n))^{3/2}} + \frac{4(ef-dg)(d+ex)(f+gx)^2}{b^2e^2n^2\sqrt{a+b\log(c(d+ex)^n)}} - \frac{}{3b^2}$$

$$= -\frac{2(d+ex)(f+gx)^3}{3ben\,(a+b\log(c(d+ex)^n))^{3/2}} + \frac{4(ef-dg)(d+ex)(f+gx)^2}{b^2e^2n^2\sqrt{a+b\log(c(d+ex)^n)}} - \frac{}{3b^2}$$

$$= -\frac{2(d+ex)(f+gx)^3}{3ben\,(a+b\log(c(d+ex)^n))^{3/2}} + \frac{4(ef-dg)(d+ex)(f+gx)^2}{b^2e^2n^2\sqrt{a+b\log(c(d+ex)^n)}} - \frac{}{3b^2}$$

$$= -\frac{2(d+ex)(f+gx)^3}{3ben\,(a+b\log(c(d+ex)^n))^{3/2}} + \frac{4(ef-dg)(d+ex)(f+gx)^2}{b^2e^2n^2\sqrt{a+b\log(c(d+ex)^n)}} - \frac{}{3b^2}$$

$$= -\frac{2(d+ex)(f+gx)^3}{3ben\,(a+b\log(c(d+ex)^n))^{3/2}} + \frac{4(ef-dg)(d+ex)(f+gx)^2}{b^2e^2n^2\sqrt{a+b\log(c(d+ex)^n)}} - \frac{}{3b^2}$$

$$= -\frac{2(d+ex)(f+gx)^3}{3ben\,(a+b\log(c(d+ex)^n))^{3/2}} + \frac{4(ef-dg)(d+ex)(f+gx)^2}{b^2e^2n^2\sqrt{a+b\log(c(d+ex)^n)}} - \frac{}{3b^2}$$

$$= \frac{4e^{-\frac{a}{bn}}(ef-dg)^3\sqrt{\pi}\,(d+ex)\,(c(d+ex)^n)^{-1/n}\,\mathrm{erfi}\left(\frac{\sqrt{a+b\log(c(d+ex}}{\sqrt{b}\sqrt{n}}\right.}{3b^{5/2}e^4n^{5/2}}$$

Mathematica [B] Leaf count is larger than twice the leaf count of optimal. 1990 vs. $2(520) = 1040$.
time = 4.49, size = 1990, normalized size = 3.83

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)^3/(a + b*Log[c*(d + e*x)^n])^(5/2),x]
```

```
[Out] (2*(d + e*x)*((-30*Sqrt[b]*d*e*f*g^2*Sqrt[n]*Sqrt[Pi]*(2*d*E^(a/(b*n))*(c*(
d + e*x)^n)^n^(-1)*Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]]/(Sqrt[b]*Sqrt[n])] -
 Sqrt[2]*(d + e*x)*Erfi[(Sqrt[2]*Sqrt[a + b*Log[c*(d + e*x)^n]])/(Sqrt[b]*S
qrt[n])]))/(E^((2*a)/(b*n))*(c*(d + e*x)^n)^(2/n)) - (6*Sqrt[b]*d^2*g^3*Sqr
t[n]*Sqrt[Pi]*(2*d*E^(a/(b*n))*(c*(d + e*x)^n)^n^(-1)*Erfi[Sqrt[a + b*Log[c
*(d + e*x)^n]]/(Sqrt[b]*Sqrt[n])] - Sqrt[2]*(d + e*x)*Erfi[(Sqrt[2]*Sqrt[a
+ b*Log[c*(d + e*x)^n]])/(Sqrt[b]*Sqrt[n])]))/(E^((2*a)/(b*n))*(c*(d + e*x)
^n)^(2/n)) + (12*Sqrt[b]*e^2*f^2*g*Sqrt[n]*Sqrt[Pi]*(-2*d*E^(a/(b*n))*(c*(d
 + e*x)^n)^n^(-1)*Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]]/(Sqrt[b]*Sqrt[n])] +
Sqrt[2]*(d + e*x)*Erfi[(Sqrt[2]*Sqrt[a + b*Log[c*(d + e*x)^n]])/(Sqrt[b]*Sq
rt[n])]))/(E^((2*a)/(b*n))*(c*(d + e*x)^n)^(2/n)) - (18*e*f*g^2*Sqrt[Pi]*(S
qrt[3]*(d + e*x)^2 - 3*Sqrt[2]*d*E^(a/(b*n))*(d + e*x)*(c*(d + e*x)^n)^n^(-
1) + 3*d^2*E^((2*a)/(b*n))*(c*(d + e*x)^n)^(2/n) - 3*d^2*E^((2*a)/(b*n))*(c
*(d + e*x)^n)^(2/n)*Erf[Sqrt[-((a + b*Log[c*(d + e*x)^n])/(b*n))]] + 3*Sqrt
[2]*d*E^(a/(b*n))*(d + e*x)*(c*(d + e*x)^n)^n^(-1)*Erf[Sqrt[2]*Sqrt[-((a +
b*Log[c*(d + e*x)^n])/(b*n))]] - Sqrt[3]*(d + e*x)^2*Erf[Sqrt[3]*Sqrt[-((a
+ b*Log[c*(d + e*x)^n])/(b*n))]])*Sqrt[a + b*Log[c*(d + e*x)^n]])/(E^((3*a)
/(b*n))*(c*(d + e*x)^n)^(3/n)*Sqrt[-((a + b*Log[c*(d + e*x)^n])/(b*n))]) -
(14*d*g^3*Sqrt[Pi]*(Sqrt[3]*(d + e*x)^2 - 3*Sqrt[2]*d*E^(a/(b*n))*(d + e*x)
*(c*(d + e*x)^n)^n^(-1) + 3*d^2*E^((2*a)/(b*n))*(c*(d + e*x)^n)^(2/n) - 3*d
^2*E^((2*a)/(b*n))*(c*(d + e*x)^n)^(2/n)*Erf[Sqrt[-((a + b*Log[c*(d + e*x)^
n])/(b*n))]] + 3*Sqrt[2]*d*E^(a/(b*n))*(d + e*x)*(c*(d + e*x)^n)^n^(-1)*Erf
[Sqrt[2]*Sqrt[-((a + b*Log[c*(d + e*x)^n])/(b*n))]] - Sqrt[3]*(d + e*x)^2*E
rf[Sqrt[3]*Sqrt[-((a + b*Log[c*(d + e*x)^n])/(b*n))]])*Sqrt[a + b*Log[c*(d
+ e*x)^n]])/(E^((3*a)/(b*n))*(c*(d + e*x)^n)^(3/n)*Sqrt[-((a + b*Log[c*(d +
 e*x)^n])/(b*n))]) - (16*g^3*Sqrt[Pi]*((d + e*x)^3 - 2*Sqrt[3]*d*E^(a/(b*n)
)*(d + e*x)^2*(c*(d + e*x)^n)^n^(-1) + 3*Sqrt[2]*d^2*E^((2*a)/(b*n))*(d + e
*x)*(c*(d + e*x)^n)^(2/n) - 2*d^3*E^((3*a)/(b*n))*(c*(d + e*x)^n)^(3/n) + 2
*d^3*E^((3*a)/(b*n))*(c*(d + e*x)^n)^(3/n)*Erf[Sqrt[-((a + b*Log[c*(d + e*x
)^n])/(b*n))]] - (d + e*x)^3*Erf[2*Sqrt[-((a + b*Log[c*(d + e*x)^n])/(b*n))
]] - 3*Sqrt[2]*d^2*E^((2*a)/(b*n))*(d + e*x)*(c*(d + e*x)^n)^(2/n)*Erf[Sqrt
[2]*Sqrt[-((a + b*Log[c*(d + e*x)^n])/(b*n))]] + 2*Sqrt[3]*d*E^(a/(b*n))*(d
 + e*x)^2*(c*(d + e*x)^n)^n^(-1)*Erf[Sqrt[3]*Sqrt[-((a + b*Log[c*(d + e*x)^
n])/(b*n))]])*Sqrt[a + b*Log[c*(d + e*x)^n]])/(E^((4*a)/(b*n))*(c*(d + e*x)
^n)^(4/n)*Sqrt[-((a + b*Log[c*(d + e*x)^n])/(b*n))]) - (2*e^3*f^3*Gamma[1/2
, -((a + b*Log[c*(d + e*x)^n])/(b*n))]*Sqrt[a + b*Log[c*(d + e*x)^n]])/(E^(
a/(b*n))*(c*(d + e*x)^n)^n^(-1)*Sqrt[-((a + b*Log[c*(d + e*x)^n])/(b*n))])
- (18*d*e^2*f^2*g*Gamma[1/2, -((a + b*Log[c*(d + e*x)^n])/(b*n))]*Sqrt[a +
b*Log[c*(d + e*x)^n]])/(E^(a/(b*n))*(c*(d + e*x)^n)^n^(-1)*Sqrt[-((a + b*Lo
g[c*(d + e*x)^n])/(b*n))]) - (12*d^2*e*f*g^2*Gamma[1/2, -((a + b*Log[c*(d +
 e*x)^n])/(b*n))]*Sqrt[a + b*Log[c*(d + e*x)^n]])/(E^(a/(b*n))*(c*(d + e*x)
^n)^n^(-1)*Sqrt[-((a + b*Log[c*(d + e*x)^n])/(b*n))]) - (b*e^2*n*(f + g*x)^
2*(b*e*n*(f + g*x) + 2*a*(e*f + 3*d*g + 4*e*g*x) + 2*b*(3*d*g + e*(f + 4*g*
```

```
x))*Log[c*(d + e*x)^n]))/(a + b*Log[c*(d + e*x)^n])^(3/2)))/(3*b^3*e^4*n^3)
```

Maple [F]
time = 0.11, size = 0, normalized size = 0.00

$$\int \frac{(gx+f)^3}{(a+b\ln(c(ex+d)^n))^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^3/(a+b*ln(c*(e*x+d)^n))^(5/2),x)
[Out] int((g*x+f)^3/(a+b*ln(c*(e*x+d)^n))^(5/2),x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^3/(a+b*log(c*(e*x+d)^n))^(5/2),x, algorithm="maxima")
[Out] integrate((g*x + f)^3/(b*log((x*e + d)^n*c) + a)^(5/2), x)
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^3/(a+b*log(c*(e*x+d)^n))^(5/2),x, algorithm="fricas")
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(f+gx)^3}{(a+b\log(c(d+ex)^n))^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**3/(a+b*ln(c*(e*x+d)**n))**(5/2),x)
[Out] Integral((f + g*x)**3/(a + b*log(c*(d + e*x)**n))**(5/2), x)
```

Giac [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^3/(a+b*log(c*(e*x+d)^n))^(5/2),x, algorithm="giac")
[Out] integrate((g*x + f)^3/(b*log((x*e + d)^n*c) + a)^(5/2), x)
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(f+g\,x)^3}{\left(a+b\,\ln\left(c\,(d+e\,x)^n\right)\right)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)^3/(a + b*log(c*(d + e*x)^n))^(5/2),x)
[Out] int((f + g*x)^3/(a + b*log(c*(d + e*x)^n))^(5/2), x)
```

3.134 $\int \frac{(f+gx)^2}{(a+b\log(c(d+ex)^n))^{5/2}}\,dx$

Optimal. Leaf size=421

$$\frac{4e^{-\frac{a}{bn}}(ef-dg)^2\sqrt{\pi}\,(d+ex)\,(c(d+ex)^n)^{-1/n}\operatorname{erfi}\left(\frac{\sqrt{a+b\log\left(c(d+ex)^n\right)}}{\sqrt{b}\,\sqrt{n}}\right)}{3b^{5/2}e^3n^{5/2}}+\frac{16e^{-\frac{2a}{bn}}g(ef-dg)\sqrt{2\pi}\,(d+$$

```
[Out] -2/3*(e*x+d)*(g*x+f)^2/b/e/n/(a+b*ln(c*(e*x+d)^n))^(3/2)+4/3*(-d*g+e*f)^2*(
e*x+d)*erfi((a+b*ln(c*(e*x+d)^n))^(1/2)/b^(1/2)/n^(1/2))*Pi^(1/2)/b^(5/2)/e
^3/exp(a/b/n)/n^(5/2)/((c*(e*x+d)^n)^(1/n))+16/3*g*(-d*g+e*f)*(e*x+d)^2*erf
i(2^(1/2)*(a+b*ln(c*(e*x+d)^n))^(1/2)/b^(1/2)/n^(1/2))*2^(1/2)*Pi^(1/2)/b^(
5/2)/e^3/exp(2*a/b/n)/n^(5/2)/((c*(e*x+d)^n)^(2/n))+4*g^2*(e*x+d)^3*erfi(3^
(1/2)*(a+b*ln(c*(e*x+d)^n))^(1/2)/b^(1/2)/n^(1/2))*3^(1/2)*Pi^(1/2)/b^(5/2)
/e^3/exp(3*a/b/n)/n^(5/2)/((c*(e*x+d)^n)^(3/n))+8/3*(-d*g+e*f)*(e*x+d)*(g*x
+f)/b^2/e^2/n^2/(a+b*ln(c*(e*x+d)^n))^(1/2)-4*(e*x+d)*(g*x+f)^2/b^2/e/n^2/(
a+b*ln(c*(e*x+d)^n))^(1/2)
```

Rubi [A]

time = 1.01, antiderivative size = 421, normalized size of antiderivative = 1.00, number of steps used = 41, number of rules used = 8, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.308$, Rules used = {2447, 2448, 2436, 2337, 2211, 2235, 2437, 2347}

$$\frac{16\sqrt{2\pi}\,ge^{-\frac{2a}{bn}}(d+ex)^2(ef-dg)\,(c(d+ex)^n)^{-2/n}\operatorname{Erfi}\left(\frac{\sqrt{2}\,\sqrt{a+b\log\left(c(d+ex)^n\right)}}{\sqrt{b}\,\sqrt{n}}\right)}{3b^{5/2}e^3n^{5/2}}+\frac{4\sqrt{\pi}\,e^{-\frac{a}{bn}}(d+ex)(ef-dg)^2\,(c(d+ex)^n)^{-1/n}\operatorname{Erfi}\left(\frac{\sqrt{a+b\log\left(c(d+ex)^n\right)}}{\sqrt{b}\,\sqrt{n}}\right)}{3b^{5/2}e^3n^{5/2}}+\frac{4\sqrt{3\pi}\,g^2e^{-\frac{3a}{bn}}(d+ex)^3\,(c(d+ex)^n)^{-3/n}\operatorname{Erfi}\left(\frac{\sqrt{3}\,\sqrt{a+b\log\left(c(d+ex)^n\right)}}{\sqrt{b}\,\sqrt{n}}\right)}{b^{5/2}e^3n^{5/2}}+\frac{8(d+ex)(f+gx)(ef-dg)}{3b^2e^2n^2\sqrt{a+b\log\left(c(d+ex)^n\right)}}-\frac{4(d+ex)(f+gx)^2}{b^2en^2\sqrt{a+b\log\left(c(d+ex)^n\right)}}-\frac{2(d+ex)(f+gx)^2}{3ben\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)^2/(a + b*Log[c*(d + e*x)^n])^(5/2),x]
```

```
[Out] (4*(e*f - d*g)^2*Sqrt[Pi]*(d + e*x)*Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]]/(Sq
rt[b]*Sqrt[n])])/(3*b^(5/2)*e^3*E^(a/(b*n))*n^(5/2)*(c*(d + e*x)^n)^n^(-1))
 + (16*g*(e*f - d*g)*Sqrt[2*Pi]*(d + e*x)^2*Erfi[(Sqrt[2]*Sqrt[a + b*Log[c*
(d + e*x)^n]])/(Sqrt[b]*Sqrt[n])])/(3*b^(5/2)*e^3*E^((2*a)/(b*n))*n^(5/2)*(
c*(d + e*x)^n)^(2/n)) + (4*g^2*Sqrt[3*Pi]*(d + e*x)^3*Erfi[(Sqrt[3]*Sqrt[a
+ b*Log[c*(d + e*x)^n]])/(Sqrt[b]*Sqrt[n])])/(b^(5/2)*e^3*E^((3*a)/(b*n))*n
^(5/2)*(c*(d + e*x)^n)^(3/n)) - (2*(d + e*x)*(f + g*x)^2)/(3*b*e*n*(a + b*L
og[c*(d + e*x)^n])^(3/2)) + (8*(e*f - d*g)*(d + e*x)*(f + g*x))/(3*b^2*e^2*
n^2*Sqrt[a + b*Log[c*(d + e*x)^n]]) - (4*(d + e*x)*(f + g*x)^2)/(b^2*e*n^2*
Sqrt[a + b*Log[c*(d + e*x)^n]])
```

Rule 2211

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - c*(f/d)) + f*g*(x^2/d)), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !TrueQ[$UseGamma]
```

Rule 2235

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[F^a*Sqrt
[Pi]*(Erfi[(c + d*x)*Rt[b*Log[F], 2]]/(2*d*Rt[b*Log[F], 2])), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2337

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2347

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_)*((d_.)*(x_))^(m_.), x_Symbol
] :> Dist[(d*x)^(m + 1)/(d*n*(c*x^n)^((m + 1)/n)), Subst[Int[E^(((m + 1)/n)
*x)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b, c, d, m, n, p}, x]
```

Rule 2436

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2437

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[(f*(x/d))^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2447

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[(d + e*x)*(f + g*x)^q*((a + b*Log[c*(d + e
*x)^n])^(p + 1)/(b*e*n*(p + 1))), x] + (-Dist[(q + 1)/(b*n*(p + 1)), Int[(f
 + g*x)^q*(a + b*Log[c*(d + e*x)^n])^(p + 1), x], x] + Dist[q*((e*f - d*g)/
(b*e*n*(p + 1))), Int[(f + g*x)^(q - 1)*(a + b*Log[c*(d + e*x)^n])^(p + 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0] && LtQ[
p, -1] && GtQ[q, 0]
```

Rule 2448

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q*(a + b*Log[c*(d
 + e*x)^n])^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f -
```

```
d*g, 0] && IGtQ[q, 0]
```

Rubi steps

$$\int \frac{(f+gx)^2}{(a+b\log(c(d+ex)^n))^{5/2}}\,dx = -\frac{2(d+ex)(f+gx)^2}{3ben\,(a+b\log(c(d+ex)^n))^{3/2}} + \frac{2\int \frac{(f+gx)^2}{(a+b\log(c(d+ex)^n))^{3/2}}\,dx}{bn} - \frac{(4(ef-}{}$$

$$= -\frac{2(d+ex)(f+gx)^2}{3ben\,(a+b\log(c(d+ex)^n))^{3/2}} + \frac{8(ef-dg)(d+ex)(f+gx)}{3b^2e^2n^2\sqrt{a+b\log(c(d+ex)^n)}} - \frac{}{b^2}$$

$$= -\frac{2(d+ex)(f+gx)^2}{3ben\,(a+b\log(c(d+ex)^n))^{3/2}} + \frac{8(ef-dg)(d+ex)(f+gx)}{3b^2e^2n^2\sqrt{a+b\log(c(d+ex)^n)}} - \frac{}{b^2}$$

$$= -\frac{2(d+ex)(f+gx)^2}{3ben\,(a+b\log(c(d+ex)^n))^{3/2}} + \frac{8(ef-dg)(d+ex)(f+gx)}{3b^2e^2n^2\sqrt{a+b\log(c(d+ex)^n)}} - \frac{}{b^2}$$

$$= -\frac{2(d+ex)(f+gx)^2}{3ben\,(a+b\log(c(d+ex)^n))^{3/2}} + \frac{8(ef-dg)(d+ex)(f+gx)}{3b^2e^2n^2\sqrt{a+b\log(c(d+ex)^n)}} - \frac{}{b^2}$$

$$= \frac{8e^{-\frac{a}{bn}}(ef-dg)^2\sqrt{\pi}\,(d+ex)\,(c(d+ex)^n)^{-1/n}\operatorname{erfi}\left(\frac{\sqrt{a+b\log(c(d+ex}}{\sqrt{b}\sqrt{n}}\right.}{3b^{5/2}e^3n^{5/2}}$$

$$= \frac{8e^{-\frac{a}{bn}}(ef-dg)^2\sqrt{\pi}\,(d+ex)\,(c(d+ex)^n)^{-1/n}\operatorname{erfi}\left(\frac{\sqrt{a+b\log(c(d+ex}}{\sqrt{b}\sqrt{n}}\right.}{3b^{5/2}e^3n^{5/2}}$$

$$= \frac{4e^{-\frac{a}{bn}}(ef-dg)^2\sqrt{\pi}\,(d+ex)\,(c(d+ex)^n)^{-1/n}\operatorname{erfi}\left(\frac{\sqrt{a+b\log(c(d+ex}}{\sqrt{b}\sqrt{n}}\right.}{3b^{5/2}e^3n^{5/2}}$$

Mathematica [**B**] Leaf count is larger than twice the leaf count of optimal. 1044 vs. $2(421) = 842$.
time = 2.25, size = 1044, normalized size = 2.48

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)^2/(a + b*Log[c*(d + e*x)^n])^(5/2),x]
```

```
[Out] (2*(d + e*x)*((-10*Sqrt[b]*d*g^2*Sqrt[n]*Sqrt[Pi]*(2*d*E^(a/(b*n))*(c*(d +
e*x)^n)^n^(-1)*Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]]/(Sqrt[b]*Sqrt[n])] - Sqr
t[2]*(d + e*x)*Erfi[(Sqrt[2]*Sqrt[a + b*Log[c*(d + e*x)^n]])/(Sqrt[b]*Sqrt[
n])]))/(E^((2*a)/(b*n))*(c*(d + e*x)^n)^(2/n)) + (8*Sqrt[b]*e*f*g*Sqrt[n]*S
qrt[Pi]*(-2*d*E^(a/(b*n))*(c*(d + e*x)^n)^n^(-1)*Erfi[Sqrt[a + b*Log[c*(d +
 e*x)^n]]/(Sqrt[b]*Sqrt[n])] + Sqrt[2]*(d + e*x)*Erfi[(Sqrt[2]*Sqrt[a + b*L
og[c*(d + e*x)^n]])/(Sqrt[b]*Sqrt[n])]))/(E^((2*a)/(b*n))*(c*(d + e*x)^n)^(
2/n)) - (6*g^2*Sqrt[Pi]*(Sqrt[3]*(d + e*x)^2 - 3*Sqrt[2]*d*E^(a/(b*n))*(d +
 e*x)*(c*(d + e*x)^n)^n^(-1) + 3*d^2*E^((2*a)/(b*n))*(c*(d + e*x)^n)^(2/n)
- 3*d^2*E^((2*a)/(b*n))*(c*(d + e*x)^n)^(2/n)*Erf[Sqrt[-((a + b*Log[c*(d +
e*x)^n])/(b*n))]] + 3*Sqrt[2]*d*E^(a/(b*n))*(d + e*x)*(c*(d + e*x)^n)^n^(-1
)*Erf[Sqrt[2]*Sqrt[-((a + b*Log[c*(d + e*x)^n])/(b*n))]] - Sqrt[3]*(d + e*x
)^2*Erf[Sqrt[3]*Sqrt[-((a + b*Log[c*(d + e*x)^n])/(b*n))]])*Sqrt[a + b*Log[
c*(d + e*x)^n]])/(E^((3*a)/(b*n))*(c*(d + e*x)^n)^(3/n)*Sqrt[-((a + b*Log[c
*(d + e*x)^n])/(b*n))]) - (2*e^2*f^2*Gamma[1/2, -((a + b*Log[c*(d + e*x)^n]
)/(b*n))]*Sqrt[a + b*Log[c*(d + e*x)^n]])/(E^(a/(b*n))*(c*(d + e*x)^n)^n^(-
1)*Sqrt[-((a + b*Log[c*(d + e*x)^n])/(b*n))]) - (12*d*e*f*g*Gamma[1/2, -((a
 + b*Log[c*(d + e*x)^n])/(b*n))]*Sqrt[a + b*Log[c*(d + e*x)^n]])/(E^(a/(b*n
))*(c*(d + e*x)^n)^n^(-1)*Sqrt[-((a + b*Log[c*(d + e*x)^n])/(b*n))]) - (4*d
^2*g^2*Gamma[1/2, -((a + b*Log[c*(d + e*x)^n])/(b*n))]*Sqrt[a + b*Log[c*(d
+ e*x)^n]])/(E^(a/(b*n))*(c*(d + e*x)^n)^n^(-1)*Sqrt[-((a + b*Log[c*(d + e*
x)^n])/(b*n))]) - (b*e*n*(f + g*x)*(b*e*n*(f + g*x) + 2*a*(e*f + 2*d*g + 3*
e*g*x) + 2*b*(2*d*g + e*(f + 3*g*x))*Log[c*(d + e*x)^n]))/(a + b*Log[c*(d +
 e*x)^n])^(3/2)))/(3*b^3*e^3*n^3)
```

Maple [F]
time = 0.15, size = 0, normalized size = 0.00

$$\int \frac{(gx+f)^2}{(a+b\ln(c(ex+d)^n))^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^2/(a+b*ln(c*(e*x+d)^n))^(5/2),x)
```

```
[Out] int((g*x+f)^2/(a+b*ln(c*(e*x+d)^n))^(5/2),x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2/(a+b*log(c*(e*x+d)^n))^(5/2),x, algorithm="maxima")
```

```
[Out] integrate((g*x + f)^2/(b*log((x*e + d)^n*c) + a)^(5/2), x)
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2/(a+b*log(c*(e*x+d)^n))^(5/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(f+gx)^2}{(a+b\log{(c(d+ex)^n)})^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**2/(a+b*ln(c*(e*x+d)**n))**(5/2),x)
```

```
[Out] Integral((f + g*x)**2/(a + b*log(c*(d + e*x)**n))**(5/2), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2/(a+b*log(c*(e*x+d)^n))^(5/2),x, algorithm="giac")
```

```
[Out] integrate((g*x + f)^2/(b*log((x*e + d)^n*c) + a)^(5/2), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(f+g\,x)^2}{(a+b\,\ln\left(c\,(d+e\,x)^n\right))^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)^2/(a + b*log(c*(d + e*x)^n))^(5/2),x)
```

```
[Out] int((f + g*x)^2/(a + b*log(c*(d + e*x)^n))^(5/2), x)
```

3.135 $\int \frac{f+gx}{(a+b\log(c(d+ex)^n))^{5/2}}\,dx$

Optimal. Leaf size=311

$$\frac{4e^{-\frac{a}{bn}}(ef-dg)\sqrt{\pi}\,(d+ex)\left(c(d+ex)^n\right)^{-1/n}\operatorname{erfi}\left(\frac{\sqrt{a+b\log\left(c(d+ex)^n\right)}}{\sqrt{b}\,\sqrt{n}}\right)}{3b^{5/2}e^2n^{5/2}}+\frac{8e^{-\frac{2a}{bn}}g\sqrt{2\pi}\,(d+ex)^2\left(c(d\right.}{}$$

```
[Out] -2/3*(e*x+d)*(g*x+f)/b/e/n/(a+b*ln(c*(e*x+d)^n))^(3/2)+4/3*(-d*g+e*f)*(e*x+
d)*erfi((a+b*ln(c*(e*x+d)^n))^(1/2)/b^(1/2)/n^(1/2))*Pi^(1/2)/b^(5/2)/e^2/e
xp(a/b/n)/n^(5/2)/((c*(e*x+d)^n)^(1/n))+8/3*g*(e*x+d)^2*erfi(2^(1/2)*(a+b*l
n(c*(e*x+d)^n))^(1/2)/b^(1/2)/n^(1/2))*2^(1/2)*Pi^(1/2)/b^(5/2)/e^2/exp(2*a
/b/n)/n^(5/2)/((c*(e*x+d)^n)^(2/n))+4/3*(-d*g+e*f)*(e*x+d)/b^2/e^2/n^2/(a+b
*ln(c*(e*x+d)^n))^(1/2)-8/3*(e*x+d)*(g*x+f)/b^2/e/n^2/(a+b*ln(c*(e*x+d)^n))
^(1/2)
```

Rubi [A]

time = 0.42, antiderivative size = 311, normalized size of antiderivative = 1.00, number of steps used = 21, number of rules used = 9, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.375$, Rules used = {2447, 2448, 2436, 2337, 2211, 2235, 2437, 2347, 2334}

$$\frac{4\sqrt{\pi}\,e^{-\frac{a}{bn}}(d+ex)(ef-dg)\left(c(d+ex)^n\right)^{-1/n}\text{Erfi}\left(\frac{\sqrt{a+b\log\left(c(d+ex)^n\right)}}{\sqrt{b}\,\sqrt{n}}\right)}{3b^{5/2}e^2n^{5/2}}+\frac{8\sqrt{2\pi}\,ge^{-\frac{2a}{bn}}(d+ex)^2\left(c(d+ex)^n\right)^{-2/n}\text{Erfi}\left(\frac{\sqrt{2}\,\sqrt{a+b\log\left(c(d+ex)^n\right)}}{\sqrt{b}\,\sqrt{n}}\right)}{3b^{5/2}e^2n^{5/2}}+\frac{4(d+ex)(ef-dg)}{3b^2e^2n^2\sqrt{a+b\log\left(c(d+ex)^n\right)}}-\frac{8(d+ex)(f+gx)}{3b^2en^2\sqrt{a+b\log\left(c(d+ex)^n\right)}}-\frac{2(d+ex)(f+gx)}{3ben\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)/(a + b*Log[c*(d + e*x)^n])^(5/2),x]
```

```
[Out] (4*(e*f - d*g)*Sqrt[Pi]*(d + e*x)*Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]]/(Sqrt
[b]*Sqrt[n])])/(3*b^(5/2)*e^2*E^(a/(b*n))*n^(5/2)*(c*(d + e*x)^n)^n^(-1)) +
 (8*g*Sqrt[2*Pi]*(d + e*x)^2*Erfi[(Sqrt[2]*Sqrt[a + b*Log[c*(d + e*x)^n]])/
(Sqrt[b]*Sqrt[n])])/(3*b^(5/2)*e^2*E^((2*a)/(b*n))*n^(5/2)*(c*(d + e*x)^n)^
(2/n)) - (2*(d + e*x)*(f + g*x))/(3*b*e*n*(a + b*Log[c*(d + e*x)^n])^(3/2))
 + (4*(e*f - d*g)*(d + e*x))/(3*b^2*e^2*n^2*Sqrt[a + b*Log[c*(d + e*x)^n]])
 - (8*(d + e*x)*(f + g*x))/(3*b^2*e*n^2*Sqrt[a + b*Log[c*(d + e*x)^n]])
```

Rule 2211

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - c*(f/d)) + f*g*(x^2/d)), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !TrueQ[$UseGamma]
```

Rule 2235

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[F^a*Sqrt
[Pi]*(Erfi[(c + d*x)*Rt[b*Log[F], 2]]/(2*d*Rt[b*Log[F], 2])), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2334

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Simp[x*((a + b
*Log[c*x^n])^(p + 1)/(b*n*(p + 1))), x] - Dist[1/(b*n*(p + 1)), Int[(a + b*
Log[c*x^n])^(p + 1), x], x] /; FreeQ[{a, b, c, n}, x] && LtQ[p, -1] && Inte
gerQ[2*p]
```

Rule 2337

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2347

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_)*((d_.)*(x_))^(m_.), x_Symbol
] :> Dist[(d*x)^(m + 1)/(d*n*(c*x^n)^((m + 1)/n)), Subst[Int[E^(((m + 1)/n)
*x)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b, c, d, m, n, p}, x]
```

Rule 2436

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2437

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[(f*(x/d))^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2447

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[(d + e*x)*(f + g*x)^q*((a + b*Log[c*(d + e
*x)^n])^(p + 1)/(b*e*n*(p + 1))), x] + (-Dist[(q + 1)/(b*n*(p + 1)), Int[(f
 + g*x)^q*(a + b*Log[c*(d + e*x)^n])^(p + 1), x], x] + Dist[q*((e*f - d*g)/
(b*e*n*(p + 1))), Int[(f + g*x)^(q - 1)*(a + b*Log[c*(d + e*x)^n])^(p + 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0] && LtQ[
p, -1] && GtQ[q, 0]
```

Rule 2448

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q*(a + b*Log[c*(d
 + e*x)^n])^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f -
```

```
d*g, 0] && IGtQ[q, 0]
```

Rubi steps

$$\int \frac{f+gx}{(a+b\log(c(d+ex)^n))^{5/2}}\,dx = -\frac{2(d+ex)(f+gx)}{3ben(a+b\log(c(d+ex)^n))^{3/2}} + \frac{4\int \frac{f+gx}{(a+b\log(c(d+ex)^n))^{3/2}}\,dx}{3bn} - \frac{(2(ef-}{}$$

$$= -\frac{2(d+ex)(f+gx)}{3ben(a+b\log(c(d+ex)^n))^{3/2}} - \frac{8(d+ex)(f+gx)}{3b^2en^2\sqrt{a+b\log(c(d+ex)^n)}} + -$$

$$= -\frac{2(d+ex)(f+gx)}{3ben(a+b\log(c(d+ex)^n))^{3/2}} + \frac{4(ef-dg)(d+ex)}{3b^2e^2n^2\sqrt{a+b\log(c(d+ex)^n)}} -$$

$$= -\frac{2(d+ex)(f+gx)}{3ben(a+b\log(c(d+ex)^n))^{3/2}} + \frac{4(ef-dg)(d+ex)}{3b^2e^2n^2\sqrt{a+b\log(c(d+ex)^n)}} -$$

$$= -\frac{2(d+ex)(f+gx)}{3ben(a+b\log(c(d+ex)^n))^{3/2}} + \frac{4(ef-dg)(d+ex)}{3b^2e^2n^2\sqrt{a+b\log(c(d+ex)^n)}} -$$

$$= -\frac{4e^{-\frac{a}{bn}}(ef-dg)\sqrt{\pi}\,(d+ex)\,(c(d+ex)^n)^{-1/n}\,\mathrm{erfi}\left(\frac{\sqrt{a+b\log(c(d+e}}{\sqrt{b}\,\sqrt{n}}\right.}{b^{5/2}e^2n^{5/2}}$$

$$= -\frac{4e^{-\frac{a}{bn}}(ef-dg)\sqrt{\pi}\,(d+ex)\,(c(d+ex)^n)^{-1/n}\,\mathrm{erfi}\left(\frac{\sqrt{a+b\log(c(d+e}}{\sqrt{b}\,\sqrt{n}}\right.}{b^{5/2}e^2n^{5/2}}$$

$$= \frac{4e^{-\frac{a}{bn}}(ef-dg)\sqrt{\pi}\,(d+ex)\,(c(d+ex)^n)^{-1/n}\,\mathrm{erfi}\left(\frac{\sqrt{a+b\log(c(d+ex}}{\sqrt{b}\,\sqrt{n}}\right.}{3b^{5/2}e^2n^{5/2}}$$

Mathematica [A]
time = 1.27, size = 353, normalized size = 1.14

$$\frac{2e^{-\frac{2a}{bn}}(d+ex)\,(c(d+ex)^n)^{-2/n}\left(-8de^{\frac{a}{bn}}g\sqrt{\pi}\,(c(d+ex)^n)^{\frac{1}{n}}\,\mathrm{erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\,\sqrt{n}}\right)+4g\sqrt{2\pi}\,(d+ex)\mathrm{erfi}\left(\frac{\sqrt{2}\,\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\,\sqrt{n}}\right)-\frac{\sqrt{b}\,e^{\frac{a}{bn}}\sqrt{n}\,(c(d+ex)^n)^{\frac{1}{n}}\left(2b(ef+3dg)n\Gamma\left(\frac{1}{2},-\frac{a+b\log(c(d+ex)^n)}{bn}\right)\left(-\frac{a+b\log(c(d+ex)^n)}{bn}\right)^{3/2}+e^{\frac{a}{bn}}(c(d+ex)^n)^{\frac{1}{n}}(ben(f+gx)+2a(ef+dg+2egx)+2b(dg+e(f+2gx))\log(c(d+ex)^n))\right)}{(a+b\log(c(d+ex)^n))^{3/2}}\right)}{3b^{5/2}e^2n^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)/(a + b*Log[c*(d + e*x)^n])^(5/2),x]
[Out] (2*(d + e*x)*(-8*d*E^(a/(b*n))*g*Sqrt[Pi]*(c*(d + e*x)^n)^n^(-1)*Erfi[Sqrt[
a + b*Log[c*(d + e*x)^n]]/(Sqrt[b]*Sqrt[n])] + 4*g*Sqrt[2*Pi]*(d + e*x)*Erf
```

```
i[(Sqrt[2]*Sqrt[a + b*Log[c*(d + e*x)^n]])/(Sqrt[b]*Sqrt[n])] - (Sqrt[b]*E^
(a/(b*n))*Sqrt[n]*(c*(d + e*x)^n)^n^(-1)*(2*b*(e*f + 3*d*g)*n*Gamma[1/2, -(
(a + b*Log[c*(d + e*x)^n])/(b*n))]*(-((a + b*Log[c*(d + e*x)^n])/(b*n)))^(3
/2) + E^(a/(b*n))*(c*(d + e*x)^n)^n^(-1)*(b*e*n*(f + g*x) + 2*a*(e*f + d*g
+ 2*e*g*x) + 2*b*(d*g + e*(f + 2*g*x))*Log[c*(d + e*x)^n])))/(a + b*Log[c*(
d + e*x)^n])^(3/2)))/(3*b^(5/2)*e^2*E^((2*a)/(b*n))*n^(5/2)*(c*(d + e*x)^n)
^(2/n))
```

Maple [F]
time = 0.03, size = 0, normalized size = 0.00

$$\int \frac{gx+f}{\left(a+b\ln\left(c\left(ex+d\right)^{n}\right)\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)/(a+b*ln(c*(e*x+d)^n))^(5/2),x)
[Out] int((g*x+f)/(a+b*ln(c*(e*x+d)^n))^(5/2),x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(a+b*log(c*(e*x+d)^n))^(5/2),x, algorithm="maxima")
[Out] integrate((g*x + f)/(b*log((x*e + d)^n*c) + a)^(5/2), x)
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(a+b*log(c*(e*x+d)^n))^(5/2),x, algorithm="fricas")
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{f+gx}{\left(a+b\log\left(c\left(d+ex\right)^{n}\right)\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(a+b*ln(c*(e*x+d)**n))**(5/2),x)
```

```
[Out] Integral((f + g*x)/(a + b*log(c*(d + e*x)**n))**(5/2), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(a+b*log(c*(e*x+d)^n))^(5/2),x, algorithm="giac")
```

```
[Out] integrate((g*x + f)/(b*log((x*e + d)^n*c) + a)^(5/2), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{f+g\,x}{{\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)}^{5/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)/(a + b*log(c*(d + e*x)^n))^(5/2),x)
```

```
[Out] int((f + g*x)/(a + b*log(c*(d + e*x)^n))^(5/2), x)
```

3.136 $\int \frac{1}{(a+b\log(c(d+ex)^n))^{5/2}}\,dx$

Optimal. Leaf size=156

$$\frac{4e^{-\frac{a}{bn}}\sqrt{\pi}\,(d+ex)\,(c(d+ex)^n)^{-1/n}\,\mathrm{erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\,\sqrt{n}}\right)}{3b^{5/2}en^{5/2}}-\frac{2(d+ex)}{3ben\,(a+b\log(c(d+ex)^n))^{3/2}}-\frac{4(d+ex)}{3b^2en^2\sqrt{a+b\log(c(d+ex)^n)}}$$

```
[Out] -2/3*(e*x+d)/b/e/n/(a+b*ln(c*(e*x+d)^n))^(3/2)+4/3*(e*x+d)*erfi((a+b*ln(c*(
e*x+d)^n))^(1/2)/b^(1/2)/n^(1/2))*Pi^(1/2)/b^(5/2)/e/exp(a/b/n)/n^(5/2)/((c
*(e*x+d)^n)^(1/n))-4/3*(e*x+d)/b^2/e/n^2/(a+b*ln(c*(e*x+d)^n))^(1/2)
```

Rubi [A]
time = 0.09, antiderivative size = 156, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}} = 0.278$, Rules used = {2436, 2334, 2337, 2211, 2235}

$$\frac{4\sqrt{\pi}\,e^{-\frac{a}{bn}}(d+ex)\,(c(d+ex)^n)^{-1/n}\,\mathrm{Erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\,\sqrt{n}}\right)}{3b^{5/2}en^{5/2}}-\frac{4(d+ex)}{3b^2en^2\sqrt{a+b\log(c(d+ex)^n)}}-\frac{2(d+ex)}{3ben\,(a+b\log(c(d+ex)^n))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^(-5/2),x]
```

```
[Out] (4*Sqrt[Pi]*(d + e*x)*Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]]/(Sqrt[b]*Sqrt[n])
])/(3*b^(5/2)*e*E^(a/(b*n))*n^(5/2)*(c*(d + e*x)^n)^n^(-1)) - (2*(d + e*x))
/(3*b*e*n*(a + b*Log[c*(d + e*x)^n])^(3/2)) - (4*(d + e*x))/(3*b^2*e*n^2*Sq
rt[a + b*Log[c*(d + e*x)^n]])
```

Rule 2211

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - c*(f/d)) + f*g*(x^2/d)), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !TrueQ[$UseGamma]
```

Rule 2235

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[F^a*Sqrt
[Pi]*(Erfi[(c + d*x)*Rt[b*Log[F], 2]]/(2*d*Rt[b*Log[F], 2])), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2334

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Simp[x*((a + b
*Log[c*x^n])^(p + 1)/(b*n*(p + 1))), x] - Dist[1/(b*n*(p + 1)), Int[(a + b*
Log[c*x^n])^(p + 1), x], x] /; FreeQ[{a, b, c, n}, x] && LtQ[p, -1] && Inte
```

```
gerQ[2*p]
```

Rule 2337

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2436

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rubi steps

$$\int \frac{1}{(a+b\log(c(d+ex)^n))^{5/2}}\,dx = \frac{\text{Subst}\left(\int \frac{1}{(a+b\log(cx^n))^{5/2}}\,dx, x, d+ex\right)}{e}$$

$$= -\frac{2(d+ex)}{3ben(a+b\log(c(d+ex)^n))^{3/2}} + \frac{2\text{Subst}\left(\int \frac{1}{(a+b\log(cx^n))^{3/2}}\,dx, x, d+e\right.}{3ben}$$

$$= -\frac{2(d+ex)}{3ben(a+b\log(c(d+ex)^n))^{3/2}} - \frac{4(d+ex)}{3b^2en^2\sqrt{a+b\log(c(d+ex)^n)}} + $$

$$= -\frac{2(d+ex)}{3ben(a+b\log(c(d+ex)^n))^{3/2}} - \frac{4(d+ex)}{3b^2en^2\sqrt{a+b\log(c(d+ex)^n)}} + $$

$$= -\frac{2(d+ex)}{3ben(a+b\log(c(d+ex)^n))^{3/2}} - \frac{4(d+ex)}{3b^2en^2\sqrt{a+b\log(c(d+ex)^n)}} + $$

$$= \frac{4e^{-\frac{a}{bn}}\sqrt{\pi}(d+ex)(c(d+ex)^n)^{-1/n}\text{erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{3b^{5/2}en^{5/2}} - $$

Mathematica [A]
time = 0.11, size = 163, normalized size = 1.04

$$-\frac{2e^{-\frac{a}{bn}}(d+ex)(c(d+ex)^n)^{-1/n}\left(2bn\Gamma\left(\frac{1}{2},-\frac{a+b\log(c(d+ex)^n)}{bn}\right)\left(-\frac{a+b\log(c(d+ex)^n)}{bn}\right)^{3/2}+e^{\frac{a}{bn}}(c(d+ex)^n)^{\frac{1}{n}}(2a+bn+2b\log(c(d+ex)^n))\right)}{3b^2en^2(a+b\log(c(d+ex)^n))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^(-5/2),x]
```

```
[Out] (-2*(d + e*x)*(2*b*n*Gamma[1/2, -((a + b*Log[c*(d + e*x)^n])/(b*n))]*(-((a
+ b*Log[c*(d + e*x)^n])/(b*n)))^(3/2) + E^(a/(b*n))*(c*(d + e*x)^n)^n^(-1)*
(2*a + b*n + 2*b*Log[c*(d + e*x)^n])))/(3*b^2*e*E^(a/(b*n))*n^2*(c*(d + e*x
)^n)^n^(-1)*(a + b*Log[c*(d + e*x)^n])^(3/2))
```

Maple [**F**]
time = 0.02, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(a+b\ln\left(c\left(ex+d\right)^{n}\right)\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+b*ln(c*(e*x+d)^n))^(5/2),x)
```

```
[Out] int(1/(a+b*ln(c*(e*x+d)^n))^(5/2),x)
```

Maxima [**F**]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(e*x+d)^n))^(5/2),x, algorithm="maxima")
```

```
[Out] integrate((b*log((x*e + d)^n*c) + a)^(-5/2), x)
```

Fricas [**F(-2)**]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(e*x+d)^n))^(5/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [**F**]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(a+b\log\left(c\left(d+ex\right)^{n}\right)\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*ln(c*(e*x+d)**n))**(5/2),x)
```

```
[Out] Integral((a + b*log(c*(d + e*x)**n))**(-5/2), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(e*x+d)^n))^(5/2),x, algorithm="giac")
```

```
[Out] integrate((b*log((x*e + d)^n*c) + a)^(-5/2), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{1}{\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a + b*log(c*(d + e*x)^n))^(5/2),x)
```

```
[Out] int(1/(a + b*log(c*(d + e*x)^n))^(5/2), x)
```

3.137 $\int \frac{1}{(f+gx)(a+b\log(c(d+ex)^n))^{5/2}}\,dx$

Optimal. Leaf size=29

$$\text{Int}\left(\frac{1}{(f+gx)\left(a+b\log\left(c(d+ex)^n\right)\right)^{5/2}},x\right)$$

```
[Out] Unintegrable(1/(g*x+f)/(a+b*ln(c*(e*x+d)^n))^(5/2),x)
```

Rubi [A]
time = 0.04, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int \frac{1}{(f+gx)\left(a+b\log\left(c(d+ex)^n\right)\right)^{5/2}}\,dx$$

Verification is not applicable to the result.

```
[In] Int[1/((f + g*x)*(a + b*Log[c*(d + e*x)^n])^(5/2)),x]
[Out] Defer[Int][1/((f + g*x)*(a + b*Log[c*(d + e*x)^n])^(5/2)), x]
```

Rubi steps

$$\int \frac{1}{(f+gx)\left(a+b\log\left(c(d+ex)^n\right)\right)^{5/2}}\,dx=\int \frac{1}{(f+gx)\left(a+b\log\left(c(d+ex)^n\right)\right)^{5/2}}\,dx$$

Mathematica [A]
time = 0.33, size = 0, normalized size = 0.00

$$\int \frac{1}{(f+gx)\left(a+b\log\left(c(d+ex)^n\right)\right)^{5/2}}\,dx$$

Verification is not applicable to the result.

```
[In] Integrate[1/((f + g*x)*(a + b*Log[c*(d + e*x)^n])^(5/2)),x]
[Out] Integrate[1/((f + g*x)*(a + b*Log[c*(d + e*x)^n])^(5/2)), x]
```

Maple [A]
time = 0.15, size = 0, normalized size = 0.00

$$\int \frac{1}{(gx+f)\left(a+b\ln\left(c\left(ex+d\right)^{n}\right)\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(g*x+f)/(a+b*ln(c*(e*x+d)^n))^(5/2),x)
```

```
[Out] int(1/(g*x+f)/(a+b*ln(c*(e*x+d)^n))^(5/2),x)
```

Maxima [A]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(a+b*log(c*(e*x+d)^n))^(5/2),x, algorithm="maxima")
```

```
[Out] integrate(1/((g*x + f)*(b*log((x*e + d)^n*c) + a)^(5/2)), x)
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(a+b*log(c*(e*x+d)^n))^(5/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: HeuristicGCDFailed

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(a+b*ln(c*(e*x+d)**n))**(5/2),x)
```

```
[Out] Exception raised: HeuristicGCDFailed >> no luck
```

Giac [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(a+b*log(c*(e*x+d)^n))^(5/2),x, algorithm="giac")
```

```
[Out] integrate(1/((g*x + f)*(b*log((x*e + d)^n*c) + a)^(5/2)), x)
```

Mupad [A]
time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{1}{(f+g\,x)\,\left(a+b\,\ln\left(c\,(d+e\,x)^n\right)\right)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((f + g*x)*(a + b*log(c*(d + e*x)^n))^(5/2)),x)
[Out] int(1/((f + g*x)*(a + b*log(c*(d + e*x)^n))^(5/2)), x)
```

3.138 $\int (f+gx)^{3/2} (a+b\log (c(d+ex)^n))\, dx$

Optimal. Leaf size=163

$$-\frac{4b(ef-dg)^2n\sqrt{f+gx}}{5e^2g}-\frac{4b(ef-dg)n(f+gx)^{3/2}}{15eg}-\frac{4bn(f+gx)^{5/2}}{25g}+\frac{4b(ef-dg)^{5/2}n\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f}}{\sqrt{ef-}}\right.}{5e^{5/2}g}$$

```
[Out] -4/15*b*(-d*g+e*f)*n*(g*x+f)^(3/2)/e/g-4/25*b*n*(g*x+f)^(5/2)/g+4/5*b*(-d*g
+e*f)^(5/2)*n*arctanh(e^(1/2)*(g*x+f)^(1/2)/(-d*g+e*f)^(1/2))/e^(5/2)/g+2/5
*(g*x+f)^(5/2)*(a+b*ln(c*(e*x+d)^n))/g-4/5*b*(-d*g+e*f)^2*n*(g*x+f)^(1/2)/e
^2/g
```

Rubi [A]
time = 0.12, antiderivative size = 163, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.167$, Rules used = {2442, 52, 65, 214}

$$\frac{2(f+gx)^{5/2}(a+b\log(c(d+ex)^n))}{5g}+\frac{4bn(ef-dg)^{5/2}\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{5e^{5/2}g}-\frac{4bn\sqrt{f+gx}(ef-dg)^2}{5e^2g}-\frac{4bn(f+gx)^{3/2}(ef-dg)}{15eg}-\frac{4bn(f+gx)^{5/2}}{25g}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)^(3/2)*(a + b*Log[c*(d + e*x)^n]),x]
```

```
[Out] (-4*b*(e*f - d*g)^2*n*Sqrt[f + g*x])/(5*e^2*g) - (4*b*(e*f - d*g)*n*(f + g*
x)^(3/2))/(15*e*g) - (4*b*n*(f + g*x)^(5/2))/(25*g) + (4*b*(e*f - d*g)^(5/2
)*n*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]])/(5*e^(5/2)*g) + (2*(f
 + g*x)^(5/2)*(a + b*Log[c*(d + e*x)^n]))/(5*g)
```

Rule 52

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
(a + b*x)^(m + 1)*((c + d*x)^n/(b*(m + n + 1))), x] + Dist[n*((b*c - a*d)/(
b*(m + n + 1))), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 65

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - a*(d/b) +
d*(x^p/b))^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 214

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-a/b, 2]/a)*ArcTanh[x
/Rt[-a/b, 2]], x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 2442

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[(f + g*x)^(q + 1)*((a + b*Log[c*(d + e*x)^n])/(
g*(q + 1))), x] - Dist[b*e*(n/(g*(q + 1))), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rubi steps

$$\int (f+gx)^{3/2}(a+b\log(c(d+ex)^n))\,dx = \frac{2(f+gx)^{5/2}(a+b\log(c(d+ex)^n))}{5g} - \frac{(2ben)\int \frac{(f+gx)^{5/2}}{d+ex}\,dx}{5g}$$

$$= -\frac{4bn(f+gx)^{5/2}}{25g} + \frac{2(f+gx)^{5/2}(a+b\log(c(d+ex)^n))}{5g} - \frac{(2b(e$$

$$= -\frac{4b(ef-dg)n(f+gx)^{3/2}}{15eg} - \frac{4bn(f+gx)^{5/2}}{25g} + \frac{2(f+gx)^{5/2}(a$$

$$= -\frac{4b(ef-dg)^2n\sqrt{f+gx}}{5e^2g} - \frac{4b(ef-dg)n(f+gx)^{3/2}}{15eg} - \frac{4bn(f$$

$$= -\frac{4b(ef-dg)^2n\sqrt{f+gx}}{5e^2g} - \frac{4b(ef-dg)n(f+gx)^{3/2}}{15eg} - \frac{4bn(f$$

$$= -\frac{4b(ef-dg)^2n\sqrt{f+gx}}{5e^2g} - \frac{4b(ef-dg)n(f+gx)^{3/2}}{15eg} - \frac{4bn(f$$

Mathematica [A]
time = 0.16, size = 137, normalized size = 0.84

$$\frac{2\left(-\frac{2}{5}bn(f+gx)^{5/2} - \frac{2b(ef-dg)n\left(\sqrt{e}\sqrt{f+gx}\,(4ef-3dg+egx)-3(ef-dg)^{3/2}\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)\right)}{3e^{5/2}} + (f+gx)^{5/2}(a+b\log(c(d+ex)^n))\right)}{5g}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)^(3/2)*(a + b*Log[c*(d + e*x)^n]),x]
```

```
[Out] (2*((-2*b*n*(f + g*x)^(5/2))/5 - (2*b*(e*f - d*g)*n*(Sqrt[e]*Sqrt[f + g*x]*
(4*e*f - 3*d*g + e*g*x) - 3*(e*f - d*g)^(3/2)*ArcTanh[(Sqrt[e]*Sqrt[f + g*x
])/Sqrt[e*f - d*g]]))/(3*e^(5/2)) + (f + g*x)^(5/2)*(a + b*Log[c*(d + e*x)^
n])))/(5*g)
```

Maple [F]
time = 0.14, size = 0, normalized size = 0.00

$$\int (gx+f)^{\frac{3}{2}} \left(a+b\ln \left(c(ex+d)^{n}\right)\right) dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^(3/2)*(a+b*ln(c*(e*x+d)^n)),x)
```

```
[Out] int((g*x+f)^(3/2)*(a+b*ln(c*(e*x+d)^n)),x)
```

Maxima [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^(3/2)*(a+b*log(c*(e*x+d)^n)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*%e^2*f-4*%e*d*g>0)', see `assume?
` for m
```

Fricas [A]
time = 0.43, size = 479, normalized size = 2.94

$$\left[\frac{2\left(15\left(bd^{2}g^{2}n-2bdfgne+bf^{2}ne^{2}\right)\sqrt{-(dg-fe)e^{(-1)}}\log\left(-\frac{dg-(gx+2f)e-2\sqrt{gx+f}\sqrt{-(dg-fe)e^{(-1)}}e}{xe+d}\right)-\left(30bd^{2}g^{2}n-15\left(bg^{2}nx^{2}+2bfgnx+bf^{2}n\right)e^{2}\log(xe+d)-15\left(bg^{2}x^{2}+2bfgx+bf^{2}\right)e^{2}\log(c)+\left(46bf^{2}n-15af^{2}+3\left(2bg^{2}n-5ag^{2}\right)x^{2}+2\left(11bfgn-15afg\right)x\right)e^{2}-10\left(bdg^{2}nx+7bdfgn\right)e\right)\sqrt{gx+f}\right)e^{(-2)}}{75g}, -\frac{2\left(30\left(bd^{2}g^{2}n-2bdfgne+bf^{2}ne^{2}\right)\sqrt{dg-fe}\arctan\left(-\frac{\sqrt{gx+f}e^{\frac{1}{2}}}{\sqrt{dg-fe}}\right)e^{\left(-\frac{1}{2}\right)}+\left(30bd^{2}g^{2}n-15\left(bg^{2}nx^{2}+2bfgnx+bf^{2}n\right)e^{2}\log(xe+d)-15\left(bg^{2}x^{2}+2bfgx+bf^{2}\right)e^{2}\log(c)+\left(46bf^{2}n-15af^{2}+3\left(2bg^{2}n-5ag^{2}\right)x^{2}+2\left(11bfgn-15afg\right)x\right)e^{2}-10\left(bdg^{2}nx+7bdfgn\right)e\right)\sqrt{gx+f}\right)e^{(-2)}}{75g}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^(3/2)*(a+b*log(c*(e*x+d)^n)),x, algorithm="fricas")
```

```
[Out] [2/75*(15*(b*d^2*g^2*n - 2*b*d*f*g*n*e + b*f^2*n*e^2)*sqrt(-(d*g - f*e)*e^(
-1))*log(-(d*g - (g*x + 2*f)*e - 2*sqrt(g*x + f)*sqrt(-(d*g - f*e)*e^(-1))*
e)/(x*e + d)) - (30*b*d^2*g^2*n - 15*(b*g^2*n*x^2 + 2*b*f*g*n*x + b*f^2*n)*
e^2*log(x*e + d) - 15*(b*g^2*x^2 + 2*b*f*g*x + b*f^2)*e^2*log(c) + (46*b*f^
2*n - 15*a*f^2 + 3*(2*b*g^2*n - 5*a*g^2)*x^2 + 2*(11*b*f*g*n - 15*a*f*g)*x)
*e^2 - 10*(b*d*g^2*n*x + 7*b*d*f*g*n)*e)*sqrt(g*x + f))*e^(-2)/g, -2/75*(30
*(b*d^2*g^2*n - 2*b*d*f*g*n*e + b*f^2*n*e^2)*sqrt(d*g - f*e)*arctan(-sqrt(g
*x + f)*e^(1/2)/sqrt(d*g - f*e))*e^(-1/2) + (30*b*d^2*g^2*n - 15*(b*g^2*n*x
```

```
^2 + 2*b*f*g*n*x + b*f^2*n)*e^2*log(x*e + d) - 15*(b*g^2*x^2 + 2*b*f*g*x +
b*f^2)*e^2*log(c) + (46*b*f^2*n - 15*a*f^2 + 3*(2*b*g^2*n - 5*a*g^2)*x^2 +
2*(11*b*f*g*n - 15*a*f*g)*x)*e^2 - 10*(b*d*g^2*n*x + 7*b*d*f*g*n)*e)*sqrt(g
*x + f))*e^(-2)/g]
```

Sympy [A]

time = 30.76, size = 469, normalized size = 2.88

$$af\left(\begin{cases}\sqrt{f}x & \text{for } g=0\\ \frac{2(f+gx)^{\frac{3}{2}}}{3g} & \text{otherwise}\end{cases}\right)+\frac{2a\left(-\frac{f(f+gx)^{\frac{3}{2}}}{3}+\frac{(f+gx)^{\frac{5}{2}}}{5}\right)}{g}+\frac{2bf\left(-\frac{2en\left(\frac{g(f+gx)^{\frac{3}{2}}}{3e}+\frac{\sqrt{f+gx}\left(-dg^2+efg\right)}{e^2}+\frac{g(dg-ef)^2\operatorname{atan}\left(\frac{\sqrt{f+gx}}{\sqrt{\frac{dg-ef}{e}}}\right)}{e^3\sqrt{\frac{dg-ef}{e}}}\right)}{3g}+\frac{(f+gx)^{\frac{3}{2}}\log\left(c\left(d-\frac{ef}{g}+\frac{e(f+gx)}{g}\right)^n\right)}{3}\right)}{g}+\frac{2b\left(-\frac{2en\left(\frac{g(f+gx)^{\frac{5}{2}}}{5e}+\frac{(f+gx)^{\frac{3}{2}}\left(-dg^2+efg\right)}{3e^2}+\frac{\sqrt{f+gx}\left(d^2g^3-2defg^2+e^2f^2g\right)}{e^3}-\frac{g(dg-ef)^3\operatorname{atan}\left(\frac{\sqrt{f+gx}}{\sqrt{\frac{dg-ef}{e}}}\right)}{e^4\sqrt{\frac{dg-ef}{e}}}\right)}{5g}-f\left(-\frac{2en\left(\frac{g(f+gx)^{\frac{3}{2}}}{3e}+\frac{\sqrt{f+gx}\left(-dg^2+efg\right)}{e^2}+\frac{g(dg-ef)^2\operatorname{atan}\left(\frac{\sqrt{f+gx}}{\sqrt{\frac{dg-ef}{e}}}\right)}{e^3\sqrt{\frac{dg-ef}{e}}}\right)}{3g}+\frac{(f+gx)^{\frac{3}{2}}\log\left(c\left(d-\frac{ef}{g}+\frac{e(f+gx)}{g}\right)^n\right)}{3}\right)+\frac{(f+gx)^{\frac{5}{2}}\log\left(c\left(d-\frac{ef}{g}+\frac{e(f+gx)}{g}\right)^n\right)}{5}\right)}{g}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**(3/2)*(a+b*ln(c*(e*x+d)**n)),x)
```

```
[Out] a*f*Piecewise((sqrt(f)*x, Eq(g, 0)), (2*(f + g*x)**(3/2)/(3*g), True)) + 2*
a*(-f*(f + g*x)**(3/2)/3 + (f + g*x)**(5/2)/5)/g + 2*b*f*(-2*e*n*(g*(f + g*
x)**(3/2)/(3*e) + sqrt(f + g*x)*(-d*g**2 + e*f*g)/e**2 + g*(d*g - e*f)**2*a
tan(sqrt(f + g*x)/sqrt((d*g - e*f)/e))/(e**3*sqrt((d*g - e*f)/e)))/(3*g) +
(f + g*x)**(3/2)*log(c*(d - e*f/g + e*(f + g*x)/g)**n)/3)/g + 2*b*(-2*e*n*(
g*(f + g*x)**(5/2)/(5*e) + (f + g*x)**(3/2)*(-d*g**2 + e*f*g)/(3*e**2) + sq
rt(f + g*x)*(d**2*g**3 - 2*d*e*f*g**2 + e**2*f**2*g)/e**3 - g*(d*g - e*f)**
3*atan(sqrt(f + g*x)/sqrt((d*g - e*f)/e))/(e**4*sqrt((d*g - e*f)/e)))/(5*g)
 - f*(-2*e*n*(g*(f + g*x)**(3/2)/(3*e) + sqrt(f + g*x)*(-d*g**2 + e*f*g)/e*
*2 + g*(d*g - e*f)**2*atan(sqrt(f + g*x)/sqrt((d*g - e*f)/e))/(e**3*sqrt((d
*g - e*f)/e)))/(3*g) + (f + g*x)**(3/2)*log(c*(d - e*f/g + e*(f + g*x)/g)**
n)/3) + (f + g*x)**(5/2)*log(c*(d - e*f/g + e*(f + g*x)/g)**n)/5)/g
```

Giac [F]

time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^(3/2)*(a+b*log(c*(e*x+d)^n)),x, algorithm="giac")
```

```
[Out] integrate((g*x + f)^(3/2)*(b*log((x*e + d)^n*c) + a), x)
```

Mupad [F]

time = 0.00, size = -1, normalized size = -0.01

$$\int (f+g\,x)^{3/2}\,\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)^(3/2)*(a + b*log(c*(d + e*x)^n)),x)
```

```
[Out] int((f + g*x)^(3/2)*(a + b*log(c*(d + e*x)^n)), x)
```

3.139 $\int \sqrt{f+gx}\,(a+b\log(c(d+ex)^n))\,dx$

Optimal. Leaf size=132

$$-\frac{4b(ef-dg)n\sqrt{f+gx}}{3eg}-\frac{4bn(f+gx)^{3/2}}{9g}+\frac{4b(ef-dg)^{3/2}n\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{3e^{3/2}g}+\frac{2(f+gx)^{3/2}(a+\cdots}{3\cdots}$$

```
[Out] -4/9*b*n*(g*x+f)^(3/2)/g+4/3*b*(-d*g+e*f)^(3/2)*n*arctanh(e^(1/2)*(g*x+f)^(
1/2)/(-d*g+e*f)^(1/2))/e^(3/2)/g+2/3*(g*x+f)^(3/2)*(a+b*ln(c*(e*x+d)^n))/g-
4/3*b*(-d*g+e*f)*n*(g*x+f)^(1/2)/e/g
```

Rubi [A]
time = 0.06, antiderivative size = 132, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.167$, Rules used = {2442, 52, 65, 214}

$$\frac{2(f+gx)^{3/2}(a+b\log(c(d+ex)^n))}{3g}+\frac{4bn(ef-dg)^{3/2}\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{3e^{3/2}g}-\frac{4bn\sqrt{f+gx}\,(ef-dg)}{3eg}-\frac{4bn(f+gx)^{3/2}}{9g}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[f + g*x]*(a + b*Log[c*(d + e*x)^n]),x]
```

```
[Out] (-4*b*(e*f - d*g)*n*Sqrt[f + g*x])/(3*e*g) - (4*b*n*(f + g*x)^(3/2))/(9*g)
+ (4*b*(e*f - d*g)^(3/2)*n*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]]
)/(3*e^(3/2)*g) + (2*(f + g*x)^(3/2)*(a + b*Log[c*(d + e*x)^n]))/(3*g)
```

Rule 52

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
(a + b*x)^(m + 1)*((c + d*x)^n/(b*(m + n + 1))), x] + Dist[n*((b*c - a*d)/(
b*(m + n + 1))), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] && !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) && !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 65

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - a*(d/b) +
d*(x^p/b))^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 214

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-a/b, 2]/a)*ArcTanh[x
/Rt[-a/b, 2]], x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 2442

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[(f + g*x)^(q + 1)*((a + b*Log[c*(d + e*x)^n])/(
g*(q + 1))), x] - Dist[b*e*(n/(g*(q + 1))), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rubi steps

$$\int \sqrt{f+gx}\,(a+b\log(c(d+ex)^n))\,dx = \frac{2(f+gx)^{3/2}(a+b\log(c(d+ex)^n))}{3g} - \frac{(2ben)\int \frac{(f+gx)^{3/2}}{d+ex}\,dx}{3g}$$

$$= -\frac{4bn(f+gx)^{3/2}}{9g} + \frac{2(f+gx)^{3/2}(a+b\log(c(d+ex)^n))}{3g} - \frac{(2b(ef$$

$$= -\frac{4b(ef-dg)n\sqrt{f+gx}}{3eg} - \frac{4bn(f+gx)^{3/2}}{9g} + \frac{2(f+gx)^{3/2}(a+b}{3g}$$

$$= -\frac{4b(ef-dg)n\sqrt{f+gx}}{3eg} - \frac{4bn(f+gx)^{3/2}}{9g} + \frac{2(f+gx)^{3/2}(a+b}{3g}$$

$$= -\frac{4b(ef-dg)n\sqrt{f+gx}}{3eg} - \frac{4bn(f+gx)^{3/2}}{9g} + \frac{4b(ef-dg)^{3/2}n\,\mathrm{ta}}{3}$$

Mathematica [A]
time = 0.09, size = 118, normalized size = 0.89

$$\frac{2\left(6b(ef-dg)^{3/2}n\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)+\sqrt{e}\sqrt{f+gx}\,(3ae(f+gx)-2bn(4ef-3dg+egx)+3be(f+gx)\log(c(d+ex)^n))\right)}{9e^{3/2}g}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[f + g*x]*(a + b*Log[c*(d + e*x)^n]),x]
```

```
[Out] (2*(6*b*(e*f - d*g)^(3/2)*n*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]
] + Sqrt[e]*Sqrt[f + g*x]*(3*a*e*(f + g*x) - 2*b*n*(4*e*f - 3*d*g + e*g*x)
+ 3*b*e*(f + g*x)*Log[c*(d + e*x)^n])))/(9*e^(3/2)*g)
```

Maple [F]
time = 0.15, size = 0, normalized size = 0.00

$$\int \sqrt{gx+f}\, \left(a+b\ln \left(c(ex+d)^{n}\right)\right) dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^(1/2)*(a+b*ln(c*(e*x+d)^n)),x)
```

```
[Out] int((g*x+f)^(1/2)*(a+b*ln(c*(e*x+d)^n)),x)
```

Maxima [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^(1/2)*(a+b*log(c*(e*x+d)^n)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*%e^2*f-4*%e*d*g>0)', see `assume?
` for m
```

Fricas [A]
time = 0.42, size = 303, normalized size = 2.30

$$\left[-\frac{2 \left(3 \, {\left(b d g n - b f n e\right)} \sqrt{-{\left(d g - f e\right)} e^{\left(-1\right)}} \log\left(-\frac{d g - {\left(g x + 2 \, f\right)} e - 2 \, \sqrt{g x + f} \sqrt{-{\left(d g - f e\right)} e^{\left(-1\right)}} e}{x e + d}\right) - {\left(6 \, b d g n + 3 \, {\left(b g n x + b f n\right)} e \log\left(x e + d\right) + 3 \, {\left(b g x + b f\right)} e \log\left(c\right) - {\left(8 \, b f n - 3 \, a f + {\left(2 \, b g n - 3 \, a g\right)} x\right)} e\right)} \sqrt{g x + f}\right) e^{\left(-1\right)}}{9 \, g}, \frac{2 \left(6 \, {\left(b d g n - b f n e\right)} \sqrt{d g - f e} \arctan\left(-\frac{\sqrt{g x + f} e^{\frac{1}{2}}}{\sqrt{d g - f e}}\right) e^{\left(-\frac{1}{2}\right)} + {\left(6 \, b d g n + 3 \, {\left(b g n x + b f n\right)} e \log\left(x e + d\right) + 3 \, {\left(b g x + b f\right)} e \log\left(c\right) - {\left(8 \, b f n - 3 \, a f + {\left(2 \, b g n - 3 \, a g\right)} x\right)} e\right)} \sqrt{g x + f}\right) e^{\left(-1\right)}}{9 \, g}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^(1/2)*(a+b*log(c*(e*x+d)^n)),x, algorithm="fricas")
```

```
[Out] [-2/9*(3*(b*d*g*n - b*f*n*e)*sqrt(-(d*g - f*e)*e^(-1))*log(-(d*g - (g*x + 2
*f)*e - 2*sqrt(g*x + f)*sqrt(-(d*g - f*e)*e^(-1))*e)/(x*e + d)) - (6*b*d*g*
n + 3*(b*g*n*x + b*f*n)*e*log(x*e + d) + 3*(b*g*x + b*f)*e*log(c) - (8*b*f*
n - 3*a*f + (2*b*g*n - 3*a*g)*x)*e)*sqrt(g*x + f))*e^(-1)/g, 2/9*(6*(b*d*g*
n - b*f*n*e)*sqrt(d*g - f*e)*arctan(-sqrt(g*x + f)*e^(1/2)/sqrt(d*g - f*e))
*e^(-1/2) + (6*b*d*g*n + 3*(b*g*n*x + b*f*n)*e*log(x*e + d) + 3*(b*g*x + b*
f)*e*log(c) - (8*b*f*n - 3*a*f + (2*b*g*n - 3*a*g)*x)*e)*sqrt(g*x + f))*e^(
-1)/g]
```

Sympy [A]

time = 2.30, size = 139, normalized size = 1.05

$$\frac{2\left(\frac{a(f+gx)^{\frac{3}{2}}}{3}+b\left(-\frac{2en\left(\frac{g(f+gx)^{\frac{3}{2}}}{3e}+\frac{\sqrt{f+gx}\,(-dg^2+efg)}{e^2}+\frac{g(dg-ef)^2\operatorname{atan}\left(\frac{\sqrt{f+gx}}{\sqrt{\frac{dg-ef}{e}}}\right)}{e^3\sqrt{\frac{dg-ef}{e}}}\right)}{3g}+\frac{(f+gx)^{\frac{3}{2}}\log\left(c\left(d-\frac{ef}{g}+\frac{e(f+gx)}{g}\right)^n\right)}{3}\right)\right)}{g}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**(1/2)*(a+b*ln(c*(e*x+d)**n)),x)
```

```
[Out] 2*(a*(f + g*x)**(3/2)/3 + b*(-2*e*n*(g*(f + g*x)**(3/2)/(3*e) + sqrt(f + g*
x)*(-d*g**2 + e*f*g)/e**2 + g*(d*g - e*f)**2*atan(sqrt(f + g*x)/sqrt((d*g -
 e*f)/e))/(e**3*sqrt((d*g - e*f)/e)))/(3*g) + (f + g*x)**(3/2)*log(c*(d - e
*f/g + e*(f + g*x)/g)**n)/3))/g
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^(1/2)*(a+b*log(c*(e*x+d)^n)),x, algorithm="giac")
```

```
[Out] integrate(sqrt(g*x + f)*(b*log((x*e + d)^n*c) + a), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int \sqrt{f+g\,x}\,\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)^(1/2)*(a + b*log(c*(d + e*x)^n)),x)
```

```
[Out] int((f + g*x)^(1/2)*(a + b*log(c*(d + e*x)^n)), x)
```

3.140 $\int \frac{a+b\log(c(d+ex)^n)}{\sqrt{f+gx}}\,dx$

Optimal. Leaf size=97

$$-\frac{4bn\sqrt{f+gx}}{g}+\frac{4b\sqrt{ef-dg}\,n\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{\sqrt{e}\,g}+\frac{2\sqrt{f+gx}\,(a+b\log(c(d+ex)^n))}{g}$$

```
[Out] 4*b*n*arctanh(e^(1/2)*(g*x+f)^(1/2)/(-d*g+e*f)^(1/2))*(-d*g+e*f)^(1/2)/g/e^
(1/2)-4*b*n*(g*x+f)^(1/2)/g+2*(a+b*ln(c*(e*x+d)^n))*(g*x+f)^(1/2)/g
```

Rubi [A]
time = 0.04, antiderivative size = 97, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.167$, Rules used = {2442, 52, 65, 214}

$$\frac{2\sqrt{f+gx}\,(a+b\log(c(d+ex)^n))}{g}+\frac{4bn\sqrt{ef-dg}\,\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{\sqrt{e}\,g}-\frac{4bn\sqrt{f+gx}}{g}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])/Sqrt[f + g*x],x]
```

```
[Out] (-4*b*n*Sqrt[f + g*x])/g + (4*b*Sqrt[e*f - d*g]*n*ArcTanh[(Sqrt[e]*Sqrt[f +
 g*x])/Sqrt[e*f - d*g]])/(Sqrt[e]*g) + (2*Sqrt[f + g*x]*(a + b*Log[c*(d + e
*x)^n]))/g
```

Rule 52

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
(a + b*x)^(m + 1)*((c + d*x)^n/(b*(m + n + 1))), x] + Dist[n*((b*c - a*d)/(
b*(m + n + 1))), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 65

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - a*(d/b) +
d*(x^p/b))^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 214

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-a/b, 2]/a)*ArcTanh[x
/Rt[-a/b, 2]], x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 2442

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[(f + g*x)^(q + 1)*((a + b*Log[c*(d + e*x)^n])/(
g*(q + 1))), x] - Dist[b*e*(n/(g*(q + 1))), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rubi steps

$$\int \frac{a+b\log\left(c(d+ex)^n\right)}{\sqrt{f+gx}}\,dx = \frac{2\sqrt{f+gx}\,\left(a+b\log\left(c(d+ex)^n\right)\right)}{g} - \frac{(2ben)\int \frac{\sqrt{f+gx}}{d+ex}\,dx}{g}$$

$$= -\frac{4bn\sqrt{f+gx}}{g} + \frac{2\sqrt{f+gx}\,\left(a+b\log\left(c(d+ex)^n\right)\right)}{g} - \frac{(2b(ef-dg)n)\int \frac{}{(d+}}{g}$$

$$= -\frac{4bn\sqrt{f+gx}}{g} + \frac{2\sqrt{f+gx}\,\left(a+b\log\left(c(d+ex)^n\right)\right)}{g} - \frac{(4b(ef-dg)n)\text{Subst}}{}$$

$$= -\frac{4bn\sqrt{f+gx}}{g} + \frac{4b\sqrt{ef-dg}\,n\tanh^{-1}\left(\frac{\sqrt{e}\,\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{\sqrt{e}\,g} + \frac{2\sqrt{f+gx}\,(a}{}$$

Mathematica [A]
time = 0.06, size = 83, normalized size = 0.86

$$\frac{2\left(\frac{2b\sqrt{ef-dg}\,n\tanh^{-1}\left(\frac{\sqrt{e}\,\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{\sqrt{e}} + \sqrt{f+gx}\,\left(a-2bn+b\log\left(c(d+ex)^n\right)\right)\right)}{g}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])/Sqrt[f + g*x],x]
[Out] (2*((2*b*Sqrt[e*f - d*g]*n*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]]
)/Sqrt[e] + Sqrt[f + g*x]*(a - 2*b*n + b*Log[c*(d + e*x)^n])))/g
```

Maple [A]
time = 0.96, size = 140, normalized size = 1.44

method	result
derivativedivides	$\frac{2\sqrt{gx+f}\,a+2b\ln\left(c\left(\frac{(gx+f)e+dg-ef}{g}\right)^{n}\right)\sqrt{gx+f}-4bn\sqrt{gx+f}+\frac{4bn\arctan\left(\frac{e\sqrt{gx+f}}{\sqrt{(dg-ef)e}}\right)dg}{\sqrt{(dg-ef)e}}-}{g}$
default	$\frac{2\sqrt{gx+f}\,a+2b\ln\left(c\left(\frac{(gx+f)e+dg-ef}{g}\right)^{n}\right)\sqrt{gx+f}-4bn\sqrt{gx+f}+\frac{4bn\arctan\left(\frac{e\sqrt{gx+f}}{\sqrt{(dg-ef)e}}\right)dg}{\sqrt{(dg-ef)e}}-}{g}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))/(g*x+f)^(1/2),x,method=_RETURNVERBOSE)
```

```
[Out] 2/g*((g*x+f)^(1/2)*a+b*ln(c*(((g*x+f)*e+d*g-e*f)/g)^n)*(g*x+f)^(1/2)-2*b*n*
(g*x+f)^(1/2)+2*b*n/((d*g-e*f)*e)^(1/2)*arctan(e*(g*x+f)^(1/2)/((d*g-e*f)*e
)^(1/2))*d*g-2*b*e*n/((d*g-e*f)*e)^(1/2)*arctan(e*(g*x+f)^(1/2)/((d*g-e*f)*
e)^(1/2))*f)
```

Maxima [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x+f)^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*%e^2*f-4*%e*d*g>0)', see `assume?
` for m
```

Fricas [A]
time = 0.41, size = 180, normalized size = 1.86

$$\left[\frac{2\left(\sqrt{-(dg-fe)e^{(-1)}}\,bn\log\left(-\frac{dg-(gx+2f)e-2\sqrt{gx+f}\sqrt{-(dg-fe)e^{(-1)}}\,e}{xe+d}\right)+(bn\log(xe+d)-2bn+b\log(c)+a)\sqrt{gx+f}\right)}{g},\ -\frac{2\left(2\sqrt{dg-fe}\,bn\arctan\left(-\frac{\sqrt{gx+f}\,e^{\frac{1}{2}}}{\sqrt{dg-fe}}\right)e^{\left(-\frac{1}{2}\right)}-(bn\log(xe+d)-2bn+b\log(c)+a)\sqrt{gx+f}\right)}{g}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x+f)^(1/2),x, algorithm="fricas")
```

```
[Out] [2*(sqrt(-(d*g - f*e)*e^(-1))*b*n*log(-(d*g - (g*x + 2*f)*e - 2*sqrt(g*x +
f)*sqrt(-(d*g - f*e)*e^(-1))*e)/(x*e + d)) + (b*n*log(x*e + d) - 2*b*n + b*
```

```
log(c) + a)*sqrt(g*x + f))/g, -2*(2*sqrt(d*g - f*e)*b*n*arctan(-sqrt(g*x +
f)*e^(1/2)/sqrt(d*g - f*e))*e^(-1/2) - (b*n*log(x*e + d) - 2*b*n + b*log(c)
 + a)*sqrt(g*x + f))/g]
```

Sympy [B] Leaf count of result is larger than twice the leaf count of optimal. 326 vs. $2(88) = 176$.
time = 16.74, size = 326, normalized size = 3.36

$$\begin{cases} \frac{-\frac{2af}{\sqrt{f+gx}} - 2a\left(-\frac{f}{\sqrt{f+gx}} - \sqrt{f+gx}\right) - 2bf\left(\frac{2en\operatorname{atan}\left(\frac{1}{\sqrt{\frac{e}{dg-ef}}\sqrt{f+gx}}\right)}{\sqrt{\frac{e}{dg-ef}}(dg-ef)} + \frac{\log(c(d+ex)^n)}{\sqrt{f+gx}}\right) - 2b\left(-\frac{2en\left(-\frac{g\sqrt{f+gx}}{e} - \frac{g\operatorname{atan}\left(\frac{1}{\sqrt{\frac{e}{dg-ef}}\sqrt{f+gx}}\right)}{e\sqrt{\frac{e}{dg-ef}}}\right)}{g} - f\left(\frac{2en\operatorname{atan}\left(\frac{1}{\sqrt{\frac{e}{dg-ef}}\sqrt{f+gx}}\right)}{\sqrt{\frac{e}{dg-ef}}(dg-ef)} + \frac{\log\left(c\left(d-\frac{ef}{g}+\frac{e(f+gx)}{g}\right)^n\right)}{\sqrt{f+gx}}\right) - \sqrt{f+gx}\log\left(c\left(d-\frac{ef}{g}+\frac{e(f+gx)}{g}\right)^n\right)\right)}{g} & \text{for } g\neq 0 \\ \frac{ax+b\left(-en\left(-\frac{d\left(\begin{cases}\frac{x}{d} & \text{for } e=0\\ \frac{\log(d+ex)}{e} & \text{otherwise}\end{cases}\right)}{e}+\frac{x}{e}\right)+x\log(c(d+ex)^n)\right)}{\sqrt{f}} & \text{otherwise}\end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))/(g*x+f)**(1/2),x)
```

```
[Out] Piecewise(((-2*a*f/sqrt(f + g*x) - 2*a*(-f/sqrt(f + g*x) - sqrt(f + g*x)) -
 2*b*f*(2*e*n*atan(1/(sqrt(e/(d*g - e*f))*sqrt(f + g*x)))/(sqrt(e/(d*g - e*
f))*(d*g - e*f)) + log(c*(d + e*x)**n)/sqrt(f + g*x)) - 2*b*(-2*e*n*(-g*sqr
t(f + g*x)/e - g*atan(1/(sqrt(e/(d*g - e*f))*sqrt(f + g*x)))/(e*sqrt(e/(d*g
 - e*f))))/g - f*(2*e*n*atan(1/(sqrt(e/(d*g - e*f))*sqrt(f + g*x)))/(sqrt(e
/(d*g - e*f))*(d*g - e*f)) + log(c*(d - e*f/g + e*(f + g*x)/g)**n)/sqrt(f +
 g*x)) - sqrt(f + g*x)*log(c*(d - e*f/g + e*(f + g*x)/g)**n)))/g, Ne(g, 0))
, ((a*x + b*(-e*n*(-d*Piecewise((x/d, Eq(e, 0)), (log(d + e*x)/e, True))/e
+ x/e) + x*log(c*(d + e*x)**n)))/sqrt(f), True))
```

Giac [A]
time = 5.87, size = 110, normalized size = 1.13

$$\frac{2\left(\left(2\left(\frac{(dg-fe)\arctan\left(\frac{\sqrt{gx+f}\,e}{\sqrt{dge-fe^2}}\right)e^{(-1)}}{\sqrt{dge-fe^2}} - \sqrt{gx+f}\,e^{(-1)}\right)e + \sqrt{gx+f}\,\log(xe+d)\right)bn + \sqrt{gx+f}\,b\log(c) + \sqrt{gx+f}\,a\right)}{g}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x+f)^(1/2),x, algorithm="giac")
```

```
[Out] 2*((2*((d*g - f*e)*arctan(sqrt(g*x + f)*e/sqrt(d*g*e - f*e^2))*e^(-1)/sqrt(
d*g*e - f*e^2) - sqrt(g*x + f)*e^(-1))*e + sqrt(g*x + f)*log(x*e + d))*b*n
+ sqrt(g*x + f)*b*log(c) + sqrt(g*x + f)*a)/g
```

Mupad [F]

time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)}{\sqrt{f+g\,x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))/(f + g*x)^(1/2),x)
[Out] int((a + b*log(c*(d + e*x)^n))/(f + g*x)^(1/2), x)
```

3.141 $\int \frac{a+b\log(c(d+ex)^n)}{(f+gx)^{3/2}}\,dx$

Optimal. Leaf size=81

$$-\frac{4b\sqrt{e}\,n\tanh^{-1}\left(\frac{\sqrt{e}\,\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{g\sqrt{ef-dg}}-\frac{2(a+b\log\left(c(d+ex)^n\right))}{g\sqrt{f+gx}}$$

```
[Out] -4*b*n*arctanh(e^(1/2)*(g*x+f)^(1/2)/(-d*g+e*f)^(1/2))*e^(1/2)/g/(-d*g+e*f)
^(1/2)-2*(a+b*ln(c*(e*x+d)^n))/g/(g*x+f)^(1/2)
```

Rubi [A]
time = 0.04, antiderivative size = 81, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.125$, Rules used = {2442, 65, 214}

$$-\frac{2(a+b\log\left(c(d+ex)^n\right))}{g\sqrt{f+gx}}-\frac{4b\sqrt{e}\,n\tanh^{-1}\left(\frac{\sqrt{e}\,\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{g\sqrt{ef-dg}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])/(f + g*x)^(3/2),x]
```

```
[Out] (-4*b*Sqrt[e]*n*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]])/(g*Sqrt[e
*f - d*g]) - (2*(a + b*Log[c*(d + e*x)^n]))/(g*Sqrt[f + g*x])
```

Rule 65

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - a*(d/b) +
d*(x^p/b))^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 214

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-a/b, 2]/a)*ArcTanh[x
/Rt[-a/b, 2]], x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 2442

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[(f + g*x)^(q + 1)*((a + b*Log[c*(d + e*x)^n])/(
g*(q + 1))), x] - Dist[b*e*(n/(g*(q + 1))), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
```

```
eQ[q, -1]
```

Rubi steps

$$
\begin{aligned}
\int \frac{a+b\log\left(c(d+ex)^n\right)}{(f+gx)^{3/2}}\,dx &= -\frac{2\left(a+b\log\left(c(d+ex)^n\right)\right)}{g\sqrt{f+gx}}+\frac{(2ben)\int\frac{1}{(d+ex)\sqrt{f+gx}}\,dx}{g}\\
&= -\frac{2\left(a+b\log\left(c(d+ex)^n\right)\right)}{g\sqrt{f+gx}}+\frac{(4ben)\,\text{Subst}\left(\int\frac{1}{d-\frac{ef}{g}+\frac{ex^2}{g}}\,dx,x,\sqrt{f+gx}\right)}{g^2}\\
&= -\frac{4b\sqrt{e}\,n\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{g\sqrt{ef-dg}}-\frac{2\left(a+b\log\left(c(d+ex)^n\right)\right)}{g\sqrt{f+gx}}
\end{aligned}
$$

Mathematica [A]
time = 0.12, size = 80, normalized size = 0.99

$$
\frac{2\left(-\frac{2b\sqrt{e}\,n\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{\sqrt{ef-dg}}-\frac{a+b\log\left(c(d+ex)^n\right)}{\sqrt{f+gx}}\right)}{g}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])/(f + g*x)^(3/2),x]
[Out] (2*((-2*b*Sqrt[e]*n*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]])/Sqrt[
e*f - d*g] - (a + b*Log[c*(d + e*x)^n])/Sqrt[f + g*x]))/g
```

Maple [F]
time = 0.17, size = 0, normalized size = 0.00

$$
\int \frac{a+b\ln\left(c(ex+d)^n\right)}{(gx+f)^{\frac{3}{2}}}\,dx
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))/(g*x+f)^(3/2),x)
[Out] int((a+b*ln(c*(e*x+d)^n))/(g*x+f)^(3/2),x)
```

Maxima [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x+f)^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*%e^2*f-4*%e*d*g>0)', see `assume?
` for m
```

Fricas [A]
time = 0.39, size = 216, normalized size = 2.67

$$\left[\frac{2\left((bgnx+bfn)\sqrt{-\frac{e}{dg-fe}}\log\left(-\frac{dg-2\,(dg-fe)\sqrt{gx+f}\sqrt{-\frac{e}{dg-fe}}-(gx+2\,f)e}{xe+d}\right)-(bn\log(xe+d)+b\log(c)+a)\sqrt{gx+f}\right)}{g^2x+fg},\ \frac{2\left(\frac{2\,(bgnx+bfn)\arctan\left(-\frac{\sqrt{dg-fe}\,e^{\left(-\frac{1}{2}\right)}}{\sqrt{gx+f}}\right)e^{\frac{1}{2}}}{\sqrt{dg-fe}}-(bn\log(xe+d)+b\log(c)+a)\sqrt{gx+f}\right)}{g^2x+fg}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x+f)^(3/2),x, algorithm="fricas")
```

```
[Out] [2*((b*g*n*x + b*f*n)*sqrt(-e/(d*g - f*e))*log(-(d*g - 2*(d*g - f*e)*sqrt(g
*x + f)*sqrt(-e/(d*g - f*e)) - (g*x + 2*f)*e)/(x*e + d)) - (b*n*log(x*e + d
) + b*log(c) + a)*sqrt(g*x + f))/(g^2*x + f*g), 2*(2*(b*g*n*x + b*f*n)*arct
an(-sqrt(d*g - f*e)*e^(-1/2)/sqrt(g*x + f))*e^(1/2)/sqrt(d*g - f*e) - (b*n*
log(x*e + d) + b*log(c) + a)*sqrt(g*x + f))/(g^2*x + f*g)]
```

Sympy [A]
time = 7.32, size = 85, normalized size = 1.05

$$\frac{-\frac{2a}{\sqrt{f+gx}}+2b\left(\frac{2n\,\mathrm{atan}\left(\frac{\sqrt{f+gx}}{\sqrt{\frac{g\left(d-\frac{ef}{g}\right)}{e}}}\right)}{\sqrt{\frac{g\left(d-\frac{ef}{g}\right)}{e}}}-\frac{\log\left(c\left(d-\frac{ef}{g}+\frac{e(f+gx)}{g}\right)^n\right)}{\sqrt{f+gx}}\right)}{g}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))/(g*x+f)**(3/2),x)
```

```
[Out] (-2*a/sqrt(f + g*x) + 2*b*(2*n*atan(sqrt(f + g*x)/sqrt(g*(d - e*f/g)/e))/sq
rt(g*(d - e*f/g)/e) - log(c*(d - e*f/g + e*(f + g*x)/g)**n)/sqrt(f + g*x)))
/g
```

Giac [A]
time = 2.80, size = 92, normalized size = 1.14

$$\frac{4\,bn\arctan\left(\frac{\sqrt{gx+f}\,e}{\sqrt{dge-fe^2}}\right)e}{\sqrt{dge-fe^2}\,g}-\frac{2\,(bn\log\left(dg+(gx+f)e-fe\right)-bn\log\left(g\right)+b\log\left(c\right)+a)}{\sqrt{gx+f}\,g}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x+f)^(3/2),x, algorithm="giac")
```

```
[Out] 4*b*n*arctan(sqrt(g*x + f)*e/sqrt(d*g*e - f*e^2))*e/(sqrt(d*g*e - f*e^2)*g)
 - 2*(b*n*log(d*g + (g*x + f)*e - f*e) - b*n*log(g) + b*log(c) + a)/(sqrt(g
*x + f)*g)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)}{{\left(f+g\,x\right)}^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))/(f + g*x)^(3/2),x)
```

```
[Out] int((a + b*log(c*(d + e*x)^n))/(f + g*x)^(3/2), x)
```

3.142 $\int \frac{a+b\log(c(d+ex)^n)}{(f+gx)^{5/2}}\,dx$

Optimal. Leaf size=114

$$\frac{4ben}{3g(ef-dg)\sqrt{f+gx}}-\frac{4be^{3/2}n\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{3g(ef-dg)^{3/2}}-\frac{2(a+b\log(c(d+ex)^n))}{3g(f+gx)^{3/2}}$$

```
[Out] -4/3*b*e^(3/2)*n*arctanh(e^(1/2)*(g*x+f)^(1/2)/(-d*g+e*f)^(1/2))/g/(-d*g+e*
f)^(3/2)-2/3*(a+b*ln(c*(e*x+d)^n))/g/(g*x+f)^(3/2)+4/3*b*e*n/g/(-d*g+e*f)/(
g*x+f)^(1/2)
```

Rubi [A]

time = 0.06, antiderivative size = 114, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.167$, Rules used = {2442, 53, 65, 214}

$$-\frac{2(a+b\log(c(d+ex)^n))}{3g(f+gx)^{3/2}}-\frac{4be^{3/2}n\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{3g(ef-dg)^{3/2}}+\frac{4ben}{3g\sqrt{f+gx}\,(ef-dg)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])/(f + g*x)^(5/2),x]
```

```
[Out] (4*b*e*n)/(3*g*(e*f - d*g)*Sqrt[f + g*x]) - (4*b*e^(3/2)*n*ArcTanh[(Sqrt[e]
*Sqrt[f + g*x])/Sqrt[e*f - d*g]])/(3*g*(e*f - d*g)^(3/2)) - (2*(a + b*Log[c
*(d + e*x)^n]))/(3*g*(f + g*x)^(3/2))
```

Rule 53

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
(a + b*x)^(m + 1)*((c + d*x)^(n + 1)/((b*c - a*d)*(m + 1))), x] - Dist[d*((
m + n + 2)/((b*c - a*d)*(m + 1))), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 65

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - a*(d/b) +
d*(x^p/b))^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 214

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-a/b, 2]/a)*ArcTanh[x
/Rt[-a/b, 2]], x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 2442

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[(f + g*x)^(q + 1)*((a + b*Log[c*(d + e*x)^n])/(
g*(q + 1))), x] - Dist[b*e*(n/(g*(q + 1))), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rubi steps

$$\int \frac{a+b\log\left(c(d+ex)^n\right)}{(f+gx)^{5/2}}\,dx = -\frac{2(a+b\log\left(c(d+ex)^n\right))}{3g(f+gx)^{3/2}} + \frac{(2ben)\int \frac{1}{(d+ex)(f+gx)^{3/2}}\,dx}{3g}$$

$$= \frac{4ben}{3g(ef-dg)\sqrt{f+gx}} - \frac{2(a+b\log\left(c(d+ex)^n\right))}{3g(f+gx)^{3/2}} + \frac{(2be^2n)\int \frac{1}{(d+ex)\sqrt{f+g}}}{3g(ef-dg)}$$

$$= \frac{4ben}{3g(ef-dg)\sqrt{f+gx}} - \frac{2(a+b\log\left(c(d+ex)^n\right))}{3g(f+gx)^{3/2}} + \frac{(4be^2n)\,\mathrm{Subst}\left(\int \frac{1}{d-\frac{ef}{g}+}\right.}{3g^2(ef}$$

$$= \frac{4ben}{3g(ef-dg)\sqrt{f+gx}} - \frac{4be^{3/2}n\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{3g(ef-dg)^{3/2}} - \frac{2(a+b\log\left(c(\right.}{3g(f+g}$$

Mathematica [C] Result contains higher order function than in optimal. Order 5 vs. order 3 in optimal.
time = 0.03, size = 85, normalized size = 0.75

$$-\frac{4ben\,{}_2F_1\left(-\frac{1}{2},1;\frac{1}{2};\frac{e(f+gx)}{ef-dg}\right)}{3g(-ef+dg)\sqrt{f+gx}} - \frac{2(a+b\log\left(c(d+ex)^n\right))}{3g(f+gx)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])/(f + g*x)^(5/2),x]
```

```
[Out] (-4*b*e*n*Hypergeometric2F1[-1/2, 1, 1/2, (e*(f + g*x))/(e*f - d*g)])/(3*g*
(-(e*f) + d*g)*Sqrt[f + g*x]) - (2*(a + b*Log[c*(d + e*x)^n]))/(3*g*(f + g*
x)^(3/2))
```

Maple [F]
time = 0.13, size = 0, normalized size = 0.00

$$\int \frac{a + b\ln\left(c(ex+d)^n\right)}{(gx+f)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))/(g*x+f)^(5/2),x)
```

```
[Out] int((a+b*ln(c*(e*x+d)^n))/(g*x+f)^(5/2),x)
```

Maxima [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x+f)^(5/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*%e^2*f-4*%e*d*g>0)', see `assume?
` for m
```

Fricas [A]
time = 0.41, size = 414, normalized size = 3.63

$$\left[-\frac{2\left((bg^2nx^2+2\,bfgnx+bf^2n)\sqrt{-\frac{e}{dg-fe}}\,e\log\left(-\frac{dg-2\,(dg-fe)\sqrt{gx+f}\sqrt{-\frac{e}{dg-fe}}-(gx+2\,f)e}{xe+d}\right)+(adg+(2\,bgnx+2\,bfn-af)e+(bdgn-bfne)\log(xe+d)+(bdg-bfe)\log(c))\sqrt{gx+f}\right)}{3\,(dg^4x^2+2\,dfg^3x+df^2g^2-(fg^3x^2+2\,f^2g^2x+f^3g)e)},\ -\frac{2\left(\frac{2\,(bg^2nx^2+2\,bfgnx+bf^2n)\arctan\left(-\frac{\sqrt{dg-fe}\,e^{\left(-\frac{1}{2}\right)}}{\sqrt{gx+f}}\right)e^{\frac{3}{2}}}{\sqrt{dg-fe}}+(adg+(2\,bgnx+2\,bfn-af)e+(bdgn-bfne)\log(xe+d)+(bdg-bfe)\log(c))\sqrt{gx+f}\right)}{3\,(dg^4x^2+2\,dfg^3x+df^2g^2-(fg^3x^2+2\,f^2g^2x+f^3g)e)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x+f)^(5/2),x, algorithm="fricas")
```

```
[Out] [-2/3*((b*g^2*n*x^2 + 2*b*f*g*n*x + b*f^2*n)*sqrt(-e/(d*g - f*e))*e*log(-(d
*g - 2*(d*g - f*e)*sqrt(g*x + f)*sqrt(-e/(d*g - f*e)) - (g*x + 2*f)*e)/(x*e
 + d)) + (a*d*g + (2*b*g*n*x + 2*b*f*n - a*f)*e + (b*d*g*n - b*f*n*e)*log(x
*e + d) + (b*d*g - b*f*e)*log(c))*sqrt(g*x + f))/(d*g^4*x^2 + 2*d*f*g^3*x +
 d*f^2*g^2 - (f*g^3*x^2 + 2*f^2*g^2*x + f^3*g)*e), -2/3*(2*(b*g^2*n*x^2 + 2
*b*f*g*n*x + b*f^2*n)*arctan(-sqrt(d*g - f*e)*e^(-1/2)/sqrt(g*x + f))*e^(3/
2)/sqrt(d*g - f*e) + (a*d*g + (2*b*g*n*x + 2*b*f*n - a*f)*e + (b*d*g*n - b*
f*n*e)*log(x*e + d) + (b*d*g - b*f*e)*log(c))*sqrt(g*x + f))/(d*g^4*x^2 + 2
*d*f*g^3*x + d*f^2*g^2 - (f*g^3*x^2 + 2*f^2*g^2*x + f^3*g)*e)]
```

Sympy [A]
time = 34.24, size = 117, normalized size = 1.03

$$\frac{-\frac{2a}{3(f+gx)^{\frac{3}{2}}}+2b\left(\frac{2en\left(-\frac{g}{\sqrt{f+gx}\,(dg-ef)}-\frac{g\,\mathrm{atan}\left(\frac{\sqrt{f+gx}}{\sqrt{\frac{dg-ef}{e}}}\right)}{\sqrt{\frac{dg-ef}{e}}\,(dg-ef)}\right)}{3g}-\frac{\log\left(c\left(d-\frac{ef}{g}+\frac{e(f+gx)}{g}\right)^{n}\right)}{3(f+gx)^{\frac{3}{2}}}\right)}{g}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))/(g*x+f)**(5/2),x)
```

```
[Out] (-2*a/(3*(f + g*x)**(3/2)) + 2*b*(2*e*n*(-g/(sqrt(f + g*x)*(d*g - e*f)) - g
*atan(sqrt(f + g*x)/sqrt((d*g - e*f)/e))/(sqrt((d*g - e*f)/e)*(d*g - e*f)))
/(3*g) - log(c*(d - e*f/g + e*(f + g*x)/g)**n)/(3*(f + g*x)**(3/2))))/g
```

Giac [A]
time = 6.00, size = 188, normalized size = 1.65

$$-\frac{4\,bn\arctan\left(\frac{\sqrt{gx+f}\,e}{\sqrt{dge-fe^{2}}}\right)e^{2}}{3\left(dg^{2}-fge\right)\sqrt{dge-fe^{2}}}-\frac{2\left(bdgn\log\left(dg+(gx+f)e-fe\right)-bfne\log\left(dg+(gx+f)e-fe\right)-bdgn\log\left(g\right)+bfne\log\left(g\right)+2\,(gx+f)bne+bdg\log\left(c\right)-bfe\log\left(c\right)+adg-afe\right)}{3\left((gx+f)^{\frac{3}{2}}dg^{2}-(gx+f)^{\frac{3}{2}}fge\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x+f)^(5/2),x, algorithm="giac")
```

```
[Out] -4/3*b*n*arctan(sqrt(g*x + f)*e/sqrt(d*g*e - f*e^2))*e^2/((d*g^2 - f*g*e)*s
qrt(d*g*e - f*e^2)) - 2/3*(b*d*g*n*log(d*g + (g*x + f)*e - f*e) - b*f*n*e*l
og(d*g + (g*x + f)*e - f*e) - b*d*g*n*log(g) + b*f*n*e*log(g) + 2*(g*x + f)
*b*n*e + b*d*g*log(c) - b*f*e*log(c) + a*d*g - a*f*e)/((g*x + f)^(3/2)*d*g^
2 - (g*x + f)^(3/2)*f*g*e)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)}{{\left(f+g\,x\right)}^{5/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))/(f + g*x)^(5/2),x)
[Out] int((a + b*log(c*(d + e*x)^n))/(f + g*x)^(5/2), x)
```

3.143 $\int \frac{a+b\log(c(d+ex)^n)}{(f+gx)^{7/2}}\,dx$

Optimal. Leaf size=145

$$\frac{4ben}{15g(ef-dg)(f+gx)^{3/2}}+\frac{4be^2n}{5g(ef-dg)^2\sqrt{f+gx}}-\frac{4be^{5/2}n\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{5g(ef-dg)^{5/2}}-\frac{2(a+b\log(c(d+e}{5g(f+gx)^{5/2}}$$

```
[Out] 4/15*b*e*n/g/(-d*g+e*f)/(g*x+f)^(3/2)-4/5*b*e^(5/2)*n*arctanh(e^(1/2)*(g*x+
f)^(1/2)/(-d*g+e*f)^(1/2))/g/(-d*g+e*f)^(5/2)-2/5*(a+b*ln(c*(e*x+d)^n))/g/(
g*x+f)^(5/2)+4/5*b*e^2*n/g/(-d*g+e*f)^2/(g*x+f)^(1/2)
```

Rubi [A]

time = 0.09, antiderivative size = 145, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.167$, Rules used = {2442, 53, 65, 214}

$$-\frac{2(a+b\log(c(d+ex)^n))}{5g(f+gx)^{5/2}}-\frac{4be^{5/2}n\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{5g(ef-dg)^{5/2}}+\frac{4be^2n}{5g\sqrt{f+gx}(ef-dg)^2}+\frac{4ben}{15g(f+gx)^{3/2}(ef-dg)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])/(f + g*x)^(7/2),x]
```

```
[Out] (4*b*e*n)/(15*g*(e*f - d*g)*(f + g*x)^(3/2)) + (4*b*e^2*n)/(5*g*(e*f - d*g)
^2*Sqrt[f + g*x]) - (4*b*e^(5/2)*n*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f
 - d*g]])/(5*g*(e*f - d*g)^(5/2)) - (2*(a + b*Log[c*(d + e*x)^n]))/(5*g*(f
+ g*x)^(5/2))
```

Rule 53

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
(a + b*x)^(m + 1)*((c + d*x)^(n + 1)/((b*c - a*d)*(m + 1))), x] - Dist[d*((
m + n + 2)/((b*c - a*d)*(m + 1))), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 65

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - a*(d/b) +
d*(x^p/b))^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 214

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-a/b, 2]/a)*ArcTanh[x
/Rt[-a/b, 2]], x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 2442

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[(f + g*x)^(q + 1)*((a + b*Log[c*(d + e*x)^n])/(
g*(q + 1))), x] - Dist[b*e*(n/(g*(q + 1))), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rubi steps

$$\begin{aligned}
\int \frac{a+b\log\left(c(d+ex)^n\right)}{(f+gx)^{7/2}}\,dx &= -\frac{2\left(a+b\log\left(c(d+ex)^n\right)\right)}{5g(f+gx)^{5/2}}+\frac{(2ben)\int\frac{1}{(d+ex)(f+gx)^{5/2}}\,dx}{5g}\\
&= \frac{4ben}{15g(ef-dg)(f+gx)^{3/2}}-\frac{2\left(a+b\log\left(c(d+ex)^n\right)\right)}{5g(f+gx)^{5/2}}+\frac{(2be^2n)\int\frac{1}{(d+ex)(f+gx)^{3/\cdots}}}{5g(ef-dg)}\\
&= \frac{4ben}{15g(ef-dg)(f+gx)^{3/2}}+\frac{4be^2n}{5g(ef-dg)^2\sqrt{f+gx}}-\frac{2\left(a+b\log\left(c(d+ex)^n\right)\cdots\right.}{5g(f+gx)^{5/2}}\\
&= \frac{4ben}{15g(ef-dg)(f+gx)^{3/2}}+\frac{4be^2n}{5g(ef-dg)^2\sqrt{f+gx}}-\frac{2\left(a+b\log\left(c(d+ex)^n\right)\cdots\right.}{5g(f+gx)^{5/2}}\\
&= \frac{4ben}{15g(ef-dg)(f+gx)^{3/2}}+\frac{4be^2n}{5g(ef-dg)^2\sqrt{f+gx}}-\frac{4be^{5/2}n\tanh^{-1}\left(\frac{\sqrt{e}\,\cdots}{\sqrt{e\cdots}}\right.}{5g(ef-dg)^{5/\cdots}}
\end{aligned}$$

Mathematica [C] Result contains higher order function than in optimal. Order 5 vs. order 3 in optimal.
time = 0.03, size = 78, normalized size = 0.54

$$\frac{2\left(\frac{2ben(f+gx)\,{}_2F_1\left(-\frac{3}{2},1;-\frac{1}{2};\frac{e(f+gx)}{ef-dg}\right)}{ef-dg}-3\left(a+b\log\left(c(d+ex)^n\right)\right)\right)}{15g(f+gx)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])/(f + g*x)^(7/2),x]
```

```
[Out] (2*((2*b*e*n*(f + g*x)*Hypergeometric2F1[-3/2, 1, -1/2, (e*(f + g*x))/(e*f
- d*g)])/(e*f - d*g) - 3*(a + b*Log[c*(d + e*x)^n])))/(15*g*(f + g*x)^(5/2)
)
```

Maple [F]
time = 0.18, size = 0, normalized size = 0.00

$$\int \frac{a + b\ln\left(c(ex + d)^n\right)}{(gx + f)^{\frac{7}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))/(g*x+f)^(7/2),x)
```

```
[Out] int((a+b*ln(c*(e*x+d)^n))/(g*x+f)^(7/2),x)
```

Maxima [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x+f)^(7/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*%e^2*f-4*%e*d*g>0)', see `assume?
` for m
```

Fricas [B] Leaf count of result is larger than twice the leaf count of optimal. 350 vs. 2(124) = 248.
time = 0.38, size = 745, normalized size = 5.14

$$\left[\frac{2\left(3\left(bg^3nx^3+3bfg^2nx^2+3bf^2gnx+bf^3n\right)\sqrt{-\frac{e}{dg-fe}}\,e^2\log\left(-\frac{dg-2(dg-fe)\sqrt{gx+f}\sqrt{-\frac{e}{dg-fe}}-(gx+2f)e}{xe+d}\right)-\left(3ad^2g^2-\left(6bg^2nx^2+14bfgnx+8bf^2n-3af^2\right)e^2+2\left(bdg^2nx+bdfgn-3adfg\right)e+3\left(bd^2g^2n-2bdfgne+bf^2ne^2\right)\log(xe+d)+3\left(bd^2g^2-2bdfge+bf^2e^2\right)\log(c)\right)\sqrt{gx+f}\right)}{15\left(d^2g^6x^3+3d^2fg^5x^2+3d^2f^2g^4x+d^2f^3g^3+\left(f^2g^4x^3+3f^3g^3x^2+3f^4g^2x+f^5g\right)e^2-2\left(dfg^5x^3+3df^2g^4x^2+3df^3g^3x+df^4g^2\right)e\right)},\ \frac{2\left(\frac{6\left(bg^3nx^3+3bfg^2nx^2+3bf^2gnx+bf^3n\right)\arctan\left(-\frac{\sqrt{dg-fe}\,e^{\left(-\frac{1}{2}\right)}}{\sqrt{gx+f}}\right)e^{\frac{5}{2}}}{\sqrt{dg-fe}}-\left(3ad^2g^2-\left(6bg^2nx^2+14bfgnx+8bf^2n-3af^2\right)e^2+2\left(bdg^2nx+bdfgn-3adfg\right)e+3\left(bd^2g^2n-2bdfgne+bf^2ne^2\right)\log(xe+d)+3\left(bd^2g^2-2bdfge+bf^2e^2\right)\log(c)\right)\sqrt{gx+f}\right)}{15\left(d^2g^6x^3+3d^2fg^5x^2+3d^2f^2g^4x+d^2f^3g^3+\left(f^2g^4x^3+3f^3g^3x^2+3f^4g^2x+f^5g\right)e^2-2\left(dfg^5x^3+3df^2g^4x^2+3df^3g^3x+df^4g^2\right)e\right)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x+f)^(7/2),x, algorithm="fricas")
```

```
[Out] [2/15*(3*(b*g^3*n*x^3 + 3*b*f*g^2*n*x^2 + 3*b*f^2*g*n*x + b*f^3*n)*sqrt(-e/
(d*g - f*e))*e^2*log(-(d*g - 2*(d*g - f*e)*sqrt(g*x + f)*sqrt(-e/(d*g - f*e
)) - (g*x + 2*f)*e)/(x*e + d)) - (3*a*d^2*g^2 - (6*b*g^2*n*x^2 + 14*b*f*g*n
*x + 8*b*f^2*n - 3*a*f^2)*e^2 + 2*(b*d*g^2*n*x + b*d*f*g*n - 3*a*d*f*g)*e +
 3*(b*d^2*g^2*n - 2*b*d*f*g*n*e + b*f^2*n*e^2)*log(x*e + d) + 3*(b*d^2*g^2
- 2*b*d*f*g*e + b*f^2*e^2)*log(c))*sqrt(g*x + f))/(d^2*g^6*x^3 + 3*d^2*f*g^
5*x^2 + 3*d^2*f^2*g^4*x + d^2*f^3*g^3 + (f^2*g^4*x^3 + 3*f^3*g^3*x^2 + 3*f^
4*g^2*x + f^5*g)*e^2 - 2*(d*f*g^5*x^3 + 3*d*f^2*g^4*x^2 + 3*d*f^3*g^3*x + d
```

```
*f^4*g^2)*e), 2/15*(6*(b*g^3*n*x^3 + 3*b*f*g^2*n*x^2 + 3*b*f^2*g*n*x + b*f^
3*n)*arctan(-sqrt(d*g - f*e)*e^(-1/2)/sqrt(g*x + f))*e^(5/2)/sqrt(d*g - f*e
) - (3*a*d^2*g^2 - (6*b*g^2*n*x^2 + 14*b*f*g*n*x + 8*b*f^2*n - 3*a*f^2)*e^2
 + 2*(b*d*g^2*n*x + b*d*f*g*n - 3*a*d*f*g)*e + 3*(b*d^2*g^2*n - 2*b*d*f*g*n
*e + b*f^2*n*e^2)*log(x*e + d) + 3*(b*d^2*g^2 - 2*b*d*f*g*e + b*f^2*e^2)*lo
g(c))*sqrt(g*x + f))/(d^2*g^6*x^3 + 3*d^2*f*g^5*x^2 + 3*d^2*f^2*g^4*x + d^2
*f^3*g^3 + (f^2*g^4*x^3 + 3*f^3*g^3*x^2 + 3*f^4*g^2*x + f^5*g)*e^2 - 2*(d*f
*g^5*x^3 + 3*d*f^2*g^4*x^2 + 3*d*f^3*g^3*x + d*f^4*g^2)*e)]
```

Sympy [A]
time = 123.27, size = 141, normalized size = 0.97

$$\frac{-\frac{2a}{5(f+gx)^{\frac{5}{2}}}+2b\left(\frac{2en\left(\frac{eg}{\sqrt{f+gx}\,(dg-ef)^2}+\frac{eg\operatorname{atan}\left(\frac{\sqrt{f+gx}}{\sqrt{\frac{dg-ef}{e}}}\right)}{\sqrt{\frac{dg-ef}{e}}\,(dg-ef)^2}-\frac{g}{3(f+gx)^{\frac{3}{2}}(dg-ef)}\right)}{5g}-\frac{\log\left(c\left(d-\frac{ef}{g}+\frac{e(f+gx)}{g}\right)^n\right)}{5(f+gx)^{\frac{5}{2}}}\right)}{g}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))/(g*x+f)**(7/2),x)
[Out] (-2*a/(5*(f + g*x)**(5/2)) + 2*b*(2*e*n*(e*g/(sqrt(f + g*x)*(d*g - e*f)**2)
 + e*g*atan(sqrt(f + g*x)/sqrt((d*g - e*f)/e))/(sqrt((d*g - e*f)/e)*(d*g -
e*f)**2) - g/(3*(f + g*x)**(3/2)*(d*g - e*f)))/(5*g) - log(c*(d - e*f/g + e
*(f + g*x)/g)**n)/(5*(f + g*x)**(5/2))))/g
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x+f)^(7/2),x, algorithm="giac")
[Out] integrate((b*log((x*e + d)^n*c) + a)/(g*x + f)^(7/2), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)}{{\left(f+g\,x\right)}^{7/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))/(f + g*x)^(7/2),x)
[Out] int((a + b*log(c*(d + e*x)^n))/(f + g*x)^(7/2), x)
```

3.144 $\int \frac{a+b\log(c(d+ex)^n)}{(f+gx)^{9/2}}\,dx$

Optimal. Leaf size=176

$$\frac{4ben}{35g(ef-dg)(f+gx)^{5/2}}+\frac{4be^2n}{21g(ef-dg)^2(f+gx)^{3/2}}+\frac{4be^3n}{7g(ef-dg)^3\sqrt{f+gx}}-\frac{4be^{7/2}n\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+}}{\sqrt{ef-d}}\right.}{7g(ef-dg)^{7/2}}$$

```
[Out] 4/35*b*e*n/g/(-d*g+e*f)/(g*x+f)^(5/2)+4/21*b*e^2*n/g/(-d*g+e*f)^2/(g*x+f)^(
3/2)-4/7*b*e^(7/2)*n*arctanh(e^(1/2)*(g*x+f)^(1/2)/(-d*g+e*f)^(1/2))/g/(-d*
g+e*f)^(7/2)-2/7*(a+b*ln(c*(e*x+d)^n))/g/(g*x+f)^(7/2)+4/7*b*e^3*n/g/(-d*g+
e*f)^3/(g*x+f)^(1/2)
```

Rubi [A]

time = 0.12, antiderivative size = 176, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.167$, Rules used = {2442, 53, 65, 214}

$$-\frac{2(a+b\log(c(d+ex)^n))}{7g(f+gx)^{7/2}}-\frac{4be^{7/2}n\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{7g(ef-dg)^{7/2}}+\frac{4be^3n}{7g\sqrt{f+gx}(ef-dg)^3}+\frac{4be^2n}{21g(f+gx)^{3/2}(ef-dg)^2}+\frac{4ben}{35g(f+gx)^{5/2}(ef-dg)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])/(f + g*x)^(9/2),x]
```

```
[Out] (4*b*e*n)/(35*g*(e*f - d*g)*(f + g*x)^(5/2)) + (4*b*e^2*n)/(21*g*(e*f - d*g
)^2*(f + g*x)^(3/2)) + (4*b*e^3*n)/(7*g*(e*f - d*g)^3*Sqrt[f + g*x]) - (4*b
*e^(7/2)*n*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]])/(7*g*(e*f - d*
g)^(7/2)) - (2*(a + b*Log[c*(d + e*x)^n]))/(7*g*(f + g*x)^(7/2))
```

Rule 53

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
(a + b*x)^(m + 1)*((c + d*x)^(n + 1)/((b*c - a*d)*(m + 1))), x] - Dist[d*((
m + n + 2)/((b*c - a*d)*(m + 1))), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 65

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - a*(d/b) +
d*(x^p/b))^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 214

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-a/b, 2]/a)*ArcTanh[x
/Rt[-a/b, 2]], x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 2442

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[(f + g*x)^(q + 1)*((a + b*Log[c*(d + e*x)^n])/(
g*(q + 1))), x] - Dist[b*e*(n/(g*(q + 1))), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rubi steps

$$\int \frac{a+b\log\left(c(d+ex)^n\right)}{(f+gx)^{9/2}}\,dx = -\frac{2(a+b\log\left(c(d+ex)^n\right))}{7g(f+gx)^{7/2}}+\frac{(2ben)\int \frac{1}{(d+ex)(f+gx)^{7/2}}\,dx}{7g}$$

$$= \frac{4ben}{35g(ef-dg)(f+gx)^{5/2}}-\frac{2(a+b\log\left(c(d+ex)^n\right))}{7g(f+gx)^{7/2}}+\frac{(2be^2n)\int \frac{1}{(d+ex)(f+gx}}{7g(ef-dg)}$$

$$= \frac{4ben}{35g(ef-dg)(f+gx)^{5/2}}+\frac{4be^2n}{21g(ef-dg)^2(f+gx)^{3/2}}-\frac{2(a+b\log\left(c(d+e\right.}{7g(f+gx)^{7/2}}$$

$$= \frac{4ben}{35g(ef-dg)(f+gx)^{5/2}}+\frac{4be^2n}{21g(ef-dg)^2(f+gx)^{3/2}}+\frac{4be^3n}{7g(ef-dg)^3\sqrt{f+}}$$

$$= \frac{4ben}{35g(ef-dg)(f+gx)^{5/2}}+\frac{4be^2n}{21g(ef-dg)^2(f+gx)^{3/2}}+\frac{4be^3n}{7g(ef-dg)^3\sqrt{f+}}$$

$$= \frac{4ben}{35g(ef-dg)(f+gx)^{5/2}}+\frac{4be^2n}{21g(ef-dg)^2(f+gx)^{3/2}}+\frac{4be^3n}{7g(ef-dg)^3\sqrt{f+}}$$

Mathematica [C] Result contains higher order function than in optimal. Order 5 vs. order 3 in optimal.
time = 0.03, size = 78, normalized size = 0.44

$$\frac{2\left(\frac{2ben(f+gx)\,{}_2F_1\left(-\frac{5}{2},1;-\frac{3}{2};\frac{e(f+gx)}{ef-dg}\right)}{ef-dg}-5(a+b\log\left(c(d+ex)^n\right))\right)}{35g(f+gx)^{7/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])/(f + g*x)^(9/2),x]
```

```
[Out] (2*((2*b*e*n*(f + g*x)*Hypergeometric2F1[-5/2, 1, -3/2, (e*(f + g*x))/(e*f
- d*g)])/(e*f - d*g) - 5*(a + b*Log[c*(d + e*x)^n])))/(35*g*(f + g*x)^(7/2)
)
```

Maple [F]
time = 0.16, size = 0, normalized size = 0.00

$$\int \frac{a + b\ln\left(c(ex+d)^{n}\right)}{(gx+f)^{\frac{9}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))/(g*x+f)^(9/2),x)
```

```
[Out] int((a+b*ln(c*(e*x+d)^n))/(g*x+f)^(9/2),x)
```

Maxima [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x+f)^(9/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*%e^2*f-4*%e*d*g>0)', see `assume?
` for m
```

Fricas [B] Leaf count of result is larger than twice the leaf count of optimal. 566 vs. 2(151) = 302.
time = 0.40, size = 1177, normalized size = 6.69

$$\left[-\frac{2\left(15\left(bg^{4}nx^{4}+4bfg^{3}nx^{3}+6bf^{2}g^{2}nx^{2}+4bf^{3}gnx+bf^{4}n\right)\sqrt{-\frac{e}{dg-fe}}\,e^{3}\log\left(-\frac{dg-2(dg-fe)\sqrt{gx+f}\sqrt{-\frac{e}{dg-fe}}-(gx+2f)e}{xe+d}\right)+\left(15ad^{3}g^{3}+\left(30bg^{3}nx^{3}+100bfg^{2}nx^{2}+116bf^{2}gnx+46bf^{3}n-15af^{3}\right)e^{3}-\left(10bdg^{3}nx^{2}+32bdfg^{2}nx+22bdf^{2}gn-45adf^{2}g\right)e^{2}+3\left(2bd^{2}g^{3}nx+2bd^{2}fg^{2}n-15ad^{2}fg^{2}\right)e+15\left(bd^{3}g^{3}n-3bd^{2}fg^{2}ne+3bdf^{2}gne^{2}-bf^{3}ne^{3}\right)\log(xe+d)+15\left(bd^{3}g^{3}-3bd^{2}fg^{2}e+3bdf^{2}ge^{2}-bf^{3}e^{3}\right)\log(c)\right)\sqrt{gx+f}\right)}{105\left(d^{3}g^{8}x^{4}+4d^{3}fg^{7}x^{3}+6d^{3}f^{2}g^{6}x^{2}+4d^{3}f^{3}g^{5}x+d^{3}f^{4}g^{4}-\left(f^{3}g^{5}x^{4}+4f^{4}g^{4}x^{3}+6f^{5}g^{3}x^{2}+4f^{6}g^{2}x+f^{7}g\right)e^{3}+3\left(df^{2}g^{6}x^{4}+4df^{3}g^{5}x^{3}+6df^{4}g^{4}x^{2}+4df^{5}g^{3}x+df^{6}g^{2}\right)e^{2}-3\left(d^{2}fg^{7}x^{4}+4d^{2}f^{2}g^{6}x^{3}+6d^{2}f^{3}g^{5}x^{2}+4d^{2}f^{4}g^{4}x+d^{2}f^{5}g^{3}\right)e\right)},\ -\frac{2\left(\ldots\right)}{\ldots}\right]$$

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x+f)^(9/2),x, algorithm="fricas")
```

```
[Out] [-2/105*(15*(b*g^4*n*x^4 + 4*b*f*g^3*n*x^3 + 6*b*f^2*g^2*n*x^2 + 4*b*f^3*g*
n*x + b*f^4*n)*sqrt(-e/(d*g - f*e))*e^3*log(-(d*g - 2*(d*g - f*e)*sqrt(g*x
+ f)*sqrt(-e/(d*g - f*e)) - (g*x + 2*f)*e)/(x*e + d)) + (15*a*d^3*g^3 + (30
*b*g^3*n*x^3 + 100*b*f*g^2*n*x^2 + 116*b*f^2*g*n*x + 46*b*f^3*n - 15*a*f^3)
*e^3 - (10*b*d*g^3*n*x^2 + 32*b*d*f*g^2*n*x + 22*b*d*f^2*g*n - 45*a*d*f^2*g
)*e^2 + 3*(2*b*d^2*g^3*n*x + 2*b*d^2*f*g^2*n - 15*a*d^2*f*g^2)*e + 15*(b*d^
3*g^3*n - 3*b*d^2*f*g^2*n*e + 3*b*d*f^2*g*n*e^2 - b*f^3*n*e^3)*log(x*e + d)
```

```
 + 15*(b*d^3*g^3 - 3*b*d^2*f*g^2*e + 3*b*d*f^2*g*e^2 - b*f^3*e^3)*log(c))*s
qrt(g*x + f))/(d^3*g^8*x^4 + 4*d^3*f*g^7*x^3 + 6*d^3*f^2*g^6*x^2 + 4*d^3*f^
3*g^5*x + d^3*f^4*g^4 - (f^3*g^5*x^4 + 4*f^4*g^4*x^3 + 6*f^5*g^3*x^2 + 4*f^
6*g^2*x + f^7*g)*e^3 + 3*(d*f^2*g^6*x^4 + 4*d*f^3*g^5*x^3 + 6*d*f^4*g^4*x^2
 + 4*d*f^5*g^3*x + d*f^6*g^2)*e^2 - 3*(d^2*f*g^7*x^4 + 4*d^2*f^2*g^6*x^3 +
6*d^2*f^3*g^5*x^2 + 4*d^2*f^4*g^4*x + d^2*f^5*g^3)*e), -2/105*(30*(b*g^4*n*
x^4 + 4*b*f*g^3*n*x^3 + 6*b*f^2*g^2*n*x^2 + 4*b*f^3*g*n*x + b*f^4*n)*arctan
(-sqrt(d*g - f*e)*e^(-1/2)/sqrt(g*x + f))*e^(7/2)/sqrt(d*g - f*e) + (15*a*d
^3*g^3 + (30*b*g^3*n*x^3 + 100*b*f*g^2*n*x^2 + 116*b*f^2*g*n*x + 46*b*f^3*n
 - 15*a*f^3)*e^3 - (10*b*d*g^3*n*x^2 + 32*b*d*f*g^2*n*x + 22*b*d*f^2*g*n -
45*a*d*f^2*g)*e^2 + 3*(2*b*d^2*g^3*n*x + 2*b*d^2*f*g^2*n - 15*a*d^2*f*g^2)*
e + 15*(b*d^3*g^3*n - 3*b*d^2*f*g^2*n*e + 3*b*d*f^2*g*n*e^2 - b*f^3*n*e^3)*
log(x*e + d) + 15*(b*d^3*g^3 - 3*b*d^2*f*g^2*e + 3*b*d*f^2*g*e^2 - b*f^3*e^
3)*log(c))*sqrt(g*x + f))/(d^3*g^8*x^4 + 4*d^3*f*g^7*x^3 + 6*d^3*f^2*g^6*x^
2 + 4*d^3*f^3*g^5*x + d^3*f^4*g^4 - (f^3*g^5*x^4 + 4*f^4*g^4*x^3 + 6*f^5*g^
3*x^2 + 4*f^6*g^2*x + f^7*g)*e^3 + 3*(d*f^2*g^6*x^4 + 4*d*f^3*g^5*x^3 + 6*d
*f^4*g^4*x^2 + 4*d*f^5*g^3*x + d*f^6*g^2)*e^2 - 3*(d^2*f*g^7*x^4 + 4*d^2*f^
2*g^6*x^3 + 6*d^2*f^3*g^5*x^2 + 4*d^2*f^4*g^4*x + d^2*f^5*g^3)*e)]
```

Sympy [**F(-2)**]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: SystemError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))/(g*x+f)**(9/2),x)
[Out] Exception raised: SystemError >> excessive stack use: stack is 4847 deep
```

Giac [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x+f)^(9/2),x, algorithm="giac")
[Out] integrate((b*log((x*e + d)^n*c) + a)/(g*x + f)^(9/2), x)
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)}{{\left(f+g\,x\right)}^{9/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))/(f + g*x)^(9/2),x)
[Out] int((a + b*log(c*(d + e*x)^n))/(f + g*x)^(9/2), x)
```

3.145 $\int (f+gx)^{3/2} \left(a+b\log\left(c(d+ex)^n\right)\right)^2 \, dx$

Optimal. Leaf size=590

$$\frac{368b^2(ef-dg)^2n^2\sqrt{f+gx}}{75e^2g}+\frac{128b^2(ef-dg)n^2(f+gx)^{3/2}}{225eg}+\frac{16b^2n^2(f+gx)^{5/2}}{125g}-\frac{368b^2(ef-dg)^{5/2}n^2\tanh}{75e^{5/2}}$$

```
[Out] 128/225*b^2*(-d*g+e*f)*n^2*(g*x+f)^(3/2)/e/g+16/125*b^2*n^2*(g*x+f)^(5/2)/g
-368/75*b^2*(-d*g+e*f)^(5/2)*n^2*arctanh(e^(1/2)*(g*x+f)^(1/2)/(-d*g+e*f)^(
1/2))/e^(5/2)/g-8/5*b^2*(-d*g+e*f)^(5/2)*n^2*arctanh(e^(1/2)*(g*x+f)^(1/2)/
(-d*g+e*f)^(1/2))^2/e^(5/2)/g-8/15*b*(-d*g+e*f)*n*(g*x+f)^(3/2)*(a+b*ln(c*(
e*x+d)^n))/e/g-8/25*b*n*(g*x+f)^(5/2)*(a+b*ln(c*(e*x+d)^n))/g+8/5*b*(-d*g+e
*f)^(5/2)*n*arctanh(e^(1/2)*(g*x+f)^(1/2)/(-d*g+e*f)^(1/2))*(a+b*ln(c*(e*x+
d)^n))/e^(5/2)/g+2/5*(g*x+f)^(5/2)*(a+b*ln(c*(e*x+d)^n))^2/g+16/5*b^2*(-d*g
+e*f)^(5/2)*n^2*arctanh(e^(1/2)*(g*x+f)^(1/2)/(-d*g+e*f)^(1/2))*ln(2/(1-e^(
1/2)*(g*x+f)^(1/2)/(-d*g+e*f)^(1/2)))/e^(5/2)/g+8/5*b^2*(-d*g+e*f)^(5/2)*n^
2*polylog(2,1-2/(1-e^(1/2)*(g*x+f)^(1/2)/(-d*g+e*f)^(1/2)))/e^(5/2)/g+368/7
5*b^2*(-d*g+e*f)^2*n^2*(g*x+f)^(1/2)/e^2/g-8/5*b*(-d*g+e*f)^2*n*(a+b*ln(c*(
e*x+d)^n))*(g*x+f)^(1/2)/e^2/g
```

Rubi [A]
time = 1.54, antiderivative size = 590, normalized size of antiderivative = 1.00, number of steps used = 28, number of rules used = 15, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.577$, Rules used = {2445, 2458, 2388, 65, 214, 2390, 12, 1601, 6873, 6131, 6055, 2449, 2352, 2356, 52}

$$\frac{8b^2n^2(ef-dg)^{5/2}\text{PolyLog}\left(2,1-\frac{2}{1-\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}}\right)}{5e^{5/2}g}+\frac{8bn(ef-dg)^{5/2}\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{5e^{5/2}g}-\frac{8bn\sqrt{f+gx}\,(ef-dg)^2\left(a+b\log\left(c(d+ex)^n\right)\right)}{5e^2g}-\frac{8bn(f+gx)^{3/2}(ef-dg)\left(a+b\log\left(c(d+ex)^n\right)\right)}{15eg}+\frac{2(f+gx)^{5/2}\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{5g}-\frac{8bn(f+gx)^{5/2}\left(a+b\log\left(c(d+ex)^n\right)\right)}{25g}-\frac{8b^2n^2(ef-dg)^{5/2}\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)^2}{5e^{5/2}g}-\frac{368b^2n^2(ef-dg)^{5/2}\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{75e^{5/2}g}+\frac{16b^2n^2(ef-dg)^{5/2}\log\left(\frac{2}{1-\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}}\right)\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{5e^{5/2}g}+\frac{368b^2n^2\sqrt{f+gx}\,(ef-dg)^2}{75e^2g}+\frac{128b^2n^2(f+gx)^{3/2}(ef-dg)}{225eg}+\frac{16b^2n^2(f+gx)^{5/2}}{125g}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)^(3/2)*(a + b*Log[c*(d + e*x)^n])^2,x]
```

```
[Out] (368*b^2*(e*f - d*g)^2*n^2*Sqrt[f + g*x])/(75*e^2*g) + (128*b^2*(e*f - d*g)
*n^2*(f + g*x)^(3/2))/(225*e*g) + (16*b^2*n^2*(f + g*x)^(5/2))/(125*g) - (3
68*b^2*(e*f - d*g)^(5/2)*n^2*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g
]])/(75*e^(5/2)*g) - (8*b^2*(e*f - d*g)^(5/2)*n^2*ArcTanh[(Sqrt[e]*Sqrt[f +
 g*x])/Sqrt[e*f - d*g]]^2)/(5*e^(5/2)*g) - (8*b*(e*f - d*g)^2*n*Sqrt[f + g*
x]*(a + b*Log[c*(d + e*x)^n]))/(5*e^2*g) - (8*b*(e*f - d*g)*n*(f + g*x)^(3/
2)*(a + b*Log[c*(d + e*x)^n]))/(15*e*g) - (8*b*n*(f + g*x)^(5/2)*(a + b*Log
[c*(d + e*x)^n]))/(25*g) + (8*b*(e*f - d*g)^(5/2)*n*ArcTanh[(Sqrt[e]*Sqrt[f
 + g*x])/Sqrt[e*f - d*g]]*(a + b*Log[c*(d + e*x)^n]))/(5*e^(5/2)*g) + (2*(f
 + g*x)^(5/2)*(a + b*Log[c*(d + e*x)^n])^2)/(5*g) + (16*b^2*(e*f - d*g)^(5/
```

```
2)*n^2*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]]*Log[2/(1 - (Sqrt[e]
*Sqrt[f + g*x])/Sqrt[e*f - d*g])])/(5*e^(5/2)*g) + (8*b^2*(e*f - d*g)^(5/2)
*n^2*PolyLog[2, 1 - 2/(1 - (Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g])])/(5*e^
(5/2)*g)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 52

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
(a + b*x)^(m + 1)*((c + d*x)^n/(b*(m + n + 1))), x] + Dist[n*((b*c - a*d)/(
b*(m + n + 1))), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 65

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - a*(d/b) +
d*(x^p/b))^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 214

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-a/b, 2]/a)*ArcTanh[x
/Rt[-a/b, 2]], x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 1601

```
Int[(Pp_)/(Qq_), x_Symbol] :> With[{p = Expon[Pp, x], q = Expon[Qq, x]}, Si
mp[Coeff[Pp, x, p]*(Log[RemoveContent[Qq, x]]/(q*Coeff[Qq, x, q])), x] /; E
qQ[p, q - 1] && EqQ[Pp, Simplify[(Coeff[Pp, x, p]/(q*Coeff[Qq, x, q]))*D[Qq
, x]]]] /; PolyQ[Pp, x] && PolyQ[Qq, x]
```

Rule 2352

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> Simp[(-e^(-1))*PolyLo
g[2, 1 - c*x], x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2356

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.),
x_Symbol] :> Simp[(d + e*x)^(q + 1)*((a + b*Log[c*x^n])^p/(e*(q + 1))), x]
```

```
- Dist[b*n*(p/(e*(q + 1))), Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^(p -
1))/x, x], x] /; FreeQ[{a, b, c, d, e, n, p, q}, x] && GtQ[p, 0] && NeQ[q,
-1] && (EqQ[p, 1] || (IntegersQ[2*p, 2*q] &&  !IGtQ[q, 0]) || (EqQ[p, 2] &&
 NeQ[q, 1]))
```

Rule 2388

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.))
/(x_), x_Symbol] :> Dist[d, Int[(d + e*x)^(q - 1)*((a + b*Log[c*x^n])^p/x),
 x], x] + Dist[e, Int[(d + e*x)^(q - 1)*(a + b*Log[c*x^n])^p, x], x] /; Fre
eQ[{a, b, c, d, e, n}, x] && IGtQ[p, 0] && GtQ[q, 0] && IntegerQ[2*q]
```

Rule 2390

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_) + (e_.)*(x_)^(r_.))^(q_.))
/(x_), x_Symbol] :> With[{u = IntHide[(d + e*x^r)^q/x, x]}, Simp[u*(a + b*L
og[c*x^n]), x] - Dist[b*n, Int[Dist[1/x, u, x], x], x]] /; FreeQ[{a, b, c,
d, e, n, r}, x] && IntegerQ[q - 1/2]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[(f + g*x)^(q + 1)*((a + b*Log[c*(d + e*x)^
n])^p/(g*(q + 1))), x] - Dist[b*e*n*(p/(g*(q + 1))), Int[(f + g*x)^(q + 1)*
((a + b*Log[c*(d + e*x)^n])^(p - 1)/(d + e*x)), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && GtQ[p, 0] && NeQ[q, -1] && Int
egersQ[2*p, 2*q] && ( !IGtQ[q, 0] || (EqQ[p, 2] && NeQ[q, 1]))
```

Rule 2449

```
Int[Log[(c_.)/((d_) + (e_.)*(x_))]/((f_) + (g_.)*(x_)^2), x_Symbol] :> Dist
[-e/g, Subst[Int[Log[2*d*x]/(1 - 2*d*x), x], x, 1/(d + e*x)], x] /; FreeQ[{
c, d, e, f, g}, x] && EqQ[c, 2*d] && EqQ[e^2*f + d^2*g, 0]
```

Rule 2458

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[(g*(x/e))^q*((e*h - d*i)/e + i*(x/e))^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 6055

```
Int[((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symbol
] :> Simp[(-(a + b*ArcTanh[c*x])^p)*(Log[2/(1 + e*(x/d))]/e), x] + Dist[b*c
```

```
*(p/e), Int[(a + b*ArcTanh[c*x])^(p - 1)*(Log[2/(1 + e*(x/d))]/(1 - c^2*x^2
)), x], x] /; FreeQ[{a, b, c, d, e}, x] && IGtQ[p, 0] && EqQ[c^2*d^2 - e^2,
 0]
```

Rule 6131

```
Int[(((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)*(x_))/((d_) + (e_.)*(x_)^2),
 x_Symbol] :> Simp[(a + b*ArcTanh[c*x])^(p + 1)/(b*e*(p + 1)), x] + Dist[1/
(c*d), Int[(a + b*ArcTanh[c*x])^p/(1 - c*x), x], x] /; FreeQ[{a, b, c, d, e
}, x] && EqQ[c^2*d + e, 0] && IGtQ[p, 0]
```

Rule 6873

```
Int[u_, x_Symbol] :> With[{v = NormalizeIntegrand[u, x]}, Int[v, x] /; v =!
= u]
```

Rubi steps

$$\int (f+gx)^{3/2}\left(a+b\log\left(c(d+ex)^n\right)\right)^2\,dx = \frac{2(f+gx)^{5/2}\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{5g} - \frac{(4ben)\int \frac{(f+gx)^{5/2}(a+b\log}{d+ex}}{5g}$$

$$= \frac{2(f+gx)^{5/2}\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{5g} - \frac{(4bn)\text{Subst}\left(\int \frac{\left(\frac{ef-dg}{e}+\right.}{}\right.}{}$$

$$= \frac{2(f+gx)^{5/2}\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{5g} - \frac{(4bn)\text{Subst}\left(\int \left(\frac{ef-dg}{e}+\right.\right.}{}$$

$$= -\frac{8bn(f+gx)^{5/2}\left(a+b\log\left(c(d+ex)^n\right)\right)}{25g} + \frac{2(f+gx)^{5/2}(a+b\,}{5g}$$

$$= \frac{16b^2n^2(f+gx)^{5/2}}{125g} - \frac{8b(ef-dg)n(f+gx)^{3/2}\left(a+b\log\left(c(d+\right.\right.}{15eg}$$

$$= \frac{128b^2(ef-dg)n^2(f+gx)^{3/2}}{225eg} + \frac{16b^2n^2(f+gx)^{5/2}}{125g} - \frac{8b(ef-d}{}$$

$$= \frac{368b^2(ef-dg)^2n^2\sqrt{f+gx}}{75e^2g} + \frac{128b^2(ef-dg)n^2(f+gx)^{3/2}}{225eg} +$$

$$= \frac{368b^2(ef-dg)^2n^2\sqrt{f+gx}}{75e^2g} + \frac{128b^2(ef-dg)n^2(f+gx)^{3/2}}{225eg} +$$

Mathematica [C] Result contains higher order function than in optimal. Order 5 vs. order 4 in optimal.
time = 4.29, size = 1143, normalized size = 1.94

[illegible]

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)^(3/2)*(a + b*Log[c*(d + e*x)^n])^2,x]
```

```
[Out] (2*((15*b^2*n^2*Sqrt[f + g*x]*(10*g*(-(e*f) + d*g)*(d + e*x)*Hypergeometric
PFQ[{-3/2, 1, 1, 1}, {2, 2, 2}, (g*(d + e*x))/(-(e*f) + d*g)] - 15*d^2*g^2*
HypergeometricPFQ[{-1/2, 1, 1, 1}, {2, 2, 2}, (g*(d + e*x))/(-(e*f) + d*g)]
 - 15*d*e*g^2*x*HypergeometricPFQ[{-1/2, 1, 1, 1}, {2, 2, 2}, (g*(d + e*x))
/(-(e*f) + d*g)] + 4*e^2*f^2*Log[d + e*x] - 8*d*e*f*g*Log[d + e*x] + 4*d^2*
g^2*Log[d + e*x] - 4*e^2*f^2*Sqrt[(e*(f + g*x))/(e*f - d*g)]*Log[d + e*x] -
 8*e^2*f*g*x*Sqrt[(e*(f + g*x))/(e*f - d*g)]*Log[d + e*x] - 4*e^2*g^2*x^2*S
qrt[(e*(f + g*x))/(e*f - d*g)]*Log[d + e*x] + 15*d^2*g^2*HypergeometricPFQ[
{-1/2, 1, 1}, {2, 2}, (g*(d + e*x))/(-(e*f) + d*g)]*Log[d + e*x] + 15*d*e*g
^2*x*HypergeometricPFQ[{-1/2, 1, 1}, {2, 2}, (g*(d + e*x))/(-(e*f) + d*g)]*
Log[d + e*x] + 2*e^2*f^2*Log[d + e*x]^2 + d*e*f*g*Log[d + e*x]^2 - 3*d^2*g^
2*Log[d + e*x]^2 - 2*e^2*f^2*Sqrt[(e*(f + g*x))/(e*f - d*g)]*Log[d + e*x]^2
 + e^2*f*g*x*Sqrt[(e*(f + g*x))/(e*f - d*g)]*Log[d + e*x]^2 + 3*e^2*g^2*x^2
*Sqrt[(e*(f + g*x))/(e*f - d*g)]*Log[d + e*x]^2 - 10*g*(-(e*f) + d*g)*(d +
e*x)*HypergeometricPFQ[{-3/2, 1, 1}, {2, 2}, (g*(d + e*x))/(-(e*f) + d*g)]*
(1 + Log[d + e*x])))/(e^2*Sqrt[(e*(f + g*x))/(e*f - d*g)]) + (75*b^2*f*n^2*
Sqrt[f + g*x]*(3*g*(d + e*x)*HypergeometricPFQ[{-1/2, 1, 1, 1}, {2, 2, 2},
(g*(d + e*x))/(-(e*f) + d*g)] + Log[d + e*x]*(-3*g*(d + e*x)*Hypergeometric
PFQ[{-1/2, 1, 1}, {2, 2}, (g*(d + e*x))/(-(e*f) + d*g)] + (d*g + e*g*x*Sqrt
[(e*(f + g*x))/(e*f - d*g)] + e*f*(-1 + Sqrt[(e*(f + g*x))/(e*f - d*g)]))*L
og[d + e*x])))/(e*Sqrt[(e*(f + g*x))/(e*f - d*g)]) - (50*b*f*n*(6*(e*f - d*
g)^(3/2)*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]] + Sqrt[e]*Sqrt[f
+ g*x]*(6*d*g - 2*e*(4*f + g*x) + 3*e*(f + g*x)*Log[d + e*x]))*(-a + b*n*Lo
g[d + e*x] - b*Log[c*(d + e*x)^n]))/e^(3/2) + (2*b*n*(30*Sqrt[e*f - d*g]*(2
*e^2*f^2 + d*e*f*g - 3*d^2*g^2)*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f -
d*g]] + Sqrt[e]*Sqrt[f + g*x]*(90*d^2*g^2 - 30*d*e*g*(2*f + g*x) + 2*e^2*(-
31*f^2 + 8*f*g*x + 9*g^2*x^2) + 15*e^2*(2*f^2 - f*g*x - 3*g^2*x^2)*Log[d +
e*x]))*(-a + b*n*Log[d + e*x] - b*Log[c*(d + e*x)^n]))/e^(5/2) + 45*(f + g*
x)^(5/2)*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2))/(225*g)
```

Maple [F]
time = 0.18, size = 0, normalized size = 0.00

$$\int (gx+f)^{\frac{3}{2}} \left(a+b\ln \left(c(ex+d)^{n}\right)\right)^{2} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^(3/2)*(a+b*ln(c*(e*x+d)^n))^2,x)
```

```
[Out] int((g*x+f)^(3/2)*(a+b*ln(c*(e*x+d)^n))^2,x)
```

Maxima [**F(-2)**]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^(3/2)*(a+b*log(c*(e*x+d)^n))^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*%e^2*f-4*%e*d*g>0)', see `assume?
` for m
```

Fricas [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^(3/2)*(a+b*log(c*(e*x+d)^n))^2,x, algorithm="fricas")
```

```
[Out] integral((b^2*g*x + b^2*f)*sqrt(g*x + f)*log((x*e + d)^n*c)^2 + 2*(a*b*g*x
+ a*b*f)*sqrt(g*x + f)*log((x*e + d)^n*c) + (a^2*g*x + a^2*f)*sqrt(g*x + f)
, x)
```

Sympy [**F**]
time = 0.00, size = 0, normalized size = 0.00

$$\int\left(a+b\log\left(c(d+ex)^{n}\right)\right)^{2}(f+gx)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**(3/2)*(a+b*ln(c*(e*x+d)**n))**2,x)
```

```
[Out] Integral((a + b*log(c*(d + e*x)**n))**2*(f + g*x)**(3/2), x)
```

Giac [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^(3/2)*(a+b*log(c*(e*x+d)^n))^2,x, algorithm="giac")
```

```
[Out] integrate((g*x + f)^(3/2)*(b*log((x*e + d)^n*c) + a)^2, x)
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.00

$$\int (f+g\,x)^{3/2}\,{\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)}^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)^(3/2)*(a + b*log(c*(d + e*x)^n))^2,x)
[Out] int((f + g*x)^(3/2)*(a + b*log(c*(d + e*x)^n))^2, x)
```

3.146 $\int \sqrt{f+gx}\,(a+b\log(c(d+ex)^n))^2\,dx$

Optimal. Leaf size=510

$$\frac{64b^2(ef-dg)n^2\sqrt{f+gx}}{9eg}+\frac{16b^2n^2(f+gx)^{3/2}}{27g}-\frac{64b^2(ef-dg)^{3/2}n^2\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{9e^{3/2}g}-\frac{8b^2(ef-dg}{}$$

```
[Out] 16/27*b^2*n^2*(g*x+f)^(3/2)/g-64/9*b^2*(-d*g+e*f)^(3/2)*n^2*arctanh(e^(1/2)
*(g*x+f)^(1/2)/(-d*g+e*f)^(1/2))/e^(3/2)/g-8/3*b^2*(-d*g+e*f)^(3/2)*n^2*arc
tanh(e^(1/2)*(g*x+f)^(1/2)/(-d*g+e*f)^(1/2))^2/e^(3/2)/g-8/9*b*n*(g*x+f)^(3
/2)*(a+b*ln(c*(e*x+d)^n))/g+8/3*b*(-d*g+e*f)^(3/2)*n*arctanh(e^(1/2)*(g*x+f
)^(1/2)/(-d*g+e*f)^(1/2))*(a+b*ln(c*(e*x+d)^n))/e^(3/2)/g+2/3*(g*x+f)^(3/2)
*(a+b*ln(c*(e*x+d)^n))^2/g+16/3*b^2*(-d*g+e*f)^(3/2)*n^2*arctanh(e^(1/2)*(g
*x+f)^(1/2)/(-d*g+e*f)^(1/2))*ln(2/(1-e^(1/2)*(g*x+f)^(1/2)/(-d*g+e*f)^(1/2
)))/e^(3/2)/g+8/3*b^2*(-d*g+e*f)^(3/2)*n^2*polylog(2,1-2/(1-e^(1/2)*(g*x+f)
^(1/2)/(-d*g+e*f)^(1/2)))/e^(3/2)/g+64/9*b^2*(-d*g+e*f)*n^2*(g*x+f)^(1/2)/e
/g-8/3*b*(-d*g+e*f)*n*(a+b*ln(c*(e*x+d)^n))*(g*x+f)^(1/2)/e/g
```

Rubi [A]
time = 1.05, antiderivative size = 510, normalized size of antiderivative = 1.00, number of steps used = 21, number of rules used = 15, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.577$, Rules used = {2445, 2458, 2388, 65, 214, 2390, 12, 1601, 6873, 6131, 6055, 2449, 2352, 2356, 52}

$$\frac{8b^2n^2(ef-dg)^{3/2}\text{PolyLog}\left(2,1-\frac{2}{1-\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}}\right)}{3e^{3/2}g}+\frac{8bn(ef-dg)^{3/2}\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)(a+b\log(c(d+ex)^n))}{3e^{3/2}g}-\frac{8bn(f+gx)^{3/2}(a+b\log(c(d+ex)^n))}{9g}-\frac{8bn\sqrt{f+gx}(ef-dg)(a+b\log(c(d+ex)^n))}{3eg}+\frac{2(f+gx)^{3/2}(a+b\log(c(d+ex)^n))^2}{3g}-\frac{8b^2n^2(ef-dg)^{3/2}\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)^2}{3e^{3/2}g}-\frac{64b^2n^2(ef-dg)^{3/2}\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{9e^{3/2}g}+\frac{16b^2n^2(ef-dg)^{3/2}\log\left(\frac{2}{1-\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}}\right)\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{3e^{3/2}g}+\frac{64b^2n^2\sqrt{f+gx}(ef-dg)}{9eg}+\frac{16b^2n^2(f+gx)^{3/2}}{27g}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[f + g*x]*(a + b*Log[c*(d + e*x)^n])^2,x]
```

```
[Out] (64*b^2*(e*f - d*g)*n^2*Sqrt[f + g*x])/(9*e*g) + (16*b^2*n^2*(f + g*x)^(3/2
))/(27*g) - (64*b^2*(e*f - d*g)^(3/2)*n^2*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/S
qrt[e*f - d*g]])/(9*e^(3/2)*g) - (8*b^2*(e*f - d*g)^(3/2)*n^2*ArcTanh[(Sqrt
[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]]^2)/(3*e^(3/2)*g) - (8*b*(e*f - d*g)*n*S
qrt[f + g*x]*(a + b*Log[c*(d + e*x)^n]))/(3*e*g) - (8*b*n*(f + g*x)^(3/2)*(
a + b*Log[c*(d + e*x)^n]))/(9*g) + (8*b*(e*f - d*g)^(3/2)*n*ArcTanh[(Sqrt[e
]*Sqrt[f + g*x])/Sqrt[e*f - d*g]]*(a + b*Log[c*(d + e*x)^n]))/(3*e^(3/2)*g)
 + (2*(f + g*x)^(3/2)*(a + b*Log[c*(d + e*x)^n])^2)/(3*g) + (16*b^2*(e*f -
d*g)^(3/2)*n^2*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]]*Log[2/(1 -
(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g])])/(3*e^(3/2)*g) + (8*b^2*(e*f - d*
g)^(3/2)*n^2*PolyLog[2, 1 - 2/(1 - (Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g])
])/(3*e^(3/2)*g)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 52

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
(a + b*x)^(m + 1)*((c + d*x)^n/(b*(m + n + 1))), x] + Dist[n*((b*c - a*d)/(
b*(m + n + 1))), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 65

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - a*(d/b) +
d*(x^p/b))^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 214

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-a/b, 2]/a)*ArcTanh[x
/Rt[-a/b, 2]], x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 1601

```
Int[(Pp_)/(Qq_), x_Symbol] :> With[{p = Expon[Pp, x], q = Expon[Qq, x]}, Si
mp[Coeff[Pp, x, p]*(Log[RemoveContent[Qq, x]]/(q*Coeff[Qq, x, q])), x] /; E
qQ[p, q - 1] && EqQ[Pp, Simplify[(Coeff[Pp, x, p]/(q*Coeff[Qq, x, q]))*D[Qq
, x]]]] /; PolyQ[Pp, x] && PolyQ[Qq, x]
```

Rule 2352

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> Simp[(-e^(-1))*PolyLo
g[2, 1 - c*x], x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2356

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.),
x_Symbol] :> Simp[(d + e*x)^(q + 1)*((a + b*Log[c*x^n])^p/(e*(q + 1))), x]
- Dist[b*n*(p/(e*(q + 1))), Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^(p -
1))/x, x], x] /; FreeQ[{a, b, c, d, e, n, p, q}, x] && GtQ[p, 0] && NeQ[q,
-1] && (EqQ[p, 1] || (IntegersQ[2*p, 2*q] &&  !IGtQ[q, 0]) || (EqQ[p, 2] &&
```

```
NeQ[q, 1]))
```

Rule 2388

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.))
/(x_), x_Symbol] :> Dist[d, Int[(d + e*x)^(q - 1)*((a + b*Log[c*x^n])^p/x),
 x], x] + Dist[e, Int[(d + e*x)^(q - 1)*(a + b*Log[c*x^n])^p, x], x] /; Fre
eQ[{a, b, c, d, e, n}, x] && IGtQ[p, 0] && GtQ[q, 0] && IntegerQ[2*q]
```

Rule 2390

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_) + (e_.)*(x_)^(r_.))^(q_.))
/(x_), x_Symbol] :> With[{u = IntHide[(d + e*x^r)^q/x, x]}, Simp[u*(a + b*L
og[c*x^n]), x] - Dist[b*n, Int[Dist[1/x, u, x], x], x]] /; FreeQ[{a, b, c,
d, e, n, r}, x] && IntegerQ[q - 1/2]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[(f + g*x)^(q + 1)*((a + b*Log[c*(d + e*x)^
n])^p/(g*(q + 1))), x] - Dist[b*e*n*(p/(g*(q + 1))), Int[(f + g*x)^(q + 1)*
((a + b*Log[c*(d + e*x)^n])^(p - 1)/(d + e*x)), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && GtQ[p, 0] && NeQ[q, -1] && Int
egersQ[2*p, 2*q] && ( !IGtQ[q, 0] || (EqQ[p, 2] && NeQ[q, 1]))
```

Rule 2449

```
Int[Log[(c_.)/((d_) + (e_.)*(x_))]/((f_) + (g_.)*(x_)^2), x_Symbol] :> Dist
[-e/g, Subst[Int[Log[2*d*x]/(1 - 2*d*x), x], x, 1/(d + e*x)], x] /; FreeQ[{
c, d, e, f, g}, x] && EqQ[c, 2*d] && EqQ[e^2*f + d^2*g, 0]
```

Rule 2458

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[(g*(x/e))^q*((e*h - d*i)/e + i*(x/e))^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 6055

```
Int[((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symbol
] :> Simp[(-(a + b*ArcTanh[c*x])^p)*(Log[2/(1 + e*(x/d))]/e), x] + Dist[b*c
*(p/e), Int[(a + b*ArcTanh[c*x])^(p - 1)*(Log[2/(1 + e*(x/d))]/(1 - c^2*x^2
)), x], x] /; FreeQ[{a, b, c, d, e}, x] && IGtQ[p, 0] && EqQ[c^2*d^2 - e^2,
 0]
```

Rule 6131

```
Int[(((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)*(x_))/((d_) + (e_.)*(x_)^2),
 x_Symbol] :> Simp[(a + b*ArcTanh[c*x])^(p + 1)/(b*e*(p + 1)), x] + Dist[1/
(c*d), Int[(a + b*ArcTanh[c*x])^p/(1 - c*x), x], x] /; FreeQ[{a, b, c, d, e
}, x] && EqQ[c^2*d + e, 0] && IGtQ[p, 0]
```

Rule 6873

```
Int[u_, x_Symbol] :> With[{v = NormalizeIntegrand[u, x]}, Int[v, x] /; v =!
= u]
```

Rubi steps

$$\int \sqrt{f+gx}\,(a+b\log(c(d+ex)^n))^2\,dx = \frac{2(f+gx)^{3/2}(a+b\log(c(d+ex)^n))^2}{3g} - \frac{(4ben)\int \frac{(f+gx)^{3/2}(a+b\log(c}{d+ex}}{3g}$$

$$= \frac{2(f+gx)^{3/2}(a+b\log(c(d+ex)^n))^2}{3g} - \frac{(4bn)\text{Subst}\left(\int \frac{\left(\frac{ef-dg}{e}+\frac{gx}{e}\right.}{}\right.}{}$$

$$= \frac{2(f+gx)^{3/2}(a+b\log(c(d+ex)^n))^2}{3g} - \frac{(4bn)\text{Subst}\left(\int \sqrt{\frac{ef-d}{e}}\right.}{}$$

$$= -\frac{8bn(f+gx)^{3/2}(a+b\log(c(d+ex)^n))}{9g} + \frac{2(f+gx)^{3/2}(a+b\,\text{lo}}{3g}$$

$$= \frac{16b^2n^2(f+gx)^{3/2}}{27g} - \frac{8b(ef-dg)n\sqrt{f+gx}\,(a+b\log(c(d+ex)}{3eg}$$

$$= \frac{64b^2(ef-dg)n^2\sqrt{f+gx}}{9eg} + \frac{16b^2n^2(f+gx)^{3/2}}{27g} - \frac{8b(ef-dg)n}{}$$

$$= \frac{64b^2(ef-dg)n^2\sqrt{f+gx}}{9eg} + \frac{16b^2n^2(f+gx)^{3/2}}{27g} - \frac{8b(ef-dg)n}{}$$

$$= \frac{64b^2(ef-dg)n^2\sqrt{f+gx}}{9eg} + \frac{16b^2n^2(f+gx)^{3/2}}{27g} - \frac{64b^2(ef-dg}{}$$

Mathematica [C] Result contains higher order function than in optimal. Order 5 vs. order 4 in optimal.
time = 1.11, size = 351, normalized size = 0.69

$$\frac{2\left(\frac{3b^2n^2\sqrt{f+gx}\left(3g(d+ex)\,{}_4F_3\left(-\frac{1}{2},1,1,1;2,2,2;\frac{g(d+ex)}{-ef+dg}\right)+\log(d+ex)\left(-3g(d+ex)\,{}_3F_2\left(-\frac{1}{2},1,1;2,2;\frac{g(d+ex)}{-ef+dg}\right)+\left(dg+egx\sqrt{\frac{e(f+gx)}{ef-dg}}+ef\left(-1+\sqrt{\frac{e(f+gx)}{ef-dg}}\right)\right)\log(d+ex)\right)\right)}{e\sqrt{\frac{e(f+gx)}{ef-dg}}}-\frac{2bn\left(6(ef-dg)^{3/2}\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)+\sqrt{e}\sqrt{f+gx}\,(6dg-2e(4f+gx)+3e(f+gx)\log(d+ex))\right)(-a+bn\log(d+ex)-b\log(c(d+ex)^n))}{e^{3/2}}+3(f+gx)^{3/2}(a-bn\log(d+ex)+b\log(c(d+ex)^n))^2\right)}{9g}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[f + g*x]*(a + b*Log[c*(d + e*x)^n])^2,x]
```

```
[Out] (2*((3*b^2*n^2*Sqrt[f + g*x]*(3*g*(d + e*x)*HypergeometricPFQ[{-1/2, 1, 1, 
1}, {2, 2, 2}, (g*(d + e*x))/(-(e*f) + d*g)] + Log[d + e*x]*(-3*g*(d + e*x)
*HypergeometricPFQ[{-1/2, 1, 1}, {2, 2}, (g*(d + e*x))/(-(e*f) + d*g)] + (d
*g + e*g*x*Sqrt[(e*(f + g*x))/(e*f - d*g)] + e*f*(-1 + Sqrt[(e*(f + g*x))/(
e*f - d*g)]))*Log[d + e*x])))/(e*Sqrt[(e*(f + g*x))/(e*f - d*g)]) - (2*b*n*
(6*(e*f - d*g)^(3/2)*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]] + Sqr
t[e]*Sqrt[f + g*x]*(6*d*g - 2*e*(4*f + g*x) + 3*e*(f + g*x)*Log[d + e*x]))*
(-a + b*n*Log[d + e*x] - b*Log[c*(d + e*x)^n]))/e^(3/2) + 3*(f + g*x)^(3/2)
*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2))/(9*g)
```

Maple [F]
time = 0.17, size = 0, normalized size = 0.00

$$\int \sqrt{gx+f}\,\left(a+b\ln\left(c(ex+d)^{n}\right)\right)^{2}dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^(1/2)*(a+b*ln(c*(e*x+d)^n))^2,x)
```

```
[Out] int((g*x+f)^(1/2)*(a+b*ln(c*(e*x+d)^n))^2,x)
```

Maxima [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^(1/2)*(a+b*log(c*(e*x+d)^n))^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*%e^2*f-4*%e*d*g>0)', see `assume?
` for m
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^(1/2)*(a+b*log(c*(e*x+d)^n))^2,x, algorithm="fricas")
```

```
[Out] integral(sqrt(g*x + f)*b^2*log((x*e + d)^n*c)^2 + 2*sqrt(g*x + f)*a*b*log((
x*e + d)^n*c) + sqrt(g*x + f)*a^2, x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \left(a + b\log \left(c(d + ex)^{n}\right)\right)^{2} \sqrt{f + gx}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**(1/2)*(a+b*ln(c*(e*x+d)**n))**2,x)
```

```
[Out] Integral((a + b*log(c*(d + e*x)**n))**2*sqrt(f + g*x), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^(1/2)*(a+b*log(c*(e*x+d)^n))^2,x, algorithm="giac")
```

```
[Out] integrate(sqrt(g*x + f)*(b*log((x*e + d)^n*c) + a)^2, x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \sqrt{f + g\,x}\,\left(a + b\,\ln\left(c\,{\left(d + e\,x\right)}^{n}\right)\right)^{2} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)^(1/2)*(a + b*log(c*(d + e*x)^n))^2,x)
```

```
[Out] int((f + g*x)^(1/2)*(a + b*log(c*(d + e*x)^n))^2, x)
```

3.147 $\int \frac{(a+b\log(c(d+ex)^n))^2}{\sqrt{f+gx}}\,dx$

Optimal. Leaf size=418

$$\frac{16b^2n^2\sqrt{f+gx}}{g}-\frac{16b^2\sqrt{ef-dg}\,n^2\tanh^{-1}\left(\frac{\sqrt{e}\,\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{\sqrt{e}\,g}-\frac{8b^2\sqrt{ef-dg}\,n^2\tanh^{-1}\left(\frac{\sqrt{e}\,\sqrt{f+gx}}{\sqrt{ef-dg}}\right.}{\sqrt{e}\,g}$$

```
[Out] -16*b^2*n^2*arctanh(e^(1/2)*(g*x+f)^(1/2)/(-d*g+e*f)^(1/2))*(-d*g+e*f)^(1/2
)/g/e^(1/2)-8*b^2*n^2*arctanh(e^(1/2)*(g*x+f)^(1/2)/(-d*g+e*f)^(1/2))^2*(-d
*g+e*f)^(1/2)/g/e^(1/2)+8*b*n*arctanh(e^(1/2)*(g*x+f)^(1/2)/(-d*g+e*f)^(1/2
))*(a+b*ln(c*(e*x+d)^n))*(-d*g+e*f)^(1/2)/g/e^(1/2)+16*b^2*n^2*arctanh(e^(1
/2)*(g*x+f)^(1/2)/(-d*g+e*f)^(1/2))*ln(2/(1-e^(1/2)*(g*x+f)^(1/2)/(-d*g+e*f
)^(1/2)))*(-d*g+e*f)^(1/2)/g/e^(1/2)+8*b^2*n^2*polylog(2,1-2/(1-e^(1/2)*(g*
x+f)^(1/2)/(-d*g+e*f)^(1/2)))*(-d*g+e*f)^(1/2)/g/e^(1/2)+16*b^2*n^2*(g*x+f)
^(1/2)/g-8*b*n*(a+b*ln(c*(e*x+d)^n))*(g*x+f)^(1/2)/g+2*(a+b*ln(c*(e*x+d)^n)
)^2*(g*x+f)^(1/2)/g
```

Rubi [A]
time = 0.73, antiderivative size = 418, normalized size of antiderivative = 1.00, number of steps used = 15, number of rules used = 15, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.577$, Rules used = {2445, 2458, 2388, 65, 214, 2390, 12, 1601, 6873, 6131, 6055, 2449, 2352, 2356, 52}

$$\frac{8b^2n^2\sqrt{ef-dg}\,\text{PolyLog}\left(2,1-\frac{2}{1-\frac{\sqrt{e}\,\sqrt{f+gx}}{\sqrt{ef-dg}}}\right)}{\sqrt{e}\,g}-\frac{8bn\sqrt{f+gx}\,(a+b\log(c(d+ex)^n))}{g}+\frac{2\sqrt{f+gx}\,(a+b\log(c(d+ex)^n))^2}{g}+\frac{8bn\sqrt{ef-dg}\tanh^{-1}\left(\frac{\sqrt{e}\,\sqrt{f+gx}}{\sqrt{ef-dg}}\right)(a+b\log(c(d+ex)^n))}{\sqrt{e}\,g}-\frac{8b^2n^2\sqrt{ef-dg}\tanh^{-1}\left(\frac{\sqrt{e}\,\sqrt{f+gx}}{\sqrt{ef-dg}}\right)^2}{\sqrt{e}\,g}-\frac{16b^2n^2\sqrt{ef-dg}\tanh^{-1}\left(\frac{\sqrt{e}\,\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{\sqrt{e}\,g}+\frac{16b^2n^2\sqrt{ef-dg}\log\left(\frac{2}{1-\frac{\sqrt{e}\,\sqrt{f+gx}}{\sqrt{ef-dg}}}\right)\tanh^{-1}\left(\frac{\sqrt{e}\,\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{\sqrt{e}\,g}+\frac{16b^2n^2\sqrt{f+gx}}{g}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^2/Sqrt[f + g*x],x]
```

```
[Out] (16*b^2*n^2*Sqrt[f + g*x])/g - (16*b^2*Sqrt[e*f - d*g]*n^2*ArcTanh[(Sqrt[e]
*Sqrt[f + g*x])/Sqrt[e*f - d*g]])/(Sqrt[e]*g) - (8*b^2*Sqrt[e*f - d*g]*n^2*
ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]]^2)/(Sqrt[e]*g) - (8*b*n*Sq
rt[f + g*x]*(a + b*Log[c*(d + e*x)^n]))/g + (8*b*Sqrt[e*f - d*g]*n*ArcTanh[
(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]]*(a + b*Log[c*(d + e*x)^n]))/(Sqrt[
e]*g) + (2*Sqrt[f + g*x]*(a + b*Log[c*(d + e*x)^n])^2)/g + (16*b^2*Sqrt[e*f
 - d*g]*n^2*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]]*Log[2/(1 - (Sq
rt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g])])/(Sqrt[e]*g) + (8*b^2*Sqrt[e*f - d*g
]*n^2*PolyLog[2, 1 - 2/(1 - (Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g])])/(Sqr
t[e]*g)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 52

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
(a + b*x)^(m + 1)*((c + d*x)^n/(b*(m + n + 1))), x] + Dist[n*((b*c - a*d)/(
b*(m + n + 1))), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 65

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - a*(d/b) +
d*(x^p/b))^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 214

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-a/b, 2]/a)*ArcTanh[x
/Rt[-a/b, 2]], x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 1601

```
Int[(Pp_)/(Qq_), x_Symbol] :> With[{p = Expon[Pp, x], q = Expon[Qq, x]}, Si
mp[Coeff[Pp, x, p]*(Log[RemoveContent[Qq, x]]/(q*Coeff[Qq, x, q])), x] /; E
qQ[p, q - 1] && EqQ[Pp, Simplify[(Coeff[Pp, x, p]/(q*Coeff[Qq, x, q]))*D[Qq
, x]]]] /; PolyQ[Pp, x] && PolyQ[Qq, x]
```

Rule 2352

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> Simp[(-e^(-1))*PolyLo
g[2, 1 - c*x], x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2356

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.),
x_Symbol] :> Simp[(d + e*x)^(q + 1)*((a + b*Log[c*x^n])^p/(e*(q + 1))), x]
- Dist[b*n*(p/(e*(q + 1))), Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^(p -
1))/x, x], x] /; FreeQ[{a, b, c, d, e, n, p, q}, x] && GtQ[p, 0] && NeQ[q,
-1] && (EqQ[p, 1] || (IntegersQ[2*p, 2*q] &&  !IGtQ[q, 0]) || (EqQ[p, 2] &&
 NeQ[q, 1]))
```

Rule 2388

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.))
/(x_), x_Symbol] :> Dist[d, Int[(d + e*x)^(q - 1)*((a + b*Log[c*x^n])^p/x),
 x], x] + Dist[e, Int[(d + e*x)^(q - 1)*(a + b*Log[c*x^n])^p, x], x] /; Fre
eQ[{a, b, c, d, e, n}, x] && IGtQ[p, 0] && GtQ[q, 0] && IntegerQ[2*q]
```

Rule 2390

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_) + (e_.)*(x_)^(r_.))^(q_.))
/(x_), x_Symbol] :> With[{u = IntHide[(d + e*x^r)^q/x, x]}, Simp[u*(a + b*L
og[c*x^n]), x] - Dist[b*n, Int[Dist[1/x, u, x], x], x]] /; FreeQ[{a, b, c,
d, e, n, r}, x] && IntegerQ[q - 1/2]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[(f + g*x)^(q + 1)*((a + b*Log[c*(d + e*x)^
n])^p/(g*(q + 1))), x] - Dist[b*e*n*(p/(g*(q + 1))), Int[(f + g*x)^(q + 1)*
((a + b*Log[c*(d + e*x)^n])^(p - 1)/(d + e*x)), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && GtQ[p, 0] && NeQ[q, -1] && Int
egersQ[2*p, 2*q] && ( !IGtQ[q, 0] || (EqQ[p, 2] && NeQ[q, 1]))
```

Rule 2449

```
Int[Log[(c_.)/((d_) + (e_.)*(x_))]/((f_) + (g_.)*(x_)^2), x_Symbol] :> Dist
[-e/g, Subst[Int[Log[2*d*x]/(1 - 2*d*x), x], x, 1/(d + e*x)], x] /; FreeQ[{
c, d, e, f, g}, x] && EqQ[c, 2*d] && EqQ[e^2*f + d^2*g, 0]
```

Rule 2458

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[(g*(x/e))^q*((e*h - d*i)/e + i*(x/e))^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 6055

```
Int[((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symbol
] :> Simp[(-(a + b*ArcTanh[c*x])^p)*(Log[2/(1 + e*(x/d))]/e), x] + Dist[b*c
*(p/e), Int[(a + b*ArcTanh[c*x])^(p - 1)*(Log[2/(1 + e*(x/d))]/(1 - c^2*x^2
)), x], x] /; FreeQ[{a, b, c, d, e}, x] && IGtQ[p, 0] && EqQ[c^2*d^2 - e^2,
 0]
```

Rule 6131

```
Int[(((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)*(x_))/((d_) + (e_.)*(x_)^2),
 x_Symbol] :> Simp[(a + b*ArcTanh[c*x])^(p + 1)/(b*e*(p + 1)), x] + Dist[1/
(c*d), Int[(a + b*ArcTanh[c*x])^p/(1 - c*x), x], x] /; FreeQ[{a, b, c, d, e
}, x] && EqQ[c^2*d + e, 0] && IGtQ[p, 0]
```

Rule 6873

```
Int[u_, x_Symbol] :> With[{v = NormalizeIntegrand[u, x]}, Int[v, x] /; v =!
= u]
```

Rubi steps

$$\int \frac{(a+b\log(c(d+ex)^n))^2}{\sqrt{f+gx}}\,dx = \frac{2\sqrt{f+gx}\,(a+b\log(c(d+ex)^n))^2}{g} - \frac{(4ben)\int \frac{\sqrt{f+gx}\,(a+b\log(c(d+ex)^n))}{d+ex}}{g}$$

$$= \frac{2\sqrt{f+gx}\,(a+b\log(c(d+ex)^n))^2}{g} - \frac{(4bn)\text{Subst}\left(\int \frac{\sqrt{\frac{ef-dg}{e}+\frac{gx}{e}}\,(a}{x}\right.}{g}$$

$$= \frac{2\sqrt{f+gx}\,(a+b\log(c(d+ex)^n))^2}{g} - \frac{(4bn)\text{Subst}\left(\int \frac{a+b\log(cx^n)}{\sqrt{\frac{ef-dg}{e}+\frac{gx}{e}}}\,d\right.}{e}$$

$$= -\frac{8bn\sqrt{f+gx}\,(a+b\log(c(d+ex)^n))}{g} + \frac{8b\sqrt{ef-dg}\,n\tanh^{-1}\left(\frac{\sqrt{e}\,\sqrt{}}{\sqrt{ef}}\right.}{\sqrt{}}$$

$$= \frac{16b^2n^2\sqrt{f+gx}}{g} - \frac{8bn\sqrt{f+gx}\,(a+b\log(c(d+ex)^n))}{g} + \frac{8b\sqrt{ef-dg}}{}$$

$$= \frac{16b^2n^2\sqrt{f+gx}}{g} - \frac{8bn\sqrt{f+gx}\,(a+b\log(c(d+ex)^n))}{g} + \frac{8b\sqrt{ef-dg}}{}$$

$$= \frac{16b^2n^2\sqrt{f+gx}}{g} - \frac{16b^2\sqrt{ef-dg}\,n^2\tanh^{-1}\left(\frac{\sqrt{e}\,\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{\sqrt{e}\,g} - \frac{8bn\sqrt{}}{}$$

$$= \frac{16b^2n^2\sqrt{f+gx}}{g} - \frac{16b^2\sqrt{ef-dg}\,n^2\tanh^{-1}\left(\frac{\sqrt{e}\,\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{} - \frac{8b^2\sqrt{}}{}$$

Mathematica [C] Result contains higher order function than in optimal. Order 5 vs. order 4 in optimal.
time = 1.12, size = 301, normalized size = 0.72

$$\frac{2\left(b^2n^2\sqrt{\frac{e(f+gx)}{ef-dg}}\left(g(d+ex)\,{}_4F_3\left(\frac{1}{2},1,1,1;2,2,2;\frac{g(d+ex)}{-ef+dg}\right)-g(d+ex)\,{}_3F_2\left(\frac{1}{2},1,1;2,2;\frac{g(d+ex)}{-ef+dg}\right)\log(d+ex)+(ef-dg)\left(-1+\sqrt{\frac{e(f+gx)}{ef-dg}}\right)\log^2(d+ex)\right)+2bn\sqrt{f+gx}\left(2\sqrt{e}\,\sqrt{ef-dg}\,\tanh^{-1}\left(\frac{\sqrt{e}\,\sqrt{f+gx}}{\sqrt{ef-dg}}\right)+e\sqrt{f+gx}\,(-2+\log(d+ex))\right)(a-bn\log(d+ex)+b\log\left(c(d+ex)^n\right))+e(f+gx)\left(a-bn\log(d+ex)+b\log\left(c(d+ex)^n\right)\right)^2\right)}{eg\sqrt{f+gx}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^2/Sqrt[f + g*x],x]
```

```
[Out] (2*(b^2*n^2*Sqrt[(e*(f + g*x))/(e*f - d*g)]*(g*(d + e*x)*HypergeometricPFQ[
{1/2, 1, 1, 1}, {2, 2, 2}, (g*(d + e*x))/(-(e*f) + d*g)] - g*(d + e*x)*Hype
rgeometricPFQ[{1/2, 1, 1}, {2, 2}, (g*(d + e*x))/(-(e*f) + d*g)]*Log[d + e*
x] + (e*f - d*g)*(-1 + Sqrt[(e*(f + g*x))/(e*f - d*g)])*Log[d + e*x]^2) + 2
*b*n*Sqrt[f + g*x]*(2*Sqrt[e]*Sqrt[e*f - d*g]*ArcTanh[(Sqrt[e]*Sqrt[f + g*x
])/Sqrt[e*f - d*g]] + e*Sqrt[f + g*x]*(-2 + Log[d + e*x]))*(a - b*n*Log[d +
 e*x] + b*Log[c*(d + e*x)^n]) + e*(f + g*x)*(a - b*n*Log[d + e*x] + b*Log[c
*(d + e*x)^n])^2))/(e*g*Sqrt[f + g*x])
```

Maple [F]
time = 0.18, size = 0, normalized size = 0.00

$$\int \frac{\left(a+b\ln\left(c(ex+d)^n\right)\right)^2}{\sqrt{gx+f}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))^2/(g*x+f)^(1/2),x)
```

```
[Out] int((a+b*ln(c*(e*x+d)^n))^2/(g*x+f)^(1/2),x)
```

Maxima [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/(g*x+f)^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*%e^2*f-4*%e*d*g>0)', see `assume?
` for m
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/(g*x+f)^(1/2),x, algorithm="fricas")
```

```
[Out] integral((sqrt(g*x + f)*b^2*log((x*e + d)^n*c)^2 + 2*sqrt(g*x + f)*a*b*log(
(x*e + d)^n*c) + sqrt(g*x + f)*a^2)/(g*x + f), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a + b\log{(c(d + ex)^n)})^2}{\sqrt{f + gx}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**2/(g*x+f)**(1/2),x)
```

```
[Out] Integral((a + b*log(c*(d + e*x)**n))**2/sqrt(f + g*x), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/(g*x+f)^(1/2),x, algorithm="giac")
```

```
[Out] integrate((b*log((x*e + d)^n*c) + a)^2/sqrt(g*x + f), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{{\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)}^2}{\sqrt{f+g\,x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))^2/(f + g*x)^(1/2),x)
```

```
[Out] int((a + b*log(c*(d + e*x)^n))^2/(f + g*x)^(1/2), x)
```

3.148 $\int \frac{(a+b\log(c(d+ex)^n))^2}{(f+gx)^{3/2}}\,dx$

Optimal. Leaf size=312

$$\frac{8b^2\sqrt{e}\,n^2\tanh^{-1}\left(\frac{\sqrt{e}\,\sqrt{f+gx}}{\sqrt{ef-dg}}\right)^2}{g\sqrt{ef-dg}}-\frac{8b\sqrt{e}\,n\tanh^{-1}\left(\frac{\sqrt{e}\,\sqrt{f+gx}}{\sqrt{ef-dg}}\right)(a+b\log(c(d+ex)^n))}{g\sqrt{ef-dg}}-\frac{2(a+b\log}{g\sqrt{}}$$

[Out] 8*b^2*n^2*arctanh(e^(1/2)*(g*x+f)^(1/2)/(-d*g+e*f)^(1/2))^2*e^(1/2)/g/(-d*g+e*f)^(1/2)-8*b*n*arctanh(e^(1/2)*(g*x+f)^(1/2)/(-d*g+e*f)^(1/2))*(a+b*ln(c*(e*x+d)^n))*e^(1/2)/g/(-d*g+e*f)^(1/2)-16*b^2*n^2*arctanh(e^(1/2)*(g*x+f)^(1/2)/(-d*g+e*f)^(1/2))*ln(2/(1-e^(1/2)*(g*x+f)^(1/2)/(-d*g+e*f)^(1/2)))*e^(1/2)/g/(-d*g+e*f)^(1/2)-8*b^2*n^2*polylog(2,1-2/(1-e^(1/2)*(g*x+f)^(1/2)/(-d*g+e*f)^(1/2)))*e^(1/2)/g/(-d*g+e*f)^(1/2)-2*(a+b*ln(c*(e*x+d)^n))^2/g/(g*x+f)^(1/2)

Rubi [A]
time = 0.53, antiderivative size = 312, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 12, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.462$, Rules used = {2445, 2458, 65, 214, 2390, 12, 1601, 6873, 6131, 6055, 2449, 2352}

$$-\frac{8b^2\sqrt{e}\,n^2\text{PolyLog}\left(2,1-\frac{2}{1-\frac{\sqrt{e}\,\sqrt{f+gx}}{\sqrt{ef-dg}}}\right)}{g\sqrt{ef-dg}}-\frac{2(a+b\log(c(d+ex)^n))^2}{g\sqrt{f+gx}}-\frac{8b\sqrt{e}\,n\tanh^{-1}\left(\frac{\sqrt{e}\,\sqrt{f+gx}}{\sqrt{ef-dg}}\right)(a+b\log(c(d+ex)^n))}{g\sqrt{ef-dg}}+\frac{8b^2\sqrt{e}\,n^2\tanh^{-1}\left(\frac{\sqrt{e}\,\sqrt{f+gx}}{\sqrt{ef-dg}}\right)^2}{g\sqrt{ef-dg}}-\frac{16b^2\sqrt{e}\,n^2\log\left(\frac{2}{1-\frac{\sqrt{e}\,\sqrt{f+gx}}{\sqrt{ef-dg}}}\right)\tanh^{-1}\left(\frac{\sqrt{e}\,\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{g\sqrt{ef-dg}}$$

Antiderivative was successfully verified.

[In] Int[(a + b*Log[c*(d + e*x)^n])^2/(f + g*x)^(3/2),x]

[Out] (8*b^2*Sqrt[e]*n^2*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]]^2)/(g*Sqrt[e*f - d*g]) - (8*b*Sqrt[e]*n*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]]*(a + b*Log[c*(d + e*x)^n]))/(g*Sqrt[e*f - d*g]) - (2*(a + b*Log[c*(d + e*x)^n])^2)/(g*Sqrt[f + g*x]) - (16*b^2*Sqrt[e]*n^2*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]]*Log[2/(1 - (Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g])])/(g*Sqrt[e*f - d*g]) - (8*b^2*Sqrt[e]*n^2*PolyLog[2, 1 - 2/(1 - (Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g])])/(g*Sqrt[e*f - d*g])

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 65

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - a*(d/b) +
```

```
d*(x^p/b))^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 214

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-a/b, 2]/a)*ArcTanh[x
/Rt[-a/b, 2]], x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 1601

```
Int[(Pp_)/(Qq_), x_Symbol] :> With[{p = Expon[Pp, x], q = Expon[Qq, x]}, Si
mp[Coeff[Pp, x, p]*(Log[RemoveContent[Qq, x]]/(q*Coeff[Qq, x, q])), x] /; E
qQ[p, q - 1] && EqQ[Pp, Simplify[(Coeff[Pp, x, p]/(q*Coeff[Qq, x, q]))*D[Qq
, x]]]] /; PolyQ[Pp, x] && PolyQ[Qq, x]
```

Rule 2352

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> Simp[(-e^(-1))*PolyLo
g[2, 1 - c*x], x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2390

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_) + (e_.)*(x_)^(r_.))^(q_.))
/(x_), x_Symbol] :> With[{u = IntHide[(d + e*x^r)^q/x, x]}, Simp[u*(a + b*L
og[c*x^n]), x] - Dist[b*n, Int[Dist[1/x, u, x], x], x]] /; FreeQ[{a, b, c,
d, e, n, r}, x] && IntegerQ[q - 1/2]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[(f + g*x)^(q + 1)*((a + b*Log[c*(d + e*x)^
n])^p/(g*(q + 1))), x] - Dist[b*e*n*(p/(g*(q + 1))), Int[(f + g*x)^(q + 1)*
((a + b*Log[c*(d + e*x)^n])^(p - 1)/(d + e*x)), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && GtQ[p, 0] && NeQ[q, -1] && Int
egersQ[2*p, 2*q] && ( !IGtQ[q, 0] || (EqQ[p, 2] && NeQ[q, 1]))
```

Rule 2449

```
Int[Log[(c_.)/((d_) + (e_.)*(x_))]/((f_) + (g_.)*(x_)^2), x_Symbol] :> Dist
[-e/g, Subst[Int[Log[2*d*x]/(1 - 2*d*x), x], x, 1/(d + e*x)], x] /; FreeQ[{
c, d, e, f, g}, x] && EqQ[c, 2*d] && EqQ[e^2*f + d^2*g, 0]
```

Rule 2458

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
```

```
[(g*(x/e))^q*((e*h - d*i)/e + i*(x/e))^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 6055

```
Int[((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symbol
] :> Simp[(-(a + b*ArcTanh[c*x])^p)*(Log[2/(1 + e*(x/d))]/e), x] + Dist[b*c
*(p/e), Int[(a + b*ArcTanh[c*x])^(p - 1)*(Log[2/(1 + e*(x/d))]/(1 - c^2*x^2
)), x], x] /; FreeQ[{a, b, c, d, e}, x] && IGtQ[p, 0] && EqQ[c^2*d^2 - e^2,
 0]
```

Rule 6131

```
Int[(((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)*(x_))/((d_) + (e_.)*(x_)^2),
 x_Symbol] :> Simp[(a + b*ArcTanh[c*x])^(p + 1)/(b*e*(p + 1)), x] + Dist[1/
(c*d), Int[(a + b*ArcTanh[c*x])^p/(1 - c*x), x], x] /; FreeQ[{a, b, c, d, e
}, x] && EqQ[c^2*d + e, 0] && IGtQ[p, 0]
```

Rule 6873

```
Int[u_, x_Symbol] :> With[{v = NormalizeIntegrand[u, x]}, Int[v, x] /; v =!
= u]
```

Rubi steps

$$\int \frac{(a+b\log(c(d+ex)^n))^2}{(f+gx)^{3/2}}\,dx = -\frac{2(a+b\log(c(d+ex)^n))^2}{g\sqrt{f+gx}} + \frac{(4ben)\int \frac{a+b\log(c(d+ex)^n)}{(d+ex)\sqrt{f+gx}}\,dx}{g}$$

$$= -\frac{2(a+b\log(c(d+ex)^n))^2}{g\sqrt{f+gx}} + \frac{(4bn)\text{Subst}\left(\int \frac{a+b\log(cx^n)}{x\sqrt{\frac{ef-dg}{e}+\frac{gx}{e}}}\,dx, x, d \cdots\right.}{g}$$

$$= -\frac{8b\sqrt{e}\,n\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)(a+b\log(c(d+ex)^n))}{g\sqrt{ef-dg}} - \frac{2(a+b\log \cdots}{g\sqrt{\cdots}}$$

$$= -\frac{8b\sqrt{e}\,n\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)(a+b\log(c(d+ex)^n))}{g\sqrt{ef-dg}} - \frac{2(a+b\log \cdots}{g\sqrt{\cdots}}$$

$$= -\frac{8b\sqrt{e}\,n\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)(a+b\log(c(d+ex)^n))}{g\sqrt{ef-dg}} - \frac{2(a+b\log \cdots}{g\sqrt{\cdots}}$$

$$= -\frac{8b\sqrt{e}\,n\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)(a+b\log(c(d+ex)^n))}{g\sqrt{ef-dg}} - \frac{2(a+b\log \cdots}{g\sqrt{\cdots}}$$

$$= \frac{8b^2\sqrt{e}\,n^2\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)^2}{g\sqrt{ef-dg}} - \frac{8b\sqrt{e}\,n\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right) \cdots}{g\sqrt{ef-dg \cdots}}$$

Mathematica [C] Result contains higher order function than in optimal. Order 5 vs. order 4 in optimal.
time = 2.30, size = 342, normalized size = 1.10

$$\frac{2\left(\frac{2bn\left(2\sqrt{e}(f+gx)\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)+\sqrt{ef-dg}\sqrt{f+gx}\log(d+ex)\right)(-a+bn\log(d+ex)-b\log(c(d+ex)^n))}{\sqrt{ef-dg}(f+gx)}-\frac{(a-bn\log(d+ex)+b\log(c(d+ex)^n))^2}{\sqrt{f+gx}}+\frac{b^2n^2\left(g(d+ex)\sqrt{\frac{e(f+gx)}{ef-dg}}\,{}_4F_3\left(1,1,1,\frac{3}{2};2,2,2;\frac{g(d+ex)}{-ef+dg}\right)+(ef-dg)\log(d+ex)\left(\left(-1+\sqrt{\frac{e(f+gx)}{ef-dg}}\right)\log(d+ex)-4\sqrt{\frac{e(f+gx)}{ef-dg}}\log\left(\frac{1}{2}\left(1+\sqrt{\frac{e(f+gx)}{ef-dg}}\right)\right)\right)\right)}{(ef-dg)\sqrt{f+gx}}\right)}{g}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^2/(f + g*x)^(3/2),x]
```

```
[Out] (2*((2*b*n*(2*Sqrt[e]*(f + g*x)*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f -
d*g]] + Sqrt[e*f - d*g]*Sqrt[f + g*x]*Log[d + e*x])*(-a + b*n*Log[d + e*x]
- b*Log[c*(d + e*x)^n]))/(Sqrt[e*f - d*g]*(f + g*x)) - (a - b*n*Log[d + e*x
] + b*Log[c*(d + e*x)^n])^2/Sqrt[f + g*x] + (b^2*n^2*(g*(d + e*x)*Sqrt[(e*(
f + g*x))/(e*f - d*g)]*HypergeometricPFQ[{1, 1, 1, 3/2}, {2, 2, 2}, (g*(d +
 e*x))/(-(e*f) + d*g)] + (e*f - d*g)*Log[d + e*x]*((-1 + Sqrt[(e*(f + g*x))
/(e*f - d*g)])*Log[d + e*x] - 4*Sqrt[(e*(f + g*x))/(e*f - d*g)]*Log[(1 + Sq
rt[(e*(f + g*x))/(e*f - d*g)])/2])))/((e*f - d*g)*Sqrt[f + g*x])))/g
```

Maple [F]
time = 0.16, size = 0, normalized size = 0.00

$$\int \frac{(a+b\ln(c(ex+d)^n))^2}{(gx+f)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))^2/(g*x+f)^(3/2),x)
```

```
[Out] int((a+b*ln(c*(e*x+d)^n))^2/(g*x+f)^(3/2),x)
```

Maxima [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/(g*x+f)^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*%e^2*f-4*%e*d*g>0)', see `assume?
` for m
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/(g*x+f)^(3/2),x, algorithm="fricas")
```

```
[Out] integral((sqrt(g*x + f)*b^2*log((x*e + d)^n*c)^2 + 2*sqrt(g*x + f)*a*b*log(
(x*e + d)^n*c) + sqrt(g*x + f)*a^2)/(g^2*x^2 + 2*f*g*x + f^2), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(a + b\log\left(c(d + ex)^{n}\right)\right)^{2}}{(f + gx)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**2/(g*x+f)**(3/2),x)
```

```
[Out] Integral((a + b*log(c*(d + e*x)**n))**2/(f + g*x)**(3/2), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/(g*x+f)^(3/2),x, algorithm="giac")
```

```
[Out] integrate((b*log((x*e + d)^n*c) + a)^2/(g*x + f)^(3/2), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{{\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)}^2}{{\left(f+g\,x\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))^2/(f + g*x)^(3/2),x)
```

```
[Out] int((a + b*log(c*(d + e*x)^n))^2/(f + g*x)^(3/2), x)
```

3.149 $\int \frac{(a+b\log(c(d+ex)^n))^2}{(f+gx)^{5/2}}\,dx$

Optimal. Leaf size=423

$$\frac{16b^2e^{3/2}n^2\tanh^{-1}\left(\frac{\sqrt{e}\,\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{3g(ef-dg)^{3/2}}+\frac{8b^2e^{3/2}n^2\tanh^{-1}\left(\frac{\sqrt{e}\,\sqrt{f+gx}}{\sqrt{ef-dg}}\right)^2}{3g(ef-dg)^{3/2}}+\frac{8ben(a+b\log\left(c(d+ex)^n\right))}{3g(ef-dg)\sqrt{f+gx}}-$$

```
[Out] 16/3*b^2*e^(3/2)*n^2*arctanh(e^(1/2)*(g*x+f)^(1/2)/(-d*g+e*f)^(1/2))/g/(-d*
g+e*f)^(3/2)+8/3*b^2*e^(3/2)*n^2*arctanh(e^(1/2)*(g*x+f)^(1/2)/(-d*g+e*f)^(
1/2))^2/g/(-d*g+e*f)^(3/2)-8/3*b*e^(3/2)*n*arctanh(e^(1/2)*(g*x+f)^(1/2)/(-
d*g+e*f)^(1/2))*(a+b*ln(c*(e*x+d)^n))/g/(-d*g+e*f)^(3/2)-2/3*(a+b*ln(c*(e*x
+d)^n))^2/g/(g*x+f)^(3/2)-16/3*b^2*e^(3/2)*n^2*arctanh(e^(1/2)*(g*x+f)^(1/2
)/(-d*g+e*f)^(1/2))*ln(2/(1-e^(1/2)*(g*x+f)^(1/2)/(-d*g+e*f)^(1/2)))/g/(-d*
g+e*f)^(3/2)-8/3*b^2*e^(3/2)*n^2*polylog(2,1-2/(1-e^(1/2)*(g*x+f)^(1/2)/(-d
*g+e*f)^(1/2)))/g/(-d*g+e*f)^(3/2)+8/3*b*e*n*(a+b*ln(c*(e*x+d)^n))/g/(-d*g+
e*f)/(g*x+f)^(1/2)
```

Rubi [A]

time = 0.80, antiderivative size = 423, normalized size of antiderivative = 1.00, number of steps used = 14, number of rules used = 14, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.538$, Rules used = {2445, 2458, 2389, 65, 214, 2390, 12, 1601, 6873, 6131, 6055, 2449, 2352, 2356}

$$-\frac{8b^2e^{3/2}n^2\text{PolyLog}\left(2,1-\frac{2}{1-\frac{\sqrt{e}\,\sqrt{f+gx}}{\sqrt{ef-dg}}}\right)}{3g(ef-dg)^{3/2}}-\frac{8be^{3/2}n\tanh^{-1}\left(\frac{\sqrt{e}\,\sqrt{f+gx}}{\sqrt{ef-dg}}\right)(a+b\log\left(c(d+ex)^n\right))}{3g(ef-dg)^{3/2}}+\frac{8ben(a+b\log\left(c(d+ex)^n\right))}{3g\sqrt{f+gx}\,(ef-dg)}-\frac{2(a+b\log\left(c(d+ex)^n\right))^2}{3g(f+gx)^{3/2}}+\frac{8b^2e^{3/2}n^2\tanh^{-1}\left(\frac{\sqrt{e}\,\sqrt{f+gx}}{\sqrt{ef-dg}}\right)^2}{3g(ef-dg)^{3/2}}+\frac{16b^2e^{3/2}n^2\tanh^{-1}\left(\frac{\sqrt{e}\,\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{3g(ef-dg)^{3/2}}-\frac{16b^2e^{3/2}n^2\log\left(\frac{2}{1-\frac{\sqrt{e}\,\sqrt{f+gx}}{\sqrt{ef-dg}}}\right)\tanh^{-1}\left(\frac{\sqrt{e}\,\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{3g(ef-dg)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^2/(f + g*x)^(5/2),x]
```

```
[Out] (16*b^2*e^(3/2)*n^2*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]])/(3*g*
(e*f - d*g)^(3/2)) + (8*b^2*e^(3/2)*n^2*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqr
t[e*f - d*g]]^2)/(3*g*(e*f - d*g)^(3/2)) + (8*b*e*n*(a + b*Log[c*(d + e*x)^
n]))/(3*g*(e*f - d*g)*Sqrt[f + g*x]) - (8*b*e^(3/2)*n*ArcTanh[(Sqrt[e]*Sqrt
[f + g*x])/Sqrt[e*f - d*g]]*(a + b*Log[c*(d + e*x)^n]))/(3*g*(e*f - d*g)^(3
/2)) - (2*(a + b*Log[c*(d + e*x)^n])^2)/(3*g*(f + g*x)^(3/2)) - (16*b^2*e^(
3/2)*n^2*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]]*Log[2/(1 - (Sqrt[
e]*Sqrt[f + g*x])/Sqrt[e*f - d*g])])/(3*g*(e*f - d*g)^(3/2)) - (8*b^2*e^(3/
2)*n^2*PolyLog[2, 1 - 2/(1 - (Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g])])/(3*
g*(e*f - d*g)^(3/2))
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 65

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - a*(d/b) +
d*(x^p/b))^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 214

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-a/b, 2]/a)*ArcTanh[x
/Rt[-a/b, 2]], x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 1601

```
Int[(Pp_)/(Qq_), x_Symbol] :> With[{p = Expon[Pp, x], q = Expon[Qq, x]}, Si
mp[Coeff[Pp, x, p]*(Log[RemoveContent[Qq, x]]/(q*Coeff[Qq, x, q])), x] /; E
qQ[p, q - 1] && EqQ[Pp, Simplify[(Coeff[Pp, x, p]/(q*Coeff[Qq, x, q]))*D[Qq
, x]]]] /; PolyQ[Pp, x] && PolyQ[Qq, x]
```

Rule 2352

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> Simp[(-e^(-1))*PolyLo
g[2, 1 - c*x], x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2356

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.),
x_Symbol] :> Simp[(d + e*x)^(q + 1)*((a + b*Log[c*x^n])^p/(e*(q + 1))), x]
- Dist[b*n*(p/(e*(q + 1))), Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^(p -
1))/x, x], x] /; FreeQ[{a, b, c, d, e, n, p, q}, x] && GtQ[p, 0] && NeQ[q,
-1] && (EqQ[p, 1] || (IntegersQ[2*p, 2*q] &&  !IGtQ[q, 0]) || (EqQ[p, 2] &&
 NeQ[q, 1]))
```

Rule 2389

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_))/
(x_), x_Symbol] :> Dist[1/d, Int[(d + e*x)^(q + 1)*((a + b*Log[c*x^n])^p/x)
, x], x] - Dist[e/d, Int[(d + e*x)^q*(a + b*Log[c*x^n])^p, x], x] /; FreeQ[
{a, b, c, d, e, n}, x] && IGtQ[p, 0] && LtQ[q, -1] && IntegerQ[2*q]
```

Rule 2390

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_) + (e_.)*(x_)^(r_.))^(q_.))
/(x_), x_Symbol] :> With[{u = IntHide[(d + e*x^r)^q/x, x]}, Simp[u*(a + b*L
og[c*x^n]), x] - Dist[b*n, Int[Dist[1/x, u, x], x], x]] /; FreeQ[{a, b, c,
d, e, n, r}, x] && IntegerQ[q - 1/2]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[(f + g*x)^(q + 1)*((a + b*Log[c*(d + e*x)^
n])^p/(g*(q + 1))), x] - Dist[b*e*n*(p/(g*(q + 1))), Int[(f + g*x)^(q + 1)*
((a + b*Log[c*(d + e*x)^n])^(p - 1)/(d + e*x)), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && GtQ[p, 0] && NeQ[q, -1] && Int
egersQ[2*p, 2*q] && ( !IGtQ[q, 0] || (EqQ[p, 2] && NeQ[q, 1]))
```

Rule 2449

```
Int[Log[(c_.)/((d_) + (e_.)*(x_))]/((f_) + (g_.)*(x_)^2), x_Symbol] :> Dist
[-e/g, Subst[Int[Log[2*d*x]/(1 - 2*d*x), x], x, 1/(d + e*x)], x] /; FreeQ[{
c, d, e, f, g}, x] && EqQ[c, 2*d] && EqQ[e^2*f + d^2*g, 0]
```

Rule 2458

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[(g*(x/e))^q*((e*h - d*i)/e + i*(x/e))^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 6055

```
Int[((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symbol
] :> Simp[(-(a + b*ArcTanh[c*x])^p)*(Log[2/(1 + e*(x/d))]/e), x] + Dist[b*c
*(p/e), Int[(a + b*ArcTanh[c*x])^(p - 1)*(Log[2/(1 + e*(x/d))]/(1 - c^2*x^2
)), x], x] /; FreeQ[{a, b, c, d, e}, x] && IGtQ[p, 0] && EqQ[c^2*d^2 - e^2,
 0]
```

Rule 6131

```
Int[(((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)*(x_))/((d_) + (e_.)*(x_)^2),
 x_Symbol] :> Simp[(a + b*ArcTanh[c*x])^(p + 1)/(b*e*(p + 1)), x] + Dist[1/
(c*d), Int[(a + b*ArcTanh[c*x])^p/(1 - c*x), x], x] /; FreeQ[{a, b, c, d, e
}, x] && EqQ[c^2*d + e, 0] && IGtQ[p, 0]
```

Rule 6873

```
Int[u_, x_Symbol] :> With[{v = NormalizeIntegrand[u, x]}, Int[v, x] /; v =!
= u]
```

Rubi steps

$$\int \frac{(a+b\log(c(d+ex)^n))^2}{(f+gx)^{5/2}}\,dx = -\frac{2(a+b\log(c(d+ex)^n))^2}{3g(f+gx)^{3/2}} + \frac{(4ben)\int \frac{a+b\log(c(d+ex)^n)}{(d+ex)(f+gx)^{3/2}}\,dx}{3g}$$

$$= -\frac{2(a+b\log(c(d+ex)^n))^2}{3g(f+gx)^{3/2}} + \frac{(4bn)\text{Subst}\left(\int \frac{a+b\log(cx^n)}{x\left(\frac{ef-dg}{e}+\frac{gx}{e}\right)^{3/2}}\,dx, x, d+ex\right)}{3g}$$

$$= -\frac{2(a+b\log(c(d+ex)^n))^2}{3g(f+gx)^{3/2}} - \frac{(4bn)\text{Subst}\left(\int \frac{a+b\log(cx^n)}{\left(\frac{ef-dg}{e}+\frac{gx}{e}\right)^{3/2}}\,dx, x, d+ex\right)}{3(ef-dg)}$$

$$= \frac{8ben(a+b\log(c(d+ex)^n))}{3g(ef-dg)\sqrt{f+gx}} - \frac{8be^{3/2}n\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)(a+b\log}{3g(ef-dg)^{3/2}}$$

$$= \frac{8ben(a+b\log(c(d+ex)^n))}{3g(ef-dg)\sqrt{f+gx}} - \frac{8be^{3/2}n\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)(a+b\log}{3g(ef-dg)^{3/2}}$$

$$= \frac{16b^2e^{3/2}n^2\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{3g(ef-dg)^{3/2}} + \frac{8ben(a+b\log(c(d+ex)^n))}{3g(ef-dg)\sqrt{f+gx}} - \frac{8be^{3}}{}$$

$$= \frac{16b^2e^{3/2}n^2\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{3g(ef-dg)^{3/2}} + \frac{8ben(a+b\log(c(d+ex)^n))}{3g(ef-dg)\sqrt{f+gx}} - \frac{8be^{3}}{}$$

$$= \frac{16b^2e^{3/2}n^2\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{3g(ef-dg)^{3/2}} + \frac{8b^2e^{3/2}n^2\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{3g(ef-dg)^{3/2}}$$

Mathematica [C] Result contains higher order function than in optimal. Order 5 vs. order 4 in optimal.
time = 3.89, size = 419, normalized size = 0.99

$$\frac{2\left(-2b\sqrt{ef-dg}\,n\left(2e^{3/2}(f+gx)^{3/2}\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)-\sqrt{ef-dg}\,(2e(f+gx)+(-ef+dg)\log(d+ex))\right)(a-bn\log(d+ex)+b\log(c(d+ex)^n))-(ef-dg)^2(a-bn\log(d+ex)+b\log(c(d+ex)^n))^2+b^2n^2\left(3eg(d+ex)(f+gx)\sqrt{\frac{e(f+gx)}{ef-dg}}\,{}_4F_3\left(1,1,1,\frac{5}{2};2,2,2;\frac{g(d+ex)}{-ef+dg}\right)+(ef-dg)\log(d+ex)\left(\left(dg+egx\sqrt{\frac{e(f+gx)}{ef-dg}}+ef\left(-1+\sqrt{\frac{e(f+gx)}{ef-dg}}\right)\right)\log(d+ex)-4e(f+gx)\left(-1+\sqrt{\frac{e(f+gx)}{ef-dg}}+\sqrt{\frac{e(f+gx)}{ef-dg}}\log\left(\frac{1}{2}\left(1+\sqrt{\frac{e(f+gx)}{ef-dg}}\right)\right)\right)\right)\right)\right)}{3g(ef-dg)^2(f+gx)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^2/(f + g*x)^(5/2),x]
```

```
[Out] (2*(-2*b*Sqrt[e*f - d*g]*n*(2*e^(3/2)*(f + g*x)^(3/2)*ArcTanh[(Sqrt[e]*Sqrt
[f + g*x])/Sqrt[e*f - d*g]] - Sqrt[e*f - d*g]*(2*e*(f + g*x) + (-(e*f) + d*
g)*Log[d + e*x]))*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n]) - (e*f - d*
g)^2*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2 + b^2*n^2*(3*e*g*(d +
e*x)*(f + g*x)*Sqrt[(e*(f + g*x))/(e*f - d*g)]*HypergeometricPFQ[{1, 1, 1,
5/2}, {2, 2, 2}, (g*(d + e*x))/(-(e*f) + d*g)] + (e*f - d*g)*Log[d + e*x]*(
(d*g + e*g*x*Sqrt[(e*(f + g*x))/(e*f - d*g)] + e*f*(-1 + Sqrt[(e*(f + g*x))
/(e*f - d*g)]))*Log[d + e*x] - 4*e*(f + g*x)*(-1 + Sqrt[(e*(f + g*x))/(e*f
- d*g)] + Sqrt[(e*(f + g*x))/(e*f - d*g)]*Log[(1 + Sqrt[(e*(f + g*x))/(e*f
- d*g)])/2])))))/(3*g*(e*f - d*g)^2*(f + g*x)^(3/2))
```

Maple [F]
time = 0.14, size = 0, normalized size = 0.00

$$\int \frac{\left(a+b\ln\left(c(ex+d)^{n}\right)\right)^{2}}{(gx+f)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))^2/(g*x+f)^(5/2),x)
```

```
[Out] int((a+b*ln(c*(e*x+d)^n))^2/(g*x+f)^(5/2),x)
```

Maxima [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/(g*x+f)^(5/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*%e^2*f-4*%e*d*g>0)', see `assume?
` for m
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/(g*x+f)^(5/2),x, algorithm="fricas")
```

```
[Out] integral((sqrt(g*x + f)*b^2*log((x*e + d)^n*c)^2 + 2*sqrt(g*x + f)*a*b*log(
(x*e + d)^n*c) + sqrt(g*x + f)*a^2)/(g^3*x^3 + 3*f*g^2*x^2 + 3*f^2*g*x + f^
3), x)
```

Sympy [**F(-2)**]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: HeuristicGCDFailed

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**2/(g*x+f)**(5/2),x)
```

```
[Out] Exception raised: HeuristicGCDFailed >> no luck
```

Giac [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/(g*x+f)^(5/2),x, algorithm="giac")
```

```
[Out] integrate((b*log((x*e + d)^n*c) + a)^2/(g*x + f)^(5/2), x)
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)^2}{{\left(f+g\,x\right)}^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))^2/(f + g*x)^(5/2),x)
```

```
[Out] int((a + b*log(c*(d + e*x)^n))^2/(f + g*x)^(5/2), x)
```

3.150 $\int \frac{(a+b\log(c(d+ex)^n))^2}{(f+gx)^{7/2}}\,dx$

Optimal. Leaf size=503

$$-\frac{16b^2e^2n^2}{15g(ef-dg)^2\sqrt{f+gx}}+\frac{64b^2e^{5/2}n^2\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{15g(ef-dg)^{5/2}}+\frac{8b^2e^{5/2}n^2\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)^2}{5g(ef-dg)^{5/2}}+-8$$

```
[Out] 64/15*b^2*e^(5/2)*n^2*arctanh(e^(1/2)*(g*x+f)^(1/2)/(-d*g+e*f)^(1/2))/g/(-d
*g+e*f)^(5/2)+8/5*b^2*e^(5/2)*n^2*arctanh(e^(1/2)*(g*x+f)^(1/2)/(-d*g+e*f)^
(1/2))^2/g/(-d*g+e*f)^(5/2)+8/15*b*e*n*(a+b*ln(c*(e*x+d)^n))/g/(-d*g+e*f)/(
g*x+f)^(3/2)-8/5*b*e^(5/2)*n*arctanh(e^(1/2)*(g*x+f)^(1/2)/(-d*g+e*f)^(1/2)
)*(a+b*ln(c*(e*x+d)^n))/g/(-d*g+e*f)^(5/2)-2/5*(a+b*ln(c*(e*x+d)^n))^2/g/(g
*x+f)^(5/2)-16/5*b^2*e^(5/2)*n^2*arctanh(e^(1/2)*(g*x+f)^(1/2)/(-d*g+e*f)^(
1/2))*ln(2/(1-e^(1/2)*(g*x+f)^(1/2)/(-d*g+e*f)^(1/2)))/g/(-d*g+e*f)^(5/2)-8
/5*b^2*e^(5/2)*n^2*polylog(2,1-2/(1-e^(1/2)*(g*x+f)^(1/2)/(-d*g+e*f)^(1/2))
)/g/(-d*g+e*f)^(5/2)-16/15*b^2*e^2*n^2/g/(-d*g+e*f)^2/(g*x+f)^(1/2)+8/5*b*e
^2*n*(a+b*ln(c*(e*x+d)^n))/g/(-d*g+e*f)^2/(g*x+f)^(1/2)
```

Rubi [A]
time = 1.12, antiderivative size = 503, normalized size of antiderivative = 1.00, number of steps used = 19, number of rules used = 15, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.577$, Rules used = {2445, 2458, 2389, 65, 214, 2390, 12, 1601, 6873, 6131, 6055, 2449, 2352, 2356, 53}

$$-\frac{8b^2e^{5/2}n^2\text{PolyLog}\left(2,1-\frac{2}{1-\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}}\right)}{5g(ef-dg)^{5/2}}-\frac{8be^{5/2}n\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)(a+b\log(c(d+ex)^n))}{5g(ef-dg)^{5/2}}+\frac{8be^2n(a+b\log(c(d+ex)^n))}{5g\sqrt{f+gx}(ef-dg)^2}+\frac{8ben(a+b\log(c(d+ex)^n))}{15g(f+gx)^{3/2}(ef-dg)}-\frac{2(a+b\log(c(d+ex)^n))^2}{5g(f+gx)^{5/2}}+\frac{8b^2e^{5/2}n^2\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)^2}{5g(ef-dg)^{5/2}}+\frac{64b^2e^{5/2}n^2\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{15g(ef-dg)^{5/2}}-\frac{16b^2e^{5/2}n^2\log\left(\frac{2}{1-\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}}\right)\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{5g(ef-dg)^{5/2}}-\frac{16b^2e^2n^2}{15g\sqrt{f+gx}(ef-dg)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^2/(f + g*x)^(7/2),x]
```

```
[Out] (-16*b^2*e^2*n^2)/(15*g*(e*f - d*g)^2*Sqrt[f + g*x]) + (64*b^2*e^(5/2)*n^2*
ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]])/(15*g*(e*f - d*g)^(5/2))
+ (8*b^2*e^(5/2)*n^2*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]]^2)/(5
*g*(e*f - d*g)^(5/2)) + (8*b*e*n*(a + b*Log[c*(d + e*x)^n]))/(15*g*(e*f - d
*g)*(f + g*x)^(3/2)) + (8*b*e^2*n*(a + b*Log[c*(d + e*x)^n]))/(5*g*(e*f - d
*g)^2*Sqrt[f + g*x]) - (8*b*e^(5/2)*n*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[
e*f - d*g]]*(a + b*Log[c*(d + e*x)^n]))/(5*g*(e*f - d*g)^(5/2)) - (2*(a + b
*Log[c*(d + e*x)^n])^2)/(5*g*(f + g*x)^(5/2)) - (16*b^2*e^(5/2)*n^2*ArcTanh
[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]]*Log[2/(1 - (Sqrt[e]*Sqrt[f + g*x]
)/Sqrt[e*f - d*g])])/(5*g*(e*f - d*g)^(5/2)) - (8*b^2*e^(5/2)*n^2*PolyLog[2
, 1 - 2/(1 - (Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g])])/(5*g*(e*f - d*g)^(5
/2))
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] && !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 53

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
(a + b*x)^(m + 1)*((c + d*x)^(n + 1)/((b*c - a*d)*(m + 1))), x] - Dist[d*((
m + n + 2)/((b*c - a*d)*(m + 1))), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] && !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 65

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - a*(d/b) +
d*(x^p/b))^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 214

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-a/b, 2]/a)*ArcTanh[x
/Rt[-a/b, 2]], x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 1601

```
Int[(Pp_)/(Qq_), x_Symbol] :> With[{p = Expon[Pp, x], q = Expon[Qq, x]}, Si
mp[Coeff[Pp, x, p]*(Log[RemoveContent[Qq, x]]/(q*Coeff[Qq, x, q])), x] /; E
qQ[p, q - 1] && EqQ[Pp, Simplify[(Coeff[Pp, x, p]/(q*Coeff[Qq, x, q]))*D[Qq
, x]]]] /; PolyQ[Pp, x] && PolyQ[Qq, x]
```

Rule 2352

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> Simp[(-e^(-1))*PolyLo
g[2, 1 - c*x], x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2356

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.),
x_Symbol] :> Simp[(d + e*x)^(q + 1)*((a + b*Log[c*x^n])^p/(e*(q + 1))), x]
- Dist[b*n*(p/(e*(q + 1))), Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^(p -
1))/x, x], x] /; FreeQ[{a, b, c, d, e, n, p, q}, x] && GtQ[p, 0] && NeQ[q,
-1] && (EqQ[p, 1] || (IntegersQ[2*p, 2*q] && !IGtQ[q, 0]) || (EqQ[p, 2] &&
```

```
NeQ[q, 1]))
```

Rule 2389

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_))/
(x_), x_Symbol] :> Dist[1/d, Int[(d + e*x)^(q + 1)*((a + b*Log[c*x^n])^p/x)
, x], x] - Dist[e/d, Int[(d + e*x)^q*(a + b*Log[c*x^n])^p, x], x] /; FreeQ[
{a, b, c, d, e, n}, x] && IGtQ[p, 0] && LtQ[q, -1] && IntegerQ[2*q]
```

Rule 2390

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_) + (e_.)*(x_)^(r_.))^(q_.))
/(x_), x_Symbol] :> With[{u = IntHide[(d + e*x^r)^q/x, x]}, Simp[u*(a + b*L
og[c*x^n]), x] - Dist[b*n, Int[Dist[1/x, u, x], x], x]] /; FreeQ[{a, b, c,
d, e, n, r}, x] && IntegerQ[q - 1/2]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[(f + g*x)^(q + 1)*((a + b*Log[c*(d + e*x)^
n])^p/(g*(q + 1))), x] - Dist[b*e*n*(p/(g*(q + 1))), Int[(f + g*x)^(q + 1)*
((a + b*Log[c*(d + e*x)^n])^(p - 1)/(d + e*x)), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && GtQ[p, 0] && NeQ[q, -1] && Int
egersQ[2*p, 2*q] && ( !IGtQ[q, 0] || (EqQ[p, 2] && NeQ[q, 1]))
```

Rule 2449

```
Int[Log[(c_.)/((d_) + (e_.)*(x_))]/((f_) + (g_.)*(x_)^2), x_Symbol] :> Dist
[-e/g, Subst[Int[Log[2*d*x]/(1 - 2*d*x), x], x, 1/(d + e*x)], x] /; FreeQ[{
c, d, e, f, g}, x] && EqQ[c, 2*d] && EqQ[e^2*f + d^2*g, 0]
```

Rule 2458

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[(g*(x/e))^q*((e*h - d*i)/e + i*(x/e))^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 6055

```
Int[((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symbol
] :> Simp[(-(a + b*ArcTanh[c*x])^p)*(Log[2/(1 + e*(x/d))]/e), x] + Dist[b*c
*(p/e), Int[(a + b*ArcTanh[c*x])^(p - 1)*(Log[2/(1 + e*(x/d))]/(1 - c^2*x^2
)), x], x] /; FreeQ[{a, b, c, d, e}, x] && IGtQ[p, 0] && EqQ[c^2*d^2 - e^2,
0]
```

Rule 6131

```
Int[(((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)*(x_))/((d_) + (e_.)*(x_)^2),
 x_Symbol] :> Simp[(a + b*ArcTanh[c*x])^(p + 1)/(b*e*(p + 1)), x] + Dist[1/
(c*d), Int[(a + b*ArcTanh[c*x])^p/(1 - c*x), x], x] /; FreeQ[{a, b, c, d, e
}, x] && EqQ[c^2*d + e, 0] && IGtQ[p, 0]
```

Rule 6873

```
Int[u_, x_Symbol] :> With[{v = NormalizeIntegrand[u, x]}, Int[v, x] /; v =!
= u]
```

Rubi steps

$$\int \frac{(a+b\log(c(d+ex)^n))^2}{(f+gx)^{7/2}}\,dx = -\frac{2(a+b\log(c(d+ex)^n))^2}{5g(f+gx)^{5/2}} + \frac{(4ben)\int \frac{a+b\log(c(d+ex)^n)}{(d+ex)(f+gx)^{5/2}}\,dx}{5g}$$

$$= -\frac{2(a+b\log(c(d+ex)^n))^2}{5g(f+gx)^{5/2}} + \frac{(4bn)\mathrm{Subst}\left(\int \frac{a+b\log(cx^n)}{x\left(\frac{ef-dg}{e}+\frac{gx}{e}\right)^{5/2}}\,dx, x, d+ex\right)}{5g}$$

$$= -\frac{2(a+b\log(c(d+ex)^n))^2}{5g(f+gx)^{5/2}} - \frac{(4bn)\mathrm{Subst}\left(\int \frac{a+b\log(cx^n)}{\left(\frac{ef-dg}{e}+\frac{gx}{e}\right)^{5/2}}\,dx, x, d+ex\right)}{5(ef-dg)}$$

$$= \frac{8ben(a+b\log(c(d+ex)^n))}{15g(ef-dg)(f+gx)^{3/2}} - \frac{2(a+b\log(c(d+ex)^n))^2}{5g(f+gx)^{5/2}} - \frac{(4ben)\mathrm{Subst}\left(\right.}{}$$

$$= -\frac{16b^2e^2n^2}{15g(ef-dg)^2\sqrt{f+gx}} + \frac{8ben(a+b\log(c(d+ex)^n))}{15g(ef-dg)(f+gx)^{3/2}} + \frac{8be^2n(a+b\,}{5g(ef-d}$$

$$= -\frac{16b^2e^2n^2}{15g(ef-dg)^2\sqrt{f+gx}} + \frac{8ben(a+b\log(c(d+ex)^n))}{15g(ef-dg)(f+gx)^{3/2}} + \frac{8be^2n(a+b\,}{5g(ef-d}$$

$$= -\frac{16b^2e^2n^2}{15g(ef-dg)^2\sqrt{f+gx}} + \frac{64b^2e^{5/2}n^2\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{15g(ef-dg)^{5/2}} + \frac{8ben}{15}$$

$$= -\frac{16b^2e^2n^2}{15g(ef-dg)^2\sqrt{f+gx}} + \frac{64b^2e^{5/2}n^2\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{15g(ef-dg)^{5/2}} + \frac{8ben}{15}$$

Mathematica [C] Result contains higher order function than in optimal. Order 5 vs. order 4 in optimal.
time = 4.34, size = 413, normalized size = 0.82

$$\frac{2\left(\frac{3b^2n^2\left(5g(d+ex)\left(\frac{e(f+gx)}{ef-dg}\right)^{5/2}{}_4F_3\left(1,1,1,\frac{7}{2};2,2,2;\frac{g(d+ex)}{-ef+dg}\right)-5g(d+ex)\left(\frac{e(f+gx)}{ef-dg}\right)^{5/2}{}_3F_2\left(1,1,\frac{7}{2};2,2;\frac{g(d+ex)}{-ef+dg}\right)\log(d+ex)-ef\log^2(d+ex)+dg\log^2(d+ex)+ef\left(\frac{e(f+gx)}{ef-dg}\right)^{5/2}\log^2(d+ex)-dg\left(\frac{e(f+gx)}{ef-dg}\right)^{5/2}\log^2(d+ex)\right)}{(ef-dg)(f+gx)^{5/2}}+2be^{5/2}n\left(-\frac{6\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{(ef-dg)^{5/2}}+\frac{\frac{2e(f+gx)(4ef-dg+3egx)}{(ef-dg)^2}-3\log(d+ex)}{e^{5/2}(f+gx)^{5/2}}\right)(a-bn\log(d+ex)+b\log\left(c(d+ex)^n\right))-\frac{3(a-bn\log(d+ex)+b\log(c(d+ex)^n))^2}{(f+gx)^{5/2}}\right)}{15g}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^2/(f + g*x)^(7/2),x]
```

```
[Out] (2*((3*b^2*n^2*(5*g*(d + e*x)*((e*(f + g*x))/(e*f - d*g))^(5/2)*Hypergeomet
ricPFQ[{1, 1, 1, 7/2}, {2, 2, 2}, (g*(d + e*x))/(-(e*f) + d*g)] - 5*g*(d +
e*x)*((e*(f + g*x))/(e*f - d*g))^(5/2)*HypergeometricPFQ[{1, 1, 7/2}, {2, 2
}, (g*(d + e*x))/(-(e*f) + d*g)]*Log[d + e*x] - e*f*Log[d + e*x]^2 + d*g*Lo
g[d + e*x]^2 + e*f*((e*(f + g*x))/(e*f - d*g))^(5/2)*Log[d + e*x]^2 - d*g*(
(e*(f + g*x))/(e*f - d*g))^(5/2)*Log[d + e*x]^2))/((e*f - d*g)*(f + g*x)^(5
/2)) + 2*b*e^(5/2)*n*((-6*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]])
/(e*f - d*g)^(5/2) + ((2*e*(f + g*x)*(4*e*f - d*g + 3*e*g*x))/(e*f - d*g)^2
 - 3*Log[d + e*x])/(e^(5/2)*(f + g*x)^(5/2)))*(a - b*n*Log[d + e*x] + b*Log
[c*(d + e*x)^n]) - (3*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2)/(f +
 g*x)^(5/2)))/(15*g)
```

Maple [F]
time = 0.15, size = 0, normalized size = 0.00

$$\int \frac{\left(a+b\ln\left(c(ex+d)^{n}\right)\right)^{2}}{(gx+f)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))^2/(g*x+f)^(7/2),x)
```

```
[Out] int((a+b*ln(c*(e*x+d)^n))^2/(g*x+f)^(7/2),x)
```

Maxima [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/(g*x+f)^(7/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*%e^2*f-4*%e*d*g>0)', see `assume?
` for m
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/(g*x+f)^(7/2),x, algorithm="fricas")
```

```
[Out] integral((sqrt(g*x + f)*b^2*log((x*e + d)^n*c)^2 + 2*sqrt(g*x + f)*a*b*log(
(x*e + d)^n*c) + sqrt(g*x + f)*a^2)/(g^4*x^4 + 4*f*g^3*x^3 + 6*f^2*g^2*x^2
+ 4*f^3*g*x + f^4), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a + b\log{(c(d + ex)^n)})^2}{(f + gx)^{\frac{7}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**2/(g*x+f)**(7/2),x)
```

```
[Out] Integral((a + b*log(c*(d + e*x)**n))**2/(f + g*x)**(7/2), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/(g*x+f)^(7/2),x, algorithm="giac")
```

```
[Out] integrate((b*log((x*e + d)^n*c) + a)^2/(g*x + f)^(7/2), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(a + b\,\ln(c\,(d + e\,x)^n))^2}{(f + g\,x)^{7/2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))^2/(f + g*x)^(7/2),x)
```

```
[Out] int((a + b*log(c*(d + e*x)^n))^2/(f + g*x)^(7/2), x)
```

3.151 $\int \frac{(a+b\log(c(d+ex)^n))^2}{(f+gx)^{9/2}}\,dx$

Optimal. Leaf size=583

$$-\frac{16b^2e^2n^2}{105g(ef-dg)^2(f+gx)^{3/2}}-\frac{128b^2e^3n^2}{105g(ef-dg)^3\sqrt{f+gx}}+\frac{368b^2e^{7/2}n^2\tanh^{-1}\left(\frac{\sqrt{e}\,\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{105g(ef-dg)^{7/2}}+\frac{8b^2e^{7/2}n^2}{}$$

```
[Out] -16/105*b^2*e^2*n^2/g/(-d*g+e*f)^2/(g*x+f)^(3/2)+368/105*b^2*e^(7/2)*n^2*ar
ctanh(e^(1/2)*(g*x+f)^(1/2)/(-d*g+e*f)^(1/2))/g/(-d*g+e*f)^(7/2)+8/7*b^2*e^
(7/2)*n^2*arctanh(e^(1/2)*(g*x+f)^(1/2)/(-d*g+e*f)^(1/2))^2/g/(-d*g+e*f)^(7
/2)+8/35*b*e*n*(a+b*ln(c*(e*x+d)^n))/g/(-d*g+e*f)/(g*x+f)^(5/2)+8/21*b*e^2*
n*(a+b*ln(c*(e*x+d)^n))/g/(-d*g+e*f)^2/(g*x+f)^(3/2)-8/7*b*e^(7/2)*n*arctan
h(e^(1/2)*(g*x+f)^(1/2)/(-d*g+e*f)^(1/2))*(a+b*ln(c*(e*x+d)^n))/g/(-d*g+e*f
)^(7/2)-2/7*(a+b*ln(c*(e*x+d)^n))^2/g/(g*x+f)^(7/2)-16/7*b^2*e^(7/2)*n^2*ar
ctanh(e^(1/2)*(g*x+f)^(1/2)/(-d*g+e*f)^(1/2))*ln(2/(1-e^(1/2)*(g*x+f)^(1/2)
/(-d*g+e*f)^(1/2)))/g/(-d*g+e*f)^(7/2)-8/7*b^2*e^(7/2)*n^2*polylog(2,1-2/(1
-e^(1/2)*(g*x+f)^(1/2)/(-d*g+e*f)^(1/2)))/g/(-d*g+e*f)^(7/2)-128/105*b^2*e^
3*n^2/g/(-d*g+e*f)^3/(g*x+f)^(1/2)+8/7*b*e^3*n*(a+b*ln(c*(e*x+d)^n))/g/(-d*
g+e*f)^3/(g*x+f)^(1/2)
```

Rubi [A]
time = 1.34, antiderivative size = 583, normalized size of antiderivative = 1.00, number of steps used = 25, number of rules used = 15, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.577$, Rules used = {2445, 2458, 2389, 65, 214, 2390, 12, 1601, 6873, 6131, 6055, 2449, 2352, 2356, 53}

$$-\frac{8b^2e^{7/2}n^2\text{PolyLog}\left(2,1-\frac{2}{1-\frac{\sqrt{e}\,\sqrt{f+gx}}{\sqrt{ef-dg}}}\right)}{7g(ef-dg)^{7/2}}-\frac{8be^{7/2}n\tanh^{-1}\left(\frac{\sqrt{e}\,\sqrt{f+gx}}{\sqrt{ef-dg}}\right)(a+b\log(c(d+ex)^n))}{7g(ef-dg)^{7/2}}+\frac{8be^3n(a+b\log(c(d+ex)^n))}{7g\sqrt{f+gx}\,(ef-dg)^3}+\frac{8be^2n(a+b\log(c(d+ex)^n))}{21g(f+gx)^{3/2}(ef-dg)^2}+\frac{8ben(a+b\log(c(d+ex)^n))}{35g(f+gx)^{5/2}(ef-dg)}-\frac{2(a+b\log(c(d+ex)^n))^2}{7g(f+gx)^{7/2}}+\frac{8b^2e^{7/2}n^2\tanh^{-1}\left(\frac{\sqrt{e}\,\sqrt{f+gx}}{\sqrt{ef-dg}}\right)^2}{7g(ef-dg)^{7/2}}+\frac{368b^2e^{7/2}n^2\tanh^{-1}\left(\frac{\sqrt{e}\,\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{105g(ef-dg)^{7/2}}-\frac{16b^2e^{7/2}n^2\log\left(\frac{2}{1-\frac{\sqrt{e}\,\sqrt{f+gx}}{\sqrt{ef-dg}}}\right)\tanh^{-1}\left(\frac{\sqrt{e}\,\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{7g(ef-dg)^{7/2}}-\frac{128b^2e^3n^2}{105g\sqrt{f+gx}\,(ef-dg)^3}-\frac{16b^2e^2n^2}{105g(f+gx)^{3/2}(ef-dg)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^2/(f + g*x)^(9/2),x]
```

```
[Out] (-16*b^2*e^2*n^2)/(105*g*(e*f - d*g)^2*(f + g*x)^(3/2)) - (128*b^2*e^3*n^2)
/(105*g*(e*f - d*g)^3*Sqrt[f + g*x]) + (368*b^2*e^(7/2)*n^2*ArcTanh[(Sqrt[e
]*Sqrt[f + g*x])/Sqrt[e*f - d*g]])/(105*g*(e*f - d*g)^(7/2)) + (8*b^2*e^(7/
2)*n^2*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]]^2)/(7*g*(e*f - d*g)
^(7/2)) + (8*b*e*n*(a + b*Log[c*(d + e*x)^n]))/(35*g*(e*f - d*g)*(f + g*x)^
(5/2)) + (8*b*e^2*n*(a + b*Log[c*(d + e*x)^n]))/(21*g*(e*f - d*g)^2*(f + g*
x)^(3/2)) + (8*b*e^3*n*(a + b*Log[c*(d + e*x)^n]))/(7*g*(e*f - d*g)^3*Sqrt[
f + g*x]) - (8*b*e^(7/2)*n*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]]
*(a + b*Log[c*(d + e*x)^n]))/(7*g*(e*f - d*g)^(7/2)) - (2*(a + b*Log[c*(d +
```

```
 e*x)^n])^2)/(7*g*(f + g*x)^(7/2)) - (16*b^2*e^(7/2)*n^2*ArcTanh[(Sqrt[e]*S
qrt[f + g*x])/Sqrt[e*f - d*g]]*Log[2/(1 - (Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f
- d*g])])/(7*g*(e*f - d*g)^(7/2)) - (8*b^2*e^(7/2)*n^2*PolyLog[2, 1 - 2/(1
- (Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g])])/(7*g*(e*f - d*g)^(7/2))
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 53

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
(a + b*x)^(m + 1)*((c + d*x)^(n + 1)/((b*c - a*d)*(m + 1))), x] - Dist[d*((
m + n + 2)/((b*c - a*d)*(m + 1))), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 65

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - a*(d/b) +
d*(x^p/b))^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 214

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-a/b, 2]/a)*ArcTanh[x
/Rt[-a/b, 2]], x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 1601

```
Int[(Pp_)/(Qq_), x_Symbol] :> With[{p = Expon[Pp, x], q = Expon[Qq, x]}, Si
mp[Coeff[Pp, x, p]*(Log[RemoveContent[Qq, x]]/(q*Coeff[Qq, x, q])), x] /; E
qQ[p, q - 1] && EqQ[Pp, Simplify[(Coeff[Pp, x, p]/(q*Coeff[Qq, x, q]))*D[Qq
, x]]]] /; PolyQ[Pp, x] && PolyQ[Qq, x]
```

Rule 2352

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> Simp[(-e^(-1))*PolyLo
g[2, 1 - c*x], x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2356

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.),
x_Symbol] :> Simp[(d + e*x)^(q + 1)*((a + b*Log[c*x^n])^p/(e*(q + 1))), x]
```

```
- Dist[b*n*(p/(e*(q + 1))), Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^(p -
1))/x, x], x] /; FreeQ[{a, b, c, d, e, n, p, q}, x] && GtQ[p, 0] && NeQ[q,
-1] && (EqQ[p, 1] || (IntegersQ[2*p, 2*q] &&  !IGtQ[q, 0]) || (EqQ[p, 2] &&
 NeQ[q, 1]))
```

Rule 2389

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_))/
(x_), x_Symbol] :> Dist[1/d, Int[(d + e*x)^(q + 1)*((a + b*Log[c*x^n])^p/x)
, x], x] - Dist[e/d, Int[(d + e*x)^q*(a + b*Log[c*x^n])^p, x], x] /; FreeQ[
{a, b, c, d, e, n}, x] && IGtQ[p, 0] && LtQ[q, -1] && IntegerQ[2*q]
```

Rule 2390

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_) + (e_.)*(x_)^(r_.))^(q_.))
/(x_), x_Symbol] :> With[{u = IntHide[(d + e*x^r)^q/x, x]}, Simp[u*(a + b*L
og[c*x^n]), x] - Dist[b*n, Int[Dist[1/x, u, x], x], x]] /; FreeQ[{a, b, c,
d, e, n, r}, x] && IntegerQ[q - 1/2]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[(f + g*x)^(q + 1)*((a + b*Log[c*(d + e*x)^
n])^p/(g*(q + 1))), x] - Dist[b*e*n*(p/(g*(q + 1))), Int[(f + g*x)^(q + 1)*
((a + b*Log[c*(d + e*x)^n])^(p - 1)/(d + e*x)), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && GtQ[p, 0] && NeQ[q, -1] && Int
egersQ[2*p, 2*q] && ( !IGtQ[q, 0] || (EqQ[p, 2] && NeQ[q, 1]))
```

Rule 2449

```
Int[Log[(c_.)/((d_) + (e_.)*(x_))]/((f_) + (g_.)*(x_)^2), x_Symbol] :> Dist
[-e/g, Subst[Int[Log[2*d*x]/(1 - 2*d*x), x], x, 1/(d + e*x)], x] /; FreeQ[{
c, d, e, f, g}, x] && EqQ[c, 2*d] && EqQ[e^2*f + d^2*g, 0]
```

Rule 2458

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[(g*(x/e))^q*((e*h - d*i)/e + i*(x/e))^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 6055

```
Int[((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symbol
] :> Simp[(-(a + b*ArcTanh[c*x])^p)*(Log[2/(1 + e*(x/d))]/e), x] + Dist[b*c
```

```
*(p/e), Int[(a + b*ArcTanh[c*x])^(p - 1)*(Log[2/(1 + e*(x/d))]/(1 - c^2*x^2
)), x], x] /; FreeQ[{a, b, c, d, e}, x] && IGtQ[p, 0] && EqQ[c^2*d^2 - e^2,
 0]
```

Rule 6131

```
Int[(((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)*(x_))/((d_) + (e_.)*(x_)^2),
 x_Symbol] :> Simp[(a + b*ArcTanh[c*x])^(p + 1)/(b*e*(p + 1)), x] + Dist[1/
(c*d), Int[(a + b*ArcTanh[c*x])^p/(1 - c*x), x], x] /; FreeQ[{a, b, c, d, e
}, x] && EqQ[c^2*d + e, 0] && IGtQ[p, 0]
```

Rule 6873

```
Int[u_, x_Symbol] :> With[{v = NormalizeIntegrand[u, x]}, Int[v, x] /; v =!
= u]
```

Rubi steps

$$\int \frac{(a+b\log(c(d+ex)^n))^2}{(f+gx)^{9/2}}\,dx = -\frac{2(a+b\log(c(d+ex)^n))^2}{7g(f+gx)^{7/2}} + \frac{(4ben)\int \frac{a+b\log(c(d+ex)^n)}{(d+ex)(f+gx)^{7/2}}\,dx}{7g}$$

$$= -\frac{2(a+b\log(c(d+ex)^n))^2}{7g(f+gx)^{7/2}} + \frac{(4bn)\text{Subst}\left(\int \frac{a+b\log(cx^n)}{x\left(\frac{ef-dg}{e}+\frac{gx}{e}\right)^{7/2}}\,dx, x, d+ex\right)}{7g}$$

$$= -\frac{2(a+b\log(c(d+ex)^n))^2}{7g(f+gx)^{7/2}} - \frac{(4bn)\text{Subst}\left(\int \frac{a+b\log(cx^n)}{\left(\frac{ef-dg}{e}+\frac{gx}{e}\right)^{7/2}}\,dx, x, d+ex\right)}{7(ef-dg)}$$

$$= \frac{8ben(a+b\log(c(d+ex)^n))}{35g(ef-dg)(f+gx)^{5/2}} - \frac{2(a+b\log(c(d+ex)^n))^2}{7g(f+gx)^{7/2}} - \frac{(4ben)\text{Subst}\left(\right.}{}$$

$$= -\frac{16b^2e^2n^2}{105g(ef-dg)^2(f+gx)^{3/2}} + \frac{8ben(a+b\log(c(d+ex)^n))}{35g(ef-dg)(f+gx)^{5/2}} + \frac{8be^2n(a+b}{21g(ef-}$$

$$= -\frac{16b^2e^2n^2}{105g(ef-dg)^2(f+gx)^{3/2}} - \frac{128b^2e^3n^2}{105g(ef-dg)^3\sqrt{f+gx}} + \frac{8ben(a+b\log}{35g(ef-dg}$$

$$= -\frac{16b^2e^2n^2}{105g(ef-dg)^2(f+gx)^{3/2}} - \frac{128b^2e^3n^2}{105g(ef-dg)^3\sqrt{f+gx}} + \frac{8ben(a+b\log}{35g(ef-dg}$$

$$= -\frac{16b^2e^2n^2}{105g(ef-dg)^2(f+gx)^{3/2}} - \frac{128b^2e^3n^2}{105g(ef-dg)^3\sqrt{f+gx}} + \frac{368b^2e^{7/2}n^2\,\text{ta}}{105}$$

$$\frac{16b^2e^2n^2}{} \quad \frac{128b^2e^3n^2}{} \quad \frac{368b^2e^{7/2}n^2\,\text{ta}}{}$$

Mathematica [C] Result contains higher order function than in optimal. Order 5 vs. order 4 in optimal.
time = 5.67, size = 444, normalized size = 0.76

$$\frac{2\left(\frac{15b^2n^2\left(7g(d+ex)\left(\frac{e(f+gx)}{ef-dg}\right)^{7/2}{}_4F_3\left(1,1,1,\frac{9}{2};2,2,2;\frac{g(d+ex)}{-ef+dg}\right)-7g(d+ex)\left(\frac{e(f+gx)}{ef-dg}\right)^{7/2}{}_3F_2\left(1,1,\frac{9}{2};2,2;\frac{g(d+ex)}{-ef+dg}\right)\log(d+ex)-ef\log^2(d+ex)+dg\log^2(d+ex)+ef\left(\frac{e(f+gx)}{ef-dg}\right)^{7/2}\log^2(d+ex)-dg\left(\frac{e(f+gx)}{ef-dg}\right)^{7/2}\log^2(d+ex)\right)}{(ef-dg)(f+gx)^{7/2}}+2be^{7/2}n\left(-\frac{30\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{(ef-dg)^{7/2}}+\frac{\frac{2e(f+gx)\left(3d^2g^2-deg(11f+5gx)+e^2\left(23f^2+35fgx+15g^2x^2\right)\right)}{(ef-dg)^3}-15\log(d+ex)}{e^{7/2}(f+gx)^{7/2}}\right)(a-bn\log(d+ex)+b\log(c(d+ex)^n))-\frac{15(a-bn\log(d+ex)+b\log(c(d+ex)^n))^2}{(f+gx)^{7/2}}\right)}{105g}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^2/(f + g*x)^(9/2),x]
```

```
[Out] (2*((15*b^2*n^2*(7*g*(d + e*x)*((e*(f + g*x))/(e*f - d*g))^(7/2)*Hypergeome
tricPFQ[{1, 1, 1, 9/2}, {2, 2, 2}, (g*(d + e*x))/(-(e*f) + d*g)] - 7*g*(d +
 e*x)*((e*(f + g*x))/(e*f - d*g))^(7/2)*HypergeometricPFQ[{1, 1, 9/2}, {2,
2}, (g*(d + e*x))/(-(e*f) + d*g)]*Log[d + e*x] - e*f*Log[d + e*x]^2 + d*g*L
og[d + e*x]^2 + e*f*((e*(f + g*x))/(e*f - d*g))^(7/2)*Log[d + e*x]^2 - d*g*
((e*(f + g*x))/(e*f - d*g))^(7/2)*Log[d + e*x]^2))/((e*f - d*g)*(f + g*x)^(
7/2)) + 2*b*e^(7/2)*n*((-30*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]
])/(e*f - d*g)^(7/2) + ((2*e*(f + g*x)*(3*d^2*g^2 - d*e*g*(11*f + 5*g*x) +
e^2*(23*f^2 + 35*f*g*x + 15*g^2*x^2)))/(e*f - d*g)^3 - 15*Log[d + e*x])/(e^
(7/2)*(f + g*x)^(7/2)))*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n]) - (15
*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2)/(f + g*x)^(7/2)))/(105*g)
```

Maple [F]
time = 0.19, size = 0, normalized size = 0.00

$$\int \frac{\left(a+b\ln\left(c(ex+d)^n\right)\right)^2}{(gx+f)^{\frac{9}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))^2/(g*x+f)^(9/2),x)
```

```
[Out] int((a+b*ln(c*(e*x+d)^n))^2/(g*x+f)^(9/2),x)
```

Maxima [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/(g*x+f)^(9/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*%e^2*f-4*%e*d*g>0)', see `assume?
` for m
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/(g*x+f)^(9/2),x, algorithm="fricas")
[Out] integral((sqrt(g*x + f)*b^2*log((x*e + d)^n*c)^2 + 2*sqrt(g*x + f)*a*b*log(
(x*e + d)^n*c) + sqrt(g*x + f)*a^2)/(g^5*x^5 + 5*f*g^4*x^4 + 10*f^2*g^3*x^3
 + 10*f^3*g^2*x^2 + 5*f^4*g*x + f^5), x)
```

Sympy [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: SystemError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**2/(g*x+f)**(9/2),x)
[Out] Exception raised: SystemError >> excessive stack use: stack is 4847 deep
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/(g*x+f)^(9/2),x, algorithm="giac")
[Out] integrate((b*log((x*e + d)^n*c) + a)^2/(g*x + f)^(9/2), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)^2}{{\left(f+g\,x\right)}^{9/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))^2/(f + g*x)^(9/2),x)
[Out] int((a + b*log(c*(d + e*x)^n))^2/(f + g*x)^(9/2), x)
```

3.152 $\int \frac{(f+gx)^{3/2}}{a+b\log(c(d+ex)^n)}\,dx$

Optimal. Leaf size=29

$$\operatorname{Int}\left(\frac{(f+gx)^{3/2}}{a+b\log\left(c(d+ex)^n\right)},x\right)$$

```
[Out] Unintegrable((g*x+f)^(3/2)/(a+b*ln(c*(e*x+d)^n)),x)
```

Rubi [A]
time = 0.03, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{(f+gx)^{3/2}}{a+b\log\left(c(d+ex)^n\right)}\,dx$$

Verification is not applicable to the result.

```
[In] Int[(f + g*x)^(3/2)/(a + b*Log[c*(d + e*x)^n]),x]
[Out] Defer[Int][(f + g*x)^(3/2)/(a + b*Log[c*(d + e*x)^n]), x]
```

Rubi steps

$$\int \frac{(f+gx)^{3/2}}{a+b\log\left(c(d+ex)^n\right)}\,dx=\int \frac{(f+gx)^{3/2}}{a+b\log\left(c(d+ex)^n\right)}\,dx$$

Mathematica [A]
time = 0.68, size = 0, normalized size = 0.00

$$\int \frac{(f+gx)^{3/2}}{a+b\log\left(c(d+ex)^n\right)}\,dx$$

Verification is not applicable to the result.

```
[In] Integrate[(f + g*x)^(3/2)/(a + b*Log[c*(d + e*x)^n]),x]
[Out] Integrate[(f + g*x)^(3/2)/(a + b*Log[c*(d + e*x)^n]), x]
```

Maple [A]
time = 0.18, size = 0, normalized size = 0.00

$$\int \frac{(gx+f)^{\frac{3}{2}}}{a+b\ln\left(c\,(ex+d)^n\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^(3/2)/(a+b*ln(c*(e*x+d)^n)),x)
```

```
[Out] int((g*x+f)^(3/2)/(a+b*ln(c*(e*x+d)^n)),x)
```

Maxima [A]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^(3/2)/(a+b*log(c*(e*x+d)^n)),x, algorithm="maxima")
```

```
[Out] 2/5*(g^2*x^2 + 2*f*g*x + f^2)*sqrt(g*x + f)/(b*g*log((x*e + d)^n) + b*g*log
(c) + a*g) + integrate(2/5*(b*g^2*n*x^2*e + 2*b*f*g*n*x*e + b*f^2*n*e)*sqrt
(g*x + f)/(b^2*d*g*log(c)^2 + 2*a*b*d*g*log(c) + a^2*d*g + (b^2*g*log(c)^2
+ 2*a*b*g*log(c) + a^2*g)*x*e + (b^2*g*x*e + b^2*d*g)*log((x*e + d)^n)^2 +
2*(b^2*d*g*log(c) + a*b*d*g + (b^2*g*log(c) + a*b*g)*x*e)*log((x*e + d)^n))
, x)
```

Fricas [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^(3/2)/(a+b*log(c*(e*x+d)^n)),x, algorithm="fricas")
```

```
[Out] integral((g*x + f)^(3/2)/(b*log((x*e + d)^n*c) + a), x)
```

Sympy [F(-1)] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**(3/2)/(a+b*ln(c*(e*x+d)**n)),x)
```

```
[Out] Timed out
```

Giac [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^(3/2)/(a+b*log(c*(e*x+d)^n)),x, algorithm="giac")
[Out] integrate((g*x + f)^(3/2)/(b*log((x*e + d)^n*c) + a), x)
```

Mupad [A]

time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{(f+g\,x)^{3/2}}{a+b\,\ln\left(c\,(d+e\,x)^n\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)^(3/2)/(a + b*log(c*(d + e*x)^n)),x)
[Out] int((f + g*x)^(3/2)/(a + b*log(c*(d + e*x)^n)), x)
```

3.153 $\int \frac{\sqrt{f+gx}}{a+b\log(c(d+ex)^n)}\,dx$

Optimal. Leaf size=29

$$\mathrm{Int}\left(\frac{\sqrt{f+gx}}{a+b\log\left(c(d+ex)^n\right)},x\right)$$

```
[Out] Unintegrable((g*x+f)^(1/2)/(a+b*ln(c*(e*x+d)^n)),x)
```

Rubi [A]
time = 0.02, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int \frac{\sqrt{f+gx}}{a+b\log\left(c(d+ex)^n\right)}\,dx$$

Verification is not applicable to the result.

```
[In] Int[Sqrt[f + g*x]/(a + b*Log[c*(d + e*x)^n]),x]
[Out] Defer[Int][Sqrt[f + g*x]/(a + b*Log[c*(d + e*x)^n]), x]
```

Rubi steps

$$\int \frac{\sqrt{f+gx}}{a+b\log\left(c(d+ex)^n\right)}\,dx = \int \frac{\sqrt{f+gx}}{a+b\log\left(c(d+ex)^n\right)}\,dx$$

Mathematica [A]
time = 0.59, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{f+gx}}{a+b\log\left(c(d+ex)^n\right)}\,dx$$

Verification is not applicable to the result.

```
[In] Integrate[Sqrt[f + g*x]/(a + b*Log[c*(d + e*x)^n]),x]
[Out] Integrate[Sqrt[f + g*x]/(a + b*Log[c*(d + e*x)^n]), x]
```

Maple [A]
time = 0.14, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{gx+f}}{a+b\ln\left(c\,(ex+d)^n\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^(1/2)/(a+b*ln(c*(e*x+d)^n)),x)
```

```
[Out] int((g*x+f)^(1/2)/(a+b*ln(c*(e*x+d)^n)),x)
```

Maxima [A]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^(1/2)/(a+b*log(c*(e*x+d)^n)),x, algorithm="maxima")
```

```
[Out] 2/3*(g*x + f)^(3/2)/(b*g*log((x*e + d)^n) + b*g*log(c) + a*g) + integrate(2
/3*(b*g*n*x*e + b*f*n*e)*sqrt(g*x + f)/(b^2*d*g*log(c)^2 + 2*a*b*d*g*log(c)
 + a^2*d*g + (b^2*g*log(c)^2 + 2*a*b*g*log(c) + a^2*g)*x*e + (b^2*g*x*e + b
^2*d*g)*log((x*e + d)^n)^2 + 2*(b^2*d*g*log(c) + a*b*d*g + (b^2*g*log(c) +
a*b*g)*x*e)*log((x*e + d)^n)), x)
```

Fricas [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^(1/2)/(a+b*log(c*(e*x+d)^n)),x, algorithm="fricas")
```

```
[Out] integral(sqrt(g*x + f)/(b*log((x*e + d)^n*c) + a), x)
```

Sympy [A]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{f+gx}}{a+b\log\left(c\left(d+ex\right)^{n}\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**(1/2)/(a+b*ln(c*(e*x+d)**n)),x)
```

```
[Out] Integral(sqrt(f + g*x)/(a + b*log(c*(d + e*x)**n)), x)
```

Giac [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^(1/2)/(a+b*log(c*(e*x+d)^n)),x, algorithm="giac")
[Out] integrate(sqrt(g*x + f)/(b*log((x*e + d)^n*c) + a), x)
```

Mupad [A]
time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{\sqrt{f+g\,x}}{a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)^(1/2)/(a + b*log(c*(d + e*x)^n)),x)
[Out] int((f + g*x)^(1/2)/(a + b*log(c*(d + e*x)^n)), x)
```

3.154 $\int \frac{1}{\sqrt{f+gx}\,(a+b\log(c(d+ex)^n))}\,dx$

Optimal. Leaf size=29

$$\text{Int}\left(\frac{1}{\sqrt{f+gx}\,\left(a+b\log\left(c(d+ex)^n\right)\right)},x\right)$$

`[Out] Unintegrable(1/(a+b*ln(c*(e*x+d)^n))/(g*x+f)^(1/2),x)`

Rubi [A]
time = 0.02, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int \frac{1}{\sqrt{f+gx}\,\left(a+b\log\left(c(d+ex)^n\right)\right)}\,dx$$

Verification is not applicable to the result.

`[In] Int[1/(Sqrt[f + g*x]*(a + b*Log[c*(d + e*x)^n])),x]`

`[Out] Defer[Int][1/(Sqrt[f + g*x]*(a + b*Log[c*(d + e*x)^n])), x]`

Rubi steps

$$\int \frac{1}{\sqrt{f+gx}\,\left(a+b\log\left(c(d+ex)^n\right)\right)}\,dx=\int \frac{1}{\sqrt{f+gx}\,\left(a+b\log\left(c(d+ex)^n\right)\right)}\,dx$$

Mathematica [A]
time = 0.82, size = 0, normalized size = 0.00

$$\int \frac{1}{\sqrt{f+gx}\,\left(a+b\log\left(c(d+ex)^n\right)\right)}\,dx$$

Verification is not applicable to the result.

`[In] Integrate[1/(Sqrt[f + g*x]*(a + b*Log[c*(d + e*x)^n])),x]`

`[Out] Integrate[1/(Sqrt[f + g*x]*(a + b*Log[c*(d + e*x)^n])), x]`

Maple [A]
time = 0.19, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(a+b\ln\left(c\left(ex+d\right)^{n}\right)\right)\sqrt{gx+f}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+b*ln(c*(e*x+d)^n))/(g*x+f)^(1/2),x)
```

```
[Out] int(1/(a+b*ln(c*(e*x+d)^n))/(g*x+f)^(1/2),x)
```

Maxima [A]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(e*x+d)^n))/(g*x+f)^(1/2),x, algorithm="maxima")
```

```
[Out] 2*sqrt(g*x + f)/(b*g*log((x*e + d)^n) + b*g*log(c) + a*g) + integrate(2*(b*
g*n*x*e + b*f*n*e)/((b^2*d*g*log(c)^2 + 2*a*b*d*g*log(c) + a^2*d*g + (b^2*g
*log(c)^2 + 2*a*b*g*log(c) + a^2*g)*x*e + (b^2*g*x*e + b^2*d*g)*log((x*e +
d)^n)^2 + 2*(b^2*d*g*log(c) + a*b*d*g + (b^2*g*log(c) + a*b*g)*x*e)*log((x*
e + d)^n))*sqrt(g*x + f)), x)
```

Fricas [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(e*x+d)^n))/(g*x+f)^(1/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(g*x + f)/(a*g*x + a*f + (b*g*x + b*f)*log((x*e + d)^n*c)), x)
```

Sympy [A]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{(a + b\log{(c(d + ex)^{n})})\sqrt{f + gx}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*ln(c*(e*x+d)**n))/(g*x+f)**(1/2),x)
```

```
[Out] Integral(1/((a + b*log(c*(d + e*x)**n))*sqrt(f + g*x)), x)
```

Giac [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(e*x+d)^n))/(g*x+f)^(1/2),x, algorithm="giac")
[Out] integrate(1/(sqrt(g*x + f)*(b*log((x*e + d)^n*c) + a)), x)
```

Mupad [A]
time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{1}{\sqrt{f+g\,x}\,\,\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((f + g*x)^(1/2)*(a + b*log(c*(d + e*x)^n))),x)
[Out] int(1/((f + g*x)^(1/2)*(a + b*log(c*(d + e*x)^n))), x)
```

3.155 $\int \frac{1}{(f+gx)^{3/2}(a+b\log(c(d+ex)^n))}\,dx$

Optimal. Leaf size=29

$$\text{Int}\left(\frac{1}{(f+gx)^{3/2}\left(a+b\log\left(c(d+ex)^n\right)\right)},x\right)$$

```
[Out] Unintegrable(1/(g*x+f)^(3/2)/(a+b*ln(c*(e*x+d)^n)),x)
```

Rubi [A]
time = 0.03, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int \frac{1}{(f+gx)^{3/2}\left(a+b\log\left(c(d+ex)^n\right)\right)}\,dx$$

Verification is not applicable to the result.

```
[In] Int[1/((f + g*x)^(3/2)*(a + b*Log[c*(d + e*x)^n])),x]
[Out] Defer[Int][1/((f + g*x)^(3/2)*(a + b*Log[c*(d + e*x)^n])), x]
```

Rubi steps

$$\int \frac{1}{(f+gx)^{3/2}\left(a+b\log\left(c(d+ex)^n\right)\right)}\,dx = \int \frac{1}{(f+gx)^{3/2}\left(a+b\log\left(c(d+ex)^n\right)\right)}\,dx$$

Mathematica [A]
time = 0.89, size = 0, normalized size = 0.00

$$\int \frac{1}{(f+gx)^{3/2}\left(a+b\log\left(c(d+ex)^n\right)\right)}\,dx$$

Verification is not applicable to the result.

```
[In] Integrate[1/((f + g*x)^(3/2)*(a + b*Log[c*(d + e*x)^n])),x]
[Out] Integrate[1/((f + g*x)^(3/2)*(a + b*Log[c*(d + e*x)^n])), x]
```

Maple [A]
time = 0.17, size = 0, normalized size = 0.00

$$\int \frac{1}{(gx+f)^{\frac{3}{2}}\left(a+b\ln\left(c\left(ex+d\right)^{n}\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(g*x+f)^(3/2)/(a+b*ln(c*(e*x+d)^n)),x)
```

```
[Out] int(1/(g*x+f)^(3/2)/(a+b*ln(c*(e*x+d)^n)),x)
```

Maxima [A]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)^(3/2)/(a+b*log(c*(e*x+d)^n)),x, algorithm="maxima")
```

```
[Out] -2*b*n*e*integrate(1/((b^2*d*g*log(c)^2 + 2*a*b*d*g*log(c) + a^2*d*g + (b^2
*g*log(c)^2 + 2*a*b*g*log(c) + a^2*g)*x*e + (b^2*g*x*e + b^2*d*g)*log((x*e
+ d)^n)^2 + 2*(b^2*d*g*log(c) + a*b*d*g + (b^2*g*log(c) + a*b*g)*x*e)*log((
x*e + d)^n))*sqrt(g*x + f)), x) - 2/((b*g*log((x*e + d)^n) + b*g*log(c) + a
*g)*sqrt(g*x + f))
```

Fricas [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)^(3/2)/(a+b*log(c*(e*x+d)^n)),x, algorithm="fricas")
```

```
[Out] integral(sqrt(g*x + f)/(a*g^2*x^2 + 2*a*f*g*x + a*f^2 + (b*g^2*x^2 + 2*b*f*
g*x + b*f^2)*log((x*e + d)^n*c)), x)
```

Sympy [A]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(a + b\log\left(c\left(d + ex\right)^{n}\right)\right)\left(f + gx\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)**(3/2)/(a+b*ln(c*(e*x+d)**n)),x)
```

```
[Out] Integral(1/((a + b*log(c*(d + e*x)**n))*(f + g*x)**(3/2)), x)
```

Giac [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)^(3/2)/(a+b*log(c*(e*x+d)^n)),x, algorithm="giac")
```

```
[Out] integrate(1/((g*x + f)^(3/2)*(b*log((x*e + d)^n*c) + a)), x)
```

Mupad [**A**]
time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{1}{{\left(f+g\,x\right)}^{3/2}\,\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((f + g*x)^(3/2)*(a + b*log(c*(d + e*x)^n))),x)
```

```
[Out] int(1/((f + g*x)^(3/2)*(a + b*log(c*(d + e*x)^n))), x)
```

3.156 $\int \sqrt{f+gx}\,\sqrt{a+b\log\left(c(d+ex)^n\right)}\,dx$

Optimal. Leaf size=83

$$\frac{2(f+gx)^{3/2}\sqrt{a+b\log\left(c(d+ex)^n\right)}}{3g}-\frac{ben\text{Int}\left(\frac{(f+gx)^{3/2}}{(d+ex)\sqrt{a+b\log\left(c(d+ex)^n\right)}},x\right)}{3g}$$

[Out] 2/3*(g*x+f)^(3/2)*(a+b*ln(c*(e*x+d)^n))^(1/2)/g-1/3*b*e*n*Unintegrable((g*x+f)^(3/2)/(e*x+d)/(a+b*ln(c*(e*x+d)^n))^(1/2),x)/g

Rubi [A]
time = 0.17, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \sqrt{f+gx}\,\sqrt{a+b\log\left(c(d+ex)^n\right)}\,dx$$

Verification is not applicable to the result.

[In] Int[Sqrt[f + g*x]*Sqrt[a + b*Log[c*(d + e*x)^n]],x]

[Out] (2*(f + g*x)^(3/2)*Sqrt[a + b*Log[c*(d + e*x)^n]])/(3*g) - (b*e*n*Defer[Int][(f + g*x)^(3/2)/((d + e*x)*Sqrt[a + b*Log[c*(d + e*x)^n]]), x])/(3*g)

Rubi steps

$$\int \sqrt{f+gx}\,\sqrt{a+b\log\left(c(d+ex)^n\right)}\,dx=\frac{2(f+gx)^{3/2}\sqrt{a+b\log\left(c(d+ex)^n\right)}}{3g}-\frac{(ben)\int\frac{(f+g}{(d+ex)\sqrt{a+b\,l}}}{3g}$$

Mathematica [A]
time = 0.56, size = 0, normalized size = 0.00

$$\int \sqrt{f+gx}\,\sqrt{a+b\log\left(c(d+ex)^n\right)}\,dx$$

Verification is not applicable to the result.

[In] Integrate[Sqrt[f + g*x]*Sqrt[a + b*Log[c*(d + e*x)^n]],x]

[Out] Integrate[Sqrt[f + g*x]*Sqrt[a + b*Log[c*(d + e*x)^n]], x]

Maple [A]
time = 0.13, size = 0, normalized size = 0.00

$$\int \sqrt{gx+f}\,\sqrt{a+b\ln\left(c\,(ex+d)^{n}\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^(1/2)*(a+b*ln(c*(e*x+d)^n))^(1/2),x)
```

```
[Out] int((g*x+f)^(1/2)*(a+b*ln(c*(e*x+d)^n))^(1/2),x)
```

Maxima [A]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^(1/2)*(a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="maxima")
```

```
[Out] integrate(sqrt(g*x + f)*sqrt(b*log((x*e + d)^n*c) + a), x)
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^(1/2)*(a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [F(-1)] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**(1/2)*(a+b*ln(c*(e*x+d)**n))**(1/2),x)
```

```
[Out] Timed out
```

Giac [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^(1/2)*(a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="giac")
```

```
[Out] integrate(sqrt(g*x + f)*sqrt(b*log((x*e + d)^n*c) + a), x)
```

Mupad [A]
time = 0.00, size = -1, normalized size = -0.01

$$\int \sqrt{f+g\,x}\,\sqrt{a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)^(1/2)*(a + b*log(c*(d + e*x)^n))^(1/2),x)
[Out] int((f + g*x)^(1/2)*(a + b*log(c*(d + e*x)^n))^(1/2), x)
```

3.157 $\int \frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{f+gx}}\,dx$

Optimal. Leaf size=79

$$\frac{2\sqrt{f+gx}\,\sqrt{a+b\log(c(d+ex)^n)}}{g}-\frac{ben\mathrm{Int}\left(\frac{\sqrt{f+gx}}{(d+ex)\sqrt{a+b\log(c(d+ex)^n)}},x\right)}{g}$$

```
[Out] 2*(g*x+f)^(1/2)*(a+b*ln(c*(e*x+d)^n))^(1/2)/g-b*e*n*Unintegrable((g*x+f)^(1
/2)/(e*x+d)/(a+b*ln(c*(e*x+d)^n))^(1/2),x)/g
```

Rubi [A]
time = 0.16, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int \frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{f+gx}}\,dx$$

Verification is not applicable to the result.

```
[In] Int[Sqrt[a + b*Log[c*(d + e*x)^n]]/Sqrt[f + g*x],x]
```

```
[Out] (2*Sqrt[f + g*x]*Sqrt[a + b*Log[c*(d + e*x)^n]])/g - (b*e*n*Defer[Int][Sqrt
[f + g*x]/((d + e*x)*Sqrt[a + b*Log[c*(d + e*x)^n]]), x])/g
```

Rubi steps

$$\int \frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{f+gx}}\,dx=\frac{2\sqrt{f+gx}\,\sqrt{a+b\log(c(d+ex)^n)}}{g}-\frac{(ben)\int \frac{\sqrt{f+gx}}{(d+ex)\sqrt{a+b\log(c(d+ex}}{g}$$

Mathematica [A]
time = 0.59, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{f+gx}}\,dx$$

Verification is not applicable to the result.

```
[In] Integrate[Sqrt[a + b*Log[c*(d + e*x)^n]]/Sqrt[f + g*x],x]
```

```
[Out] Integrate[Sqrt[a + b*Log[c*(d + e*x)^n]]/Sqrt[f + g*x], x]
```

Maple [A]
time = 0.14, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{a+b\ln\left(c\left(ex+d\right)^{n}\right)}}{\sqrt{gx+f}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))^(1/2)/(g*x+f)^(1/2),x)
[Out] int((a+b*ln(c*(e*x+d)^n))^(1/2)/(g*x+f)^(1/2),x)
```

Maxima [A]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(1/2)/(g*x+f)^(1/2),x, algorithm="maxima")
[Out] integrate(sqrt(b*log((x*e + d)^n*c) + a)/sqrt(g*x + f), x)
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(1/2)/(g*x+f)^(1/2),x, algorithm="fricas")
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [A]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{a+b\log\left(c\left(d+ex\right)^{n}\right)}}{\sqrt{f+gx}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**(1/2)/(g*x+f)**(1/2),x)
[Out] Integral(sqrt(a + b*log(c*(d + e*x)**n))/sqrt(f + g*x), x)
```

Giac [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(1/2)/(g*x+f)^(1/2),x, algorithm="giac")
[Out] integrate(sqrt(b*log((x*e + d)^n*c) + a)/sqrt(g*x + f), x)
```

Mupad [A]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\sqrt{a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)}}{\sqrt{f+g\,x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))^(1/2)/(f + g*x)^(1/2),x)
[Out] int((a + b*log(c*(d + e*x)^n))^(1/2)/(f + g*x)^(1/2), x)
```

3.158 $\int \frac{\sqrt{a+b\log\left(c(d+ex)^n\right)}}{(f+gx)^{3/2}}\,dx$

Optimal. Leaf size=78

$$-\frac{2\sqrt{a+b\log\left(c(d+ex)^n\right)}}{g\sqrt{f+gx}}+\frac{ben\text{Int}\left(\frac{1}{(d+ex)\sqrt{f+gx}\,\sqrt{a+b\log\left(c(d+ex)^n\right)}},x\right)}{g}$$

```
[Out] -2*(a+b*ln(c*(e*x+d)^n))^(1/2)/g/(g*x+f)^(1/2)+b*e*n*Unintegrable(1/(e*x+d)
/(g*x+f)^(1/2)/(a+b*ln(c*(e*x+d)^n))^(1/2),x)/g
```

Rubi [A]
time = 0.17, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int \frac{\sqrt{a+b\log\left(c(d+ex)^n\right)}}{(f+gx)^{3/2}}\,dx$$

Verification is not applicable to the result.

```
[In] Int[Sqrt[a + b*Log[c*(d + e*x)^n]]/(f + g*x)^(3/2),x]
```

```
[Out] (-2*Sqrt[a + b*Log[c*(d + e*x)^n]])/(g*Sqrt[f + g*x]) + (b*e*n*Defer[Int][1
/((d + e*x)*Sqrt[f + g*x]*Sqrt[a + b*Log[c*(d + e*x)^n]]), x])/g
```

Rubi steps

$$\int \frac{\sqrt{a+b\log\left(c(d+ex)^n\right)}}{(f+gx)^{3/2}}\,dx=-\frac{2\sqrt{a+b\log\left(c(d+ex)^n\right)}}{g\sqrt{f+gx}}+\frac{(ben)\int \frac{1}{(d+ex)\sqrt{f+gx}\,\sqrt{a+b\log\left(c(d+\right.}}{g}$$

Mathematica [A]
time = 0.66, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{a+b\log\left(c(d+ex)^n\right)}}{(f+gx)^{3/2}}\,dx$$

Verification is not applicable to the result.

```
[In] Integrate[Sqrt[a + b*Log[c*(d + e*x)^n]]/(f + g*x)^(3/2),x]
```

```
[Out] Integrate[Sqrt[a + b*Log[c*(d + e*x)^n]]/(f + g*x)^(3/2), x]
```

Maple [A]
time = 0.13, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{a+b\ln\left(c\left(ex+d\right)^{n}\right)}}{\left(gx+f\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))^(1/2)/(g*x+f)^(3/2),x)
```

```
[Out] int((a+b*ln(c*(e*x+d)^n))^(1/2)/(g*x+f)^(3/2),x)
```

Maxima [A]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(1/2)/(g*x+f)^(3/2),x, algorithm="maxima")
```

```
[Out] integrate(sqrt(b*log((x*e + d)^n*c) + a)/(g*x + f)^(3/2), x)
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(1/2)/(g*x+f)^(3/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [A]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{a+b\log\left(c\left(d+ex\right)^{n}\right)}}{\left(f+gx\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**(1/2)/(g*x+f)**(3/2),x)
```

```
[Out] Integral(sqrt(a + b*log(c*(d + e*x)**n))/(f + g*x)**(3/2), x)
```

Giac [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(1/2)/(g*x+f)^(3/2),x, algorithm="giac")
```

```
[Out] integrate(sqrt(b*log((x*e + d)^n*c) + a)/(g*x + f)^(3/2), x)
```

Mupad [A]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\sqrt{a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)}}{{\left(f+g\,x\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))^(1/2)/(f + g*x)^(3/2),x)
```

```
[Out] int((a + b*log(c*(d + e*x)^n))^(1/2)/(f + g*x)^(3/2), x)
```

3.159 $\int \frac{\sqrt{f+gx}}{\sqrt{a+b\log(c(d+ex)^n)}}\,dx$

Optimal. Leaf size=31

$$\text{Int}\left(\frac{\sqrt{f+gx}}{\sqrt{a+b\log(c(d+ex)^n)}},x\right)$$

```
[Out] Unintegrable((g*x+f)^(1/2)/(a+b*ln(c*(e*x+d)^n))^(1/2),x)
```

Rubi [A]
time = 0.04, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int \frac{\sqrt{f+gx}}{\sqrt{a+b\log(c(d+ex)^n)}}\,dx$$

Verification is not applicable to the result.

```
[In] Int[Sqrt[f + g*x]/Sqrt[a + b*Log[c*(d + e*x)^n]],x]
[Out] Defer[Int][Sqrt[f + g*x]/Sqrt[a + b*Log[c*(d + e*x)^n]], x]
```

Rubi steps

$$\int \frac{\sqrt{f+gx}}{\sqrt{a+b\log(c(d+ex)^n)}}\,dx = \int \frac{\sqrt{f+gx}}{\sqrt{a+b\log(c(d+ex)^n)}}\,dx$$

Mathematica [A]
time = 4.86, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{f+gx}}{\sqrt{a+b\log(c(d+ex)^n)}}\,dx$$

Verification is not applicable to the result.

```
[In] Integrate[Sqrt[f + g*x]/Sqrt[a + b*Log[c*(d + e*x)^n]],x]
[Out] Integrate[Sqrt[f + g*x]/Sqrt[a + b*Log[c*(d + e*x)^n]], x]
```

Maple [A]
time = 0.16, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{gx+f}}{\sqrt{a+b\ln\left(c\,(ex+d)^n\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^(1/2)/(a+b*ln(c*(e*x+d)^n))^(1/2),x)
```

```
[Out] int((g*x+f)^(1/2)/(a+b*ln(c*(e*x+d)^n))^(1/2),x)
```

Maxima [A]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^(1/2)/(a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="maxima")
```

```
[Out] integrate(sqrt(g*x + f)/sqrt(b*log((x*e + d)^n*c) + a), x)
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^(1/2)/(a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [F(-1)] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**(1/2)/(a+b*ln(c*(e*x+d)**n))**(1/2),x)
```

```
[Out] Timed out
```

Giac [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^(1/2)/(a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="giac")
```

```
[Out] integrate(sqrt(g*x + f)/sqrt(b*log((x*e + d)^n*c) + a), x)
```

Mupad [A]
time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{\sqrt{f+g\,x}}{\sqrt{a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)^(1/2)/(a + b*log(c*(d + e*x)^n))^(1/2),x)
[Out] int((f + g*x)^(1/2)/(a + b*log(c*(d + e*x)^n))^(1/2), x)
```

3.160 $\int \frac{1}{\sqrt{f+gx}\sqrt{a+b\log\left(c(d+ex)^n\right)}}\,dx$

Optimal. Leaf size=31

$$\text{Int}\left(\frac{1}{\sqrt{f+gx}\sqrt{a+b\log\left(c(d+ex)^n\right)}},x\right)$$

```
[Out] Unintegrable(1/(g*x+f)^(1/2)/(a+b*ln(c*(e*x+d)^n))^(1/2),x)
```

Rubi [A]
time = 0.04, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int \frac{1}{\sqrt{f+gx}\sqrt{a+b\log\left(c(d+ex)^n\right)}}\,dx$$

Verification is not applicable to the result.

```
[In] Int[1/(Sqrt[f + g*x]*Sqrt[a + b*Log[c*(d + e*x)^n]]),x]
[Out] Defer[Int][1/(Sqrt[f + g*x]*Sqrt[a + b*Log[c*(d + e*x)^n]]), x]
```

Rubi steps

$$\int \frac{1}{\sqrt{f+gx}\sqrt{a+b\log\left(c(d+ex)^n\right)}}\,dx = \int \frac{1}{\sqrt{f+gx}\sqrt{a+b\log\left(c(d+ex)^n\right)}}\,dx$$

Mathematica [A]
time = 3.01, size = 0, normalized size = 0.00

$$\int \frac{1}{\sqrt{f+gx}\sqrt{a+b\log\left(c(d+ex)^n\right)}}\,dx$$

Verification is not applicable to the result.

```
[In] Integrate[1/(Sqrt[f + g*x]*Sqrt[a + b*Log[c*(d + e*x)^n]]),x]
[Out] Integrate[1/(Sqrt[f + g*x]*Sqrt[a + b*Log[c*(d + e*x)^n]]), x]
```

Maple [A]
time = 0.17, size = 0, normalized size = 0.00

$$\int \frac{1}{\sqrt{gx+f}\,\sqrt{a+b\ln\left(c\left(ex+d\right)^{n}\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(g*x+f)^(1/2)/(a+b*ln(c*(e*x+d)^n))^(1/2),x)
```

```
[Out] int(1/(g*x+f)^(1/2)/(a+b*ln(c*(e*x+d)^n))^(1/2),x)
```

Maxima [A]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)^(1/2)/(a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="maxima
")
```

```
[Out] integrate(1/(sqrt(g*x + f)*sqrt(b*log((x*e + d)^n*c) + a)), x)
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)^(1/2)/(a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="fricas
")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [A]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\sqrt{a + b \log \left(c \left(d + ex\right)^{n}\right)} \sqrt{f + gx}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)**(1/2)/(a+b*ln(c*(e*x+d)**n))**(1/2),x)
```

```
[Out] Integral(1/(sqrt(a + b*log(c*(d + e*x)**n))*sqrt(f + g*x)), x)
```

Giac [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)^(1/2)/(a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="giac")
[Out] integrate(1/(sqrt(g*x + f)*sqrt(b*log((x*e + d)^n*c) + a)), x)
```

Mupad [A]
time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{1}{\sqrt{f+g\,x}\,\sqrt{a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((f + g*x)^(1/2)*(a + b*log(c*(d + e*x)^n))^(1/2)),x)
[Out] int(1/((f + g*x)^(1/2)*(a + b*log(c*(d + e*x)^n))^(1/2)), x)
```

3.161 $\int \frac{1}{(f+gx)^{3/2}\sqrt{a+b\log(c(d+ex)^n)}}\,dx$

Optimal. Leaf size=31

$$\text{Int}\left(\frac{1}{(f+gx)^{3/2}\sqrt{a+b\log(c(d+ex)^n)}},x\right)$$

```
[Out] Unintegrable(1/(g*x+f)^(3/2)/(a+b*ln(c*(e*x+d)^n))^(1/2),x)
```

Rubi [A]
time = 0.04, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int \frac{1}{(f+gx)^{3/2}\sqrt{a+b\log(c(d+ex)^n)}}\,dx$$

Verification is not applicable to the result.

```
[In] Int[1/((f + g*x)^(3/2)*Sqrt[a + b*Log[c*(d + e*x)^n]]),x]
[Out] Defer[Int][1/((f + g*x)^(3/2)*Sqrt[a + b*Log[c*(d + e*x)^n]]), x]
```

Rubi steps

$$\int \frac{1}{(f+gx)^{3/2}\sqrt{a+b\log(c(d+ex)^n)}}\,dx = \int \frac{1}{(f+gx)^{3/2}\sqrt{a+b\log(c(d+ex)^n)}}\,dx$$

Mathematica [A]
time = 0.55, size = 0, normalized size = 0.00

$$\int \frac{1}{(f+gx)^{3/2}\sqrt{a+b\log(c(d+ex)^n)}}\,dx$$

Verification is not applicable to the result.

```
[In] Integrate[1/((f + g*x)^(3/2)*Sqrt[a + b*Log[c*(d + e*x)^n]]),x]
[Out] Integrate[1/((f + g*x)^(3/2)*Sqrt[a + b*Log[c*(d + e*x)^n]]), x]
```

Maple [A]
time = 0.17, size = 0, normalized size = 0.00

$$\int \frac{1}{(gx+f)^{\frac{3}{2}}\sqrt{a+b\ln(c(ex+d)^n)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(g*x+f)^(3/2)/(a+b*ln(c*(e*x+d)^n))^(1/2),x)
```

```
[Out] int(1/(g*x+f)^(3/2)/(a+b*ln(c*(e*x+d)^n))^(1/2),x)
```

Maxima [A]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)^(3/2)/(a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="maxima
")
```

```
[Out] integrate(1/((g*x + f)^(3/2)*sqrt(b*log((x*e + d)^n*c) + a)), x)
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)^(3/2)/(a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="fricas
")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [A]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\sqrt{a + b\log\left(c\left(d + ex\right)^{n}\right)}\,\left(f + gx\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)**(3/2)/(a+b*ln(c*(e*x+d)**n))**(1/2),x)
```

```
[Out] Integral(1/(sqrt(a + b*log(c*(d + e*x)**n))*(f + g*x)**(3/2)), x)
```

Giac [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)^(3/2)/(a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="giac")
[Out] integrate(1/((g*x + f)^(3/2)*sqrt(b*log((x*e + d)^n*c) + a)), x)
```

Mupad [A]
time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{1}{(f+g\,x)^{3/2}\,\sqrt{a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((f + g*x)^(3/2)*(a + b*log(c*(d + e*x)^n))^(1/2)),x)
[Out] int(1/((f + g*x)^(3/2)*(a + b*log(c*(d + e*x)^n))^(1/2)), x)
```

3.162 $\int (f+gx)^m (a+b\log(c(d+ex)^n))\,dx$

Optimal. Leaf size=94

$$\frac{ben(f+gx)^{2+m}\,{}_2F_1\left(1,2+m;3+m;\frac{e(f+gx)}{ef-dg}\right)}{g(ef-dg)(1+m)(2+m)}+\frac{(f+gx)^{1+m}\,(a+b\log(c(d+ex)^n))}{g(1+m)}$$

```
[Out] b*e*n*(g*x+f)^(2+m)*hypergeom([1, 2+m],[3+m],e*(g*x+f)/(-d*g+e*f))/g/(-d*g+
e*f)/(1+m)/(2+m)+(g*x+f)^(1+m)*(a+b*ln(c*(e*x+d)^n))/g/(1+m)
```

Rubi [A]
time = 0.04, antiderivative size = 94, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$, Rules used = {2442, 70}

$$\frac{(f+gx)^{m+1}\,(a+b\log(c(d+ex)^n))}{g(m+1)}+\frac{ben(f+gx)^{m+2}\,{}_2F_1\left(1,m+2;m+3;\frac{e(f+gx)}{ef-dg}\right)}{g(m+1)(m+2)(ef-dg)}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)^m*(a + b*Log[c*(d + e*x)^n]),x]
```

```
[Out] (b*e*n*(f + g*x)^(2 + m)*Hypergeometric2F1[1, 2 + m, 3 + m, (e*(f + g*x))/(
e*f - d*g)])/(g*(e*f - d*g)*(1 + m)*(2 + m)) + ((f + g*x)^(1 + m)*(a + b*Lo
g[c*(d + e*x)^n]))/(g*(1 + m))
```

Rule 70

```
Int[((a_) + (b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[(b
*c - a*d)^n*((a + b*x)^(m + 1)/(b^(n + 1)*(m + 1)))*Hypergeometric2F1[-n, m
 + 1, m + 2, (-d)*((a + b*x)/(b*c - a*d))], x] /; FreeQ[{a, b, c, d, m}, x]
 && NeQ[b*c - a*d, 0] &&  !IntegerQ[m] && IntegerQ[n]
```

Rule 2442

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[(f + g*x)^(q + 1)*((a + b*Log[c*(d + e*x)^n])/(
g*(q + 1))), x] - Dist[b*e*(n/(g*(q + 1))), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rubi steps

$$\int (f+gx)^m (a+b\log (c(d+ex)^n))\, dx = \frac{(f+gx)^{1+m} (a+b\log (c(d+ex)^n))}{g(1+m)} - \frac{(ben)\int \frac{(f+gx)^{1+m}}{d+ex}\, dx}{g(1+m)}$$
$$= \frac{ben(f+gx)^{2+m}\, {}_2F_1\left(1,2+m;3+m;\frac{e(f+gx)}{ef-dg}\right)}{g(ef-dg)(1+m)(2+m)} + \frac{(f+gx)^{1+m} (a}{g(1}$$

Mathematica [A]
time = 0.05, size = 81, normalized size = 0.86

$$\frac{(f+gx)^{1+m}\left(a+\frac{ben(f+gx)\, {}_2F_1\left(1,2+m;3+m;\frac{e(f+gx)}{ef-dg}\right)}{(ef-dg)(2+m)}+b\log (c(d+ex)^n)\right)}{g(1+m)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)^m*(a + b*Log[c*(d + e*x)^n]),x]
```

```
[Out] ((f + g*x)^(1 + m)*(a + (b*e*n*(f + g*x)*Hypergeometric2F1[1, 2 + m, 3 + m,
 (e*(f + g*x))/(e*f - d*g)])/((e*f - d*g)*(2 + m)) + b*Log[c*(d + e*x)^n]))
/(g*(1 + m))
```

Maple [F]
time = 0.16, size = 0, normalized size = 0.00

$$\int (gx+f)^m (a+b\ln (c(ex+d)^n))\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^m*(a+b*ln(c*(e*x+d)^n)),x)
```

```
[Out] int((g*x+f)^m*(a+b*ln(c*(e*x+d)^n)),x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^m*(a+b*log(c*(e*x+d)^n)),x, algorithm="maxima")
```

```
[Out] b*((g*x + f)*(g*x + f)^m*log((x*e + d)^n)/(g*(m + 1)) + integrate((d*g*(m +
 1)*log(c) - f*n*e + (g*(m + 1)*log(c) - g*n)*x*e)*(g*x + f)^m/(g*(m + 1)*x
*e + d*g*(m + 1)), x)) + (g*x + f)^(m + 1)*a/(g*(m + 1))
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^m*(a+b*log(c*(e*x+d)^n)),x, algorithm="fricas")
[Out] integral((g*x + f)^m*b*log((x*e + d)^n*c) + (g*x + f)^m*a, x)
```

Sympy [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: HeuristicGCDFailed

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**m*(a+b*ln(c*(e*x+d)**n)),x)
[Out] Exception raised: HeuristicGCDFailed >> no luck
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^m*(a+b*log(c*(e*x+d)^n)),x, algorithm="giac")
[Out] integrate((b*log((x*e + d)^n*c) + a)*(g*x + f)^m, x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int (f+g\,x)^m\,\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right) \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)^m*(a + b*log(c*(d + e*x)^n)),x)
[Out] int((f + g*x)^m*(a + b*log(c*(d + e*x)^n)), x)
```

3.163 $\int \frac{(f+gx)^m}{a+b\log(c(d+ex)^n)}\,dx$

Optimal. Leaf size=27

$$\text{Int}\left(\frac{(f+gx)^m}{a+b\log\left(c(d+ex)^n\right)},x\right)$$

```
[Out] Unintegrable((g*x+f)^m/(a+b*ln(c*(e*x+d)^n)),x)
```

Rubi [A]
time = 0.02, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int \frac{(f+gx)^m}{a+b\log\left(c(d+ex)^n\right)}\,dx$$

Verification is not applicable to the result.

```
[In] Int[(f + g*x)^m/(a + b*Log[c*(d + e*x)^n]),x]
[Out] Defer[Int][(f + g*x)^m/(a + b*Log[c*(d + e*x)^n]), x]
```

Rubi steps

$$\int \frac{(f+gx)^m}{a+b\log\left(c(d+ex)^n\right)}\,dx=\int \frac{(f+gx)^m}{a+b\log\left(c(d+ex)^n\right)}\,dx$$

Mathematica [A]
time = 0.21, size = 0, normalized size = 0.00

$$\int \frac{(f+gx)^m}{a+b\log\left(c(d+ex)^n\right)}\,dx$$

Verification is not applicable to the result.

```
[In] Integrate[(f + g*x)^m/(a + b*Log[c*(d + e*x)^n]),x]
[Out] Integrate[(f + g*x)^m/(a + b*Log[c*(d + e*x)^n]), x]
```

Maple [A]
time = 0.12, size = 0, normalized size = 0.00

$$\int \frac{(gx+f)^m}{a+b\ln\left(c\left(ex+d\right)^n\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^m/(a+b*ln(c*(e*x+d)^n)),x)
[Out] int((g*x+f)^m/(a+b*ln(c*(e*x+d)^n)),x)
```

Maxima [A]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^m/(a+b*log(c*(e*x+d)^n)),x, algorithm="maxima")
[Out] integrate((g*x + f)^m/(b*log((x*e + d)^n*c) + a), x)
```

Fricas [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^m/(a+b*log(c*(e*x+d)^n)),x, algorithm="fricas")
[Out] integral((g*x + f)^m/(b*log((x*e + d)^n*c) + a), x)
```

Sympy [A]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(f+gx)^m}{a+b\log\left(c\left(d+ex\right)^n\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**m/(a+b*ln(c*(e*x+d)**n)),x)
[Out] Integral((f + g*x)**m/(a + b*log(c*(d + e*x)**n)), x)
```

Giac [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^m/(a+b*log(c*(e*x+d)^n)),x, algorithm="giac")
[Out] integrate((g*x + f)^m/(b*log((x*e + d)^n*c) + a), x)
```

Mupad [A]
time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{{\left(f+g\,x\right)}^m}{a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)^m/(a + b*log(c*(d + e*x)^n)),x)
[Out] int((f + g*x)^m/(a + b*log(c*(d + e*x)^n)), x)
```

3.164 $\int \frac{(f+gx)^m}{(a+b\log(c(d+ex)^n))^2}\,dx$

Optimal. Leaf size=27

$$\text{Int}\left(\frac{(f+gx)^m}{(a+b\log(c(d+ex)^n))^2},x\right)$$

```
[Out] Unintegrable((g*x+f)^m/(a+b*ln(c*(e*x+d)^n))^2,x)
```

Rubi [A]
time = 0.02, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int \frac{(f+gx)^m}{(a+b\log(c(d+ex)^n))^2}\,dx$$

Verification is not applicable to the result.

```
[In] Int[(f + g*x)^m/(a + b*Log[c*(d + e*x)^n])^2,x]
[Out] Defer[Int][(f + g*x)^m/(a + b*Log[c*(d + e*x)^n])^2, x]
```

Rubi steps

$$\int \frac{(f+gx)^m}{(a+b\log(c(d+ex)^n))^2}\,dx = \int \frac{(f+gx)^m}{(a+b\log(c(d+ex)^n))^2}\,dx$$

Mathematica [A]
time = 2.98, size = 0, normalized size = 0.00

$$\int \frac{(f+gx)^m}{(a+b\log(c(d+ex)^n))^2}\,dx$$

Verification is not applicable to the result.

```
[In] Integrate[(f + g*x)^m/(a + b*Log[c*(d + e*x)^n])^2,x]
[Out] Integrate[(f + g*x)^m/(a + b*Log[c*(d + e*x)^n])^2, x]
```

Maple [A]
time = 0.01, size = 0, normalized size = 0.00

$$\int \frac{(gx+f)^m}{(a+b\ln(c(ex+d)^n))^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^m/(a+b*ln(c*(e*x+d)^n))^2,x)
```

```
[Out] int((g*x+f)^m/(a+b*ln(c*(e*x+d)^n))^2,x)
```

Maxima [A]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^m/(a+b*log(c*(e*x+d)^n))^2,x, algorithm="maxima")
```

```
[Out] -(x*e + d)*(g*x + f)^m/(b^2*n*e*log((x*e + d)^n) + (b^2*n*log(c) + a*b*n)*e
) + integrate((g*(m + 1)*x*e + d*g*m + f*e)*(g*x + f)^m/((b^2*g*n*log(c) +
a*b*g*n)*x*e + (b^2*f*n*log(c) + a*b*f*n)*e + (b^2*g*n*x*e + b^2*f*n*e)*log
((x*e + d)^n)), x)
```

Fricas [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^m/(a+b*log(c*(e*x+d)^n))^2,x, algorithm="fricas")
```

```
[Out] integral((g*x + f)^m/(b^2*log((x*e + d)^n*c)^2 + 2*a*b*log((x*e + d)^n*c) +
 a^2), x)
```

Sympy [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: HeuristicGCDFailed

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**m/(a+b*ln(c*(e*x+d)**n))**2,x)
```

```
[Out] Exception raised: HeuristicGCDFailed >> no luck
```

Giac [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^m/(a+b*log(c*(e*x+d)^n))^2,x, algorithm="giac")
```

```
[Out] integrate((g*x + f)^m/(b*log((x*e + d)^n*c) + a)^2, x)
```

Mupad [A]
time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{(f+g\,x)^m}{\left(a+b\,\ln\left(c\,(d+e\,x)^n\right)\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)^m/(a + b*log(c*(d + e*x)^n))^2,x)
[Out] int((f + g*x)^m/(a + b*log(c*(d + e*x)^n))^2, x)
```

3.165 $\int (f+gx)^m (a+b\log(c(d+ex)^n))^{3/2}\,dx$

Optimal. Leaf size=29

$$\mathrm{Int}\left((f+gx)^m (a+b\log(c(d+ex)^n))^{3/2},x\right)$$

[Out] Unintegrable((g*x+f)^m*(a+b*ln(c*(e*x+d)^n))^(3/2),x)

Rubi [A]
time = 0.03, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int (f+gx)^m (a+b\log(c(d+ex)^n))^{3/2}\,dx$$

Verification is not applicable to the result.

[In] Int[(f + g*x)^m*(a + b*Log[c*(d + e*x)^n])^(3/2),x]

[Out] Defer[Int][(f + g*x)^m*(a + b*Log[c*(d + e*x)^n])^(3/2), x]

Rubi steps

$$\int (f+gx)^m (a+b\log(c(d+ex)^n))^{3/2}\,dx = \int (f+gx)^m (a+b\log(c(d+ex)^n))^{3/2}\,dx$$

Mathematica [A]
time = 14.76, size = 0, normalized size = 0.00

$$\int (f+gx)^m (a+b\log(c(d+ex)^n))^{3/2}\,dx$$

Verification is not applicable to the result.

[In] Integrate[(f + g*x)^m*(a + b*Log[c*(d + e*x)^n])^(3/2),x]

[Out] Integrate[(f + g*x)^m*(a + b*Log[c*(d + e*x)^n])^(3/2), x]

Maple [A]
time = 0.16, size = 0, normalized size = 0.00

$$\int (gx+f)^m (a+b\ln(c(ex+d)^n))^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^m*(a+b*ln(c*(e*x+d)^n))^(3/2),x)
```

```
[Out] int((g*x+f)^m*(a+b*ln(c*(e*x+d)^n))^(3/2),x)
```

Maxima [**A**]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^m*(a+b*log(c*(e*x+d)^n))^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((b*log((x*e + d)^n*c) + a)^(3/2)*(g*x + f)^m, x)
```

Fricas [**A**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^m*(a+b*log(c*(e*x+d)^n))^(3/2),x, algorithm="fricas")
```

```
[Out] integral(((g*x + f)^m*b*log((x*e + d)^n*c) + (g*x + f)^m*a)*sqrt(b*log((x*e
 + d)^n*c) + a), x)
```

Sympy [**F(-1)**] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**m*(a+b*ln(c*(e*x+d)**n))**(3/2),x)
```

```
[Out] Timed out
```

Giac [**A**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^m*(a+b*log(c*(e*x+d)^n))^(3/2),x, algorithm="giac")
```

```
[Out] integrate((b*log((x*e + d)^n*c) + a)^(3/2)*(g*x + f)^m, x)
```

Mupad [**A**]
time = 0.00, size = -1, normalized size = -0.03

$$\int (f+g\,x)^m\,\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)^m*(a + b*log(c*(d + e*x)^n))^(3/2),x)
[Out] int((f + g*x)^m*(a + b*log(c*(d + e*x)^n))^(3/2), x)
```

3.166 $\int (f+gx)^m \sqrt{a+b\log(c(d+ex)^n)}\,dx$

Optimal. Leaf size=29

$$\text{Int}\left((f+gx)^m \sqrt{a+b\log(c(d+ex)^n)},x\right)$$

```
[Out] Unintegrable((g*x+f)^m*(a+b*ln(c*(e*x+d)^n))^(1/2),x)
```

Rubi [A]
time = 0.03, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int (f+gx)^m \sqrt{a+b\log(c(d+ex)^n)}\,dx$$

Verification is not applicable to the result.

```
[In] Int[(f + g*x)^m*Sqrt[a + b*Log[c*(d + e*x)^n]],x]
[Out] Defer[Int][(f + g*x)^m*Sqrt[a + b*Log[c*(d + e*x)^n]], x]
```

Rubi steps

$$\int (f+gx)^m \sqrt{a+b\log(c(d+ex)^n)}\,dx = \int (f+gx)^m \sqrt{a+b\log(c(d+ex)^n)}\,dx$$

Mathematica [A]
time = 0.05, size = 0, normalized size = 0.00

$$\int (f+gx)^m \sqrt{a+b\log(c(d+ex)^n)}\,dx$$

Verification is not applicable to the result.

```
[In] Integrate[(f + g*x)^m*Sqrt[a + b*Log[c*(d + e*x)^n]],x]
[Out] Integrate[(f + g*x)^m*Sqrt[a + b*Log[c*(d + e*x)^n]], x]
```

Maple [A]
time = 0.20, size = 0, normalized size = 0.00

$$\int (gx+f)^m \sqrt{a+b\ln(c(ex+d)^n)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^m*(a+b*ln(c*(e*x+d)^n))^(1/2),x)
[Out] int((g*x+f)^m*(a+b*ln(c*(e*x+d)^n))^(1/2),x)
```

Maxima [A]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^m*(a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="maxima")
[Out] integrate(sqrt(b*log((x*e + d)^n*c) + a)*(g*x + f)^m, x)
```

Fricas [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^m*(a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="fricas")
[Out] integral(sqrt(b*log((x*e + d)^n*c) + a)*(g*x + f)^m, x)
```

Sympy [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: HeuristicGCDFailed

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**m*(a+b*ln(c*(e*x+d)**n))**(1/2),x)
[Out] Exception raised: HeuristicGCDFailed >> no luck
```

Giac [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^m*(a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="giac")
[Out] integrate(sqrt(b*log((x*e + d)^n*c) + a)*(g*x + f)^m, x)
```

Mupad [A]
time = 0.00, size = -1, normalized size = -0.03

$$\int (f+g\,x)^m\,\sqrt{a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)^m*(a + b*log(c*(d + e*x)^n))^(1/2),x)
[Out] int((f + g*x)^m*(a + b*log(c*(d + e*x)^n))^(1/2), x)
```

3.167 $\int \frac{(f+gx)^m}{\sqrt{a+b\log(c(d+ex)^n)}}\,dx$

Optimal. Leaf size=29

$$\text{Int}\left(\frac{(f+gx)^m}{\sqrt{a+b\log(c(d+ex)^n)}},x\right)$$

```
[Out] Unintegrable((g*x+f)^m/(a+b*ln(c*(e*x+d)^n))^(1/2),x)
```

Rubi [A]
time = 0.03, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int \frac{(f+gx)^m}{\sqrt{a+b\log(c(d+ex)^n)}}\,dx$$

Verification is not applicable to the result.

```
[In] Int[(f + g*x)^m/Sqrt[a + b*Log[c*(d + e*x)^n]],x]
[Out] Defer[Int][(f + g*x)^m/Sqrt[a + b*Log[c*(d + e*x)^n]], x]
```

Rubi steps

$$\int \frac{(f+gx)^m}{\sqrt{a+b\log(c(d+ex)^n)}}\,dx = \int \frac{(f+gx)^m}{\sqrt{a+b\log(c(d+ex)^n)}}\,dx$$

Mathematica [A]
time = 10.36, size = 0, normalized size = 0.00

$$\int \frac{(f+gx)^m}{\sqrt{a+b\log(c(d+ex)^n)}}\,dx$$

Verification is not applicable to the result.

```
[In] Integrate[(f + g*x)^m/Sqrt[a + b*Log[c*(d + e*x)^n]],x]
[Out] Integrate[(f + g*x)^m/Sqrt[a + b*Log[c*(d + e*x)^n]], x]
```

Maple [A]
time = 0.17, size = 0, normalized size = 0.00

$$\int \frac{(gx+f)^m}{\sqrt{a+b\ln(c(ex+d)^n)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^m/(a+b*ln(c*(e*x+d)^n))^(1/2),x)
[Out] int((g*x+f)^m/(a+b*ln(c*(e*x+d)^n))^(1/2),x)
```

Maxima [A]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^m/(a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="maxima")
[Out] integrate((g*x + f)^m/sqrt(b*log((x*e + d)^n*c) + a), x)
```

Fricas [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^m/(a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="fricas")
[Out] integral((g*x + f)^m/sqrt(b*log((x*e + d)^n*c) + a), x)
```

Sympy [A]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(f+gx)^m}{\sqrt{a+b\log\left(c\left(d+ex\right)^n\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**m/(a+b*ln(c*(e*x+d)**n))**(1/2),x)
[Out] Integral((f + g*x)**m/sqrt(a + b*log(c*(d + e*x)**n)), x)
```

Giac [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^m/(a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="giac")
[Out] integrate((g*x + f)^m/sqrt(b*log((x*e + d)^n*c) + a), x)
```

Mupad [A]
time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{(f+g\,x)^m}{\sqrt{a+b\,\ln\left(c\,(d+e\,x)^n\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)^m/(a + b*log(c*(d + e*x)^n))^(1/2),x)
[Out] int((f + g*x)^m/(a + b*log(c*(d + e*x)^n))^(1/2), x)
```

3.168 $\int \frac{(f+gx)^m}{(a+b\log(c(d+ex)^n))^{3/2}}\,dx$

Optimal. Leaf size=29

$$\text{Int}\left(\frac{(f+gx)^m}{(a+b\log(c(d+ex)^n))^{3/2}},x\right)$$

```
[Out] Unintegrable((g*x+f)^m/(a+b*ln(c*(e*x+d)^n))^(3/2),x)
```

Rubi [A]
time = 0.04, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int \frac{(f+gx)^m}{(a+b\log(c(d+ex)^n))^{3/2}}\,dx$$

Verification is not applicable to the result.

```
[In] Int[(f + g*x)^m/(a + b*Log[c*(d + e*x)^n])^(3/2),x]
[Out] Defer[Int][(f + g*x)^m/(a + b*Log[c*(d + e*x)^n])^(3/2), x]
```

Rubi steps

$$\int \frac{(f+gx)^m}{(a+b\log(c(d+ex)^n))^{3/2}}\,dx = \int \frac{(f+gx)^m}{(a+b\log(c(d+ex)^n))^{3/2}}\,dx$$

Mathematica [A]
time = 12.77, size = 0, normalized size = 0.00

$$\int \frac{(f+gx)^m}{(a+b\log(c(d+ex)^n))^{3/2}}\,dx$$

Verification is not applicable to the result.

```
[In] Integrate[(f + g*x)^m/(a + b*Log[c*(d + e*x)^n])^(3/2),x]
[Out] Integrate[(f + g*x)^m/(a + b*Log[c*(d + e*x)^n])^(3/2), x]
```

Maple [A]
time = 0.15, size = 0, normalized size = 0.00

$$\int \frac{(gx+f)^m}{(a+b\ln(c(ex+d)^n))^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^m/(a+b*ln(c*(e*x+d)^n))^(3/2),x)
```

```
[Out] int((g*x+f)^m/(a+b*ln(c*(e*x+d)^n))^(3/2),x)
```

Maxima [A]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^m/(a+b*log(c*(e*x+d)^n))^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((g*x + f)^m/(b*log((x*e + d)^n*c) + a)^(3/2), x)
```

Fricas [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^m/(a+b*log(c*(e*x+d)^n))^(3/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(b*log((x*e + d)^n*c) + a)*(g*x + f)^m/(b^2*log((x*e + d)^n*c)
^2 + 2*a*b*log((x*e + d)^n*c) + a^2), x)
```

Sympy [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: HeuristicGCDFailed

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**m/(a+b*ln(c*(e*x+d)**n))**(3/2),x)
```

```
[Out] Exception raised: HeuristicGCDFailed >> no luck
```

Giac [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^m/(a+b*log(c*(e*x+d)^n))^(3/2),x, algorithm="giac")
```

```
[Out] integrate((g*x + f)^m/(b*log((x*e + d)^n*c) + a)^(3/2), x)
```

Mupad [A]
time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{(f + g\,x)^m}{(a + b\,\ln\left(c\,(d + e\,x)^n\right))^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)^m/(a + b*log(c*(d + e*x)^n))^(3/2),x)
[Out] int((f + g*x)^m/(a + b*log(c*(d + e*x)^n))^(3/2), x)
```

3.169 $\int (f+gx)^m (a+b\log(c(d+ex)^n))^n\,dx$

Optimal. Leaf size=27

$$\text{Int}\left((f+gx)^m (a+b\log(c(d+ex)^n))^n, x\right)$$

[Out] Unintegrable((g*x+f)^m*(a+b*ln(c*(e*x+d)^n))^n,x)

Rubi [A]
time = 0.02, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int (f+gx)^m (a+b\log(c(d+ex)^n))^n\,dx$$

Verification is not applicable to the result.

[In] Int[(f + g*x)^m*(a + b*Log[c*(d + e*x)^n])^n,x]

[Out] Defer[Int][(f + g*x)^m*(a + b*Log[c*(d + e*x)^n])^n, x]

Rubi steps

$$\int (f+gx)^m (a+b\log(c(d+ex)^n))^n\,dx = \int (f+gx)^m (a+b\log(c(d+ex)^n))^n\,dx$$

Mathematica [A]
time = 0.29, size = 0, normalized size = 0.00

$$\int (f+gx)^m (a+b\log(c(d+ex)^n))^n\,dx$$

Verification is not applicable to the result.

[In] Integrate[(f + g*x)^m*(a + b*Log[c*(d + e*x)^n])^n,x]

[Out] Integrate[(f + g*x)^m*(a + b*Log[c*(d + e*x)^n])^n, x]

Maple [A]
time = 0.16, size = 0, normalized size = 0.00

$$\int (gx+f)^m (a+b\ln(c(ex+d)^n))^n\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^m*(a+b*ln(c*(e*x+d)^n))^n,x)
```

```
[Out] int((g*x+f)^m*(a+b*ln(c*(e*x+d)^n))^n,x)
```

Maxima [**F(-2)**]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^m*(a+b*log(c*(e*x+d)^n))^n,x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError >> ECL says: In function CAR, the value of t
he first argument is  0which is not of the expected type LIST
```

Fricas [**A**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^m*(a+b*log(c*(e*x+d)^n))^n,x, algorithm="fricas")
```

```
[Out] integral((g*x + f)^m*(b*log((x*e + d)^n*c) + a)^n, x)
```

Sympy [**F(-2)**]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: HeuristicGCDFailed

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**m*(a+b*ln(c*(e*x+d)**n))**n,x)
```

```
[Out] Exception raised: HeuristicGCDFailed >> no luck
```

Giac [**F(-2)**]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^m*(a+b*log(c*(e*x+d)^n))^n,x, algorithm="giac")
```

```
[Out] Exception raised: RuntimeError >> An error occurred running a Giac command:
INPUT:sage2OUTPUT:Simplification assuming sageVARd near 0Simplification ass
uming sageVARd near 0Simplification assuming sageVARd near 0Simplification
assuming
```

Mupad [A]
time = 0.00, size = -1, normalized size = -0.04

$$\int (f+gx)^m (a+b\ln (c(d+ex)^n))^n\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)^m*(a + b*log(c*(d + e*x)^n))^n,x)
[Out] int((f + g*x)^m*(a + b*log(c*(d + e*x)^n))^n, x)
```

3.170 $\int (f+gx)^3 (a+b\log(c(d+ex)^n))^n \, dx$

Optimal. Leaf size=474

$$\frac{4^{-1-n}e^{-\frac{4a}{bn}}g^3(d+ex)^4\left(c(d+ex)^n\right)^{-4/n}\Gamma\left(1+n,-\frac{4(a+b\log(c(d+ex)^n))}{bn}\right)(a+b\log(c(d+ex)^n))^n\left(-\frac{a+b\log(c(d+ex}{bn}\right.}{e^4}$$

```
[Out] 4^(-1-n)*g^3*(e*x+d)^4*GAMMA(1+n,-4*(a+b*ln(c*(e*x+d)^n))/b/n)*(a+b*ln(c*(e
*x+d)^n))^n/e^4/exp(4*a/b/n)/((c*(e*x+d)^n)^(4/n))/(((-a-b*ln(c*(e*x+d)^n))
/b/n)^n)+g^2*(-d*g+e*f)*(e*x+d)^3*GAMMA(1+n,-3*(a+b*ln(c*(e*x+d)^n))/b/n)*(
a+b*ln(c*(e*x+d)^n))^n/(3^n)/e^4/exp(3*a/b/n)/((c*(e*x+d)^n)^(3/n))/(((-a-b
*ln(c*(e*x+d)^n))/b/n)^n)+3*2^(-1-n)*g*(-d*g+e*f)^2*(e*x+d)^2*GAMMA(1+n,-2*
(a+b*ln(c*(e*x+d)^n))/b/n)*(a+b*ln(c*(e*x+d)^n))^n/e^4/exp(2*a/b/n)/((c*(e*
x+d)^n)^(2/n))/(((-a-b*ln(c*(e*x+d)^n))/b/n)^n)+(-d*g+e*f)^3*(e*x+d)*GAMMA(
1+n,(-a-b*ln(c*(e*x+d)^n))/b/n)*(a+b*ln(c*(e*x+d)^n))^n/e^4/exp(a/b/n)/((c*
(e*x+d)^n)^(1/n))/(((-a-b*ln(c*(e*x+d)^n))/b/n)^n)
```

Rubi [A]

time = 0.40, antiderivative size = 474, normalized size of antiderivative = 1.00, number of steps used = 14, number of rules used = 6, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.250$, Rules used = {2448, 2436, 2337, 2212, 2437, 2347}

$$\frac{g^2 3^{-n}e^{-\frac{3a}{bn}}(d+ex)^3(ef-dg)\left(c(d+ex)^n\right)^{-3/n}(a+b\log(c(d+ex)^n))^n\left(-\frac{a+b\log(c(d+ex)^n)}{bn}\right)^{-n}\text{Gamma}\left(n+1,-\frac{3(a+b\log(c(d+ex)^n))}{bn}\right)}{e^4}+\frac{3g2^{-n-1}e^{-\frac{2a}{bn}}(d+ex)^2(ef-dg)^2\left(c(d+ex)^n\right)^{-2/n}(a+b\log(c(d+ex)^n))^n\left(-\frac{a+b\log(c(d+ex)^n)}{bn}\right)^{-n}\text{Gamma}\left(n+1,-\frac{2(a+b\log(c(d+ex)^n))}{bn}\right)}{e^4}+\frac{e^{-\frac{a}{bn}}(d+ex)(ef-dg)^3\left(c(d+ex)^n\right)^{-1/n}(a+b\log(c(d+ex)^n))^n\left(-\frac{a+b\log(c(d+ex)^n)}{bn}\right)^{-n}\text{Gamma}\left(n+1,-\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{e^4}+\frac{g^3 4^{-n-1}e^{-\frac{4a}{bn}}(d+ex)^4\left(c(d+ex)^n\right)^{-4/n}(a+b\log(c(d+ex)^n))^n\left(-\frac{a+b\log(c(d+ex)^n)}{bn}\right)^{-n}\text{Gamma}\left(n+1,-\frac{4(a+b\log(c(d+ex)^n))}{bn}\right)}{e^4}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)^3*(a + b*Log[c*(d + e*x)^n])^n,x]
```

```
[Out] (4^(-1 - n)*g^3*(d + e*x)^4*Gamma[1 + n, (-4*(a + b*Log[c*(d + e*x)^n]))/(b
*n)]*(a + b*Log[c*(d + e*x)^n])^n)/(e^4*E^((4*a)/(b*n))*(c*(d + e*x)^n)^(4/
n)*(-((a + b*Log[c*(d + e*x)^n])/(b*n)))^n) + (g^2*(e*f - d*g)*(d + e*x)^3*
Gamma[1 + n, (-3*(a + b*Log[c*(d + e*x)^n]))/(b*n)]*(a + b*Log[c*(d + e*x)^
n])^n)/(3^n*e^4*E^((3*a)/(b*n))*(c*(d + e*x)^n)^(3/n)*(-((a + b*Log[c*(d +
e*x)^n])/(b*n)))^n) + (3*2^(-1 - n)*g*(e*f - d*g)^2*(d + e*x)^2*Gamma[1 + n
, (-2*(a + b*Log[c*(d + e*x)^n]))/(b*n)]*(a + b*Log[c*(d + e*x)^n])^n)/(e^4
*E^((2*a)/(b*n))*(c*(d + e*x)^n)^(2/n)*(-((a + b*Log[c*(d + e*x)^n])/(b*n))
)^n) + ((e*f - d*g)^3*(d + e*x)*Gamma[1 + n, -((a + b*Log[c*(d + e*x)^n])/(
b*n))]*(a + b*Log[c*(d + e*x)^n])^n)/(e^4*E^(a/(b*n))*(c*(d + e*x)^n)^n^(-1
)*(-((a + b*Log[c*(d + e*x)^n])/(b*n)))^n)
```

Rule 2212

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))*((c_.) + (d_.)*(x_))^(m_), x_Symbol]
:> Simp[(-F^(g*(e - c*(f/d))))*((c + d*x)^FracPart[m]/(d*((-f)*g*(Log[F]/d)
)^(IntPart[m] + 1)*((-f)*g*Log[F]*((c + d*x)/d))^FracPart[m]))*Gamma[m + 1,
 ((-f)*g*(Log[F]/d))*(c + d*x)], x] /; FreeQ[{F, c, d, e, f, g, m}, x] &&
```

```
!IntegerQ[m]
```

Rule 2337

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2347

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_)*((d_.)*(x_))^(m_.), x_Symbol
] :> Dist[(d*x)^(m + 1)/(d*n*(c*x^n)^((m + 1)/n)), Subst[Int[E^(((m + 1)/n)
*x)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b, c, d, m, n, p}, x]
```

Rule 2436

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2437

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[(f*(x/d))^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2448

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q*(a + b*Log[c*(d
 + e*x)^n])^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f -
 d*g, 0] && IGtQ[q, 0]
```

Rubi steps

$$
\begin{aligned}
\int (f+gx)^3 \left(a+b\log\left(c(d+ex)^n\right)\right)^n\,dx &= \int \left(\frac{(ef-dg)^3\left(a+b\log\left(c(d+ex)^n\right)\right)^n}{e^3}+\frac{3g(ef-dg)^2(d+ex)}{\cdots}\right. \\
&= \frac{g^3\int (d+ex)^3\left(a+b\log\left(c(d+ex)^n\right)\right)^n\,dx}{e^3}+\frac{(3g^2(ef-dg))\int (d\cdots}{\cdots} \\
&= \frac{g^3\mathrm{Subst}\left(\int x^3(a+b\log\left(cx^n\right))^n\,dx,x,d+ex\right)}{e^4}+\frac{(3g^2(ef-dg))\,\mathrm{S}\cdots}{\cdots} \\
&= \frac{\left(g^3(d+ex)^4\left(c(d+ex)^n\right)^{-4/n}\right)\mathrm{Subst}\left(\int e^{\frac{4x}{n}}(a+bx)^n\,dx,x,\log\left(c\cdots\right)\right.}{e^4n} \\
&= \frac{4^{-1-n}e^{-\frac{4a}{bn}}g^3(d+ex)^4\left(c(d+ex)^n\right)^{-4/n}\Gamma\left(1+n,-\frac{4(a+b\log(c(d+ex)^n\cdots}{bn}\right.}{e^4}
\end{aligned}
$$

Mathematica [A]
time = 1.08, size = 343, normalized size = 0.72

$$
\frac{3^{-n}4^{-1-n}e^{-\frac{4a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-4/n}\left(3^ng^3(d+ex)^3\Gamma\left(1+n,-\frac{4(a+b\log(c(d+ex)^n))}{bn}\right)+2^{1+n}e^{\frac{a}{bn}}(ef-dg)\left(c(d+ex)^n\right)^{\frac{1}{n}}\left(2^{1+n}g^2(d+ex)^2\Gamma\left(1+n,-\frac{3(a+b\log(c(d+ex)^n))}{bn}\right)+3^ne^{\frac{a}{bn}}(ef-dg)\left(c(d+ex)^n\right)^{\frac{1}{n}}\left(3g(d+ex)\Gamma\left(1+n,-\frac{2(a+b\log(c(d+ex)^n))}{bn}\right)+2^{1+n}e^{\frac{a}{bn}}(ef-dg)\left(c(d+ex)^n\right)^{\frac{1}{n}}\Gamma\left(1+n,-\frac{a+b\log(c(d+ex)^n)}{bn}\right)\right)\right)\right)\left(a+b\log\left(c(d+ex)^n\right)\right)^n\left(-\frac{a+b\log(c(d+ex)^n)}{bn}\right)^{-n}}{e^4}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)^3*(a + b*Log[c*(d + e*x)^n])^n,x]
```

```
[Out] (4^(-1 - n)*(d + e*x)*(3^n*g^3*(d + e*x)^3*Gamma[1 + n, (-4*(a + b*Log[c*(d
 + e*x)^n]))/(b*n)] + 2^(1 + n)*E^(a/(b*n))*(e*f - d*g)*(c*(d + e*x)^n)^n^(
-1)*(2^(1 + n)*g^2*(d + e*x)^2*Gamma[1 + n, (-3*(a + b*Log[c*(d + e*x)^n]))
/(b*n)] + 3^n*E^(a/(b*n))*(e*f - d*g)*(c*(d + e*x)^n)^n^(-1)*(3*g*(d + e*x)
*Gamma[1 + n, (-2*(a + b*Log[c*(d + e*x)^n]))/(b*n)] + 2^(1 + n)*E^(a/(b*n)
)*(e*f - d*g)*(c*(d + e*x)^n)^n^(-1)*Gamma[1 + n, -((a + b*Log[c*(d + e*x)^
n])/(b*n))])))*(a + b*Log[c*(d + e*x)^n])^n)/(3^n*e^4*E^((4*a)/(b*n))*(c*(d
 + e*x)^n)^(4/n)*(-((a + b*Log[c*(d + e*x)^n])/(b*n)))^n)
```

Maple [F]
time = 0.15, size = 0, normalized size = 0.00

$$
\int (gx+f)^3\left(a+b\ln\left(c(ex+d)^n\right)\right)^n\,dx
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^3*(a+b*ln(c*(e*x+d)^n))^n,x)
```

```
[Out] int((g*x+f)^3*(a+b*ln(c*(e*x+d)^n))^n,x)
```

Maxima [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^3*(a+b*log(c*(e*x+d)^n))^n,x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError >> ECL says: In function CAR, the value of t
he first argument is  0which is not of the expected type LIST
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^3*(a+b*log(c*(e*x+d)^n))^n,x, algorithm="fricas")
```

```
[Out] integral((g^3*x^3 + 3*f*g^2*x^2 + 3*f^2*g*x + f^3)*(b*log((x*e + d)^n*c) +
a)^n, x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int (a+b\log(c(d+ex)^n))^n (f+gx)^3 \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**3*(a+b*ln(c*(e*x+d)**n))**n,x)
```

```
[Out] Integral((a + b*log(c*(d + e*x)**n))**n*(f + g*x)**3, x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^3*(a+b*log(c*(e*x+d)^n))^n,x, algorithm="giac")
```

```
[Out] integrate((g*x + f)^3*(b*log((x*e + d)^n*c) + a)^n, x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int (f+g\,x)^3\,\left(a+b\,\ln\left(c\,(d+e\,x)^n\right)\right)^n \,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)^3*(a + b*log(c*(d + e*x)^n))^n,x)
```

```
[Out] int((f + g*x)^3*(a + b*log(c*(d + e*x)^n))^n, x)
```

3.171 $\int (f+gx)^2 (a+b\log(c(d+ex)^n))^n\,dx$

Optimal. Leaf size=348

$$\frac{3^{-1-n}e^{-\frac{3a}{bn}}g^2(d+ex)^3\left(c(d+ex)^n\right)^{-3/n}\Gamma\left(1+n,-\frac{3(a+b\log(c(d+ex)^n))}{bn}\right)(a+b\log(c(d+ex)^n))^n\left(-\frac{a+b\log(c(d+ex}{bn}\right.}{e^3}$$

```
[Out] 3^(-1-n)*g^2*(e*x+d)^3*GAMMA(1+n,-3*(a+b*ln(c*(e*x+d)^n))/b/n)*(a+b*ln(c*(e
*x+d)^n))^n/e^3/exp(3*a/b/n)/((c*(e*x+d)^n)^(3/n))/(((-a-b*ln(c*(e*x+d)^n))
/b/n)^n)+g*(-d*g+e*f)*(e*x+d)^2*GAMMA(1+n,-2*(a+b*ln(c*(e*x+d)^n))/b/n)*(a+
b*ln(c*(e*x+d)^n))^n/(2^n)/e^3/exp(2*a/b/n)/((c*(e*x+d)^n)^(2/n))/(((-a-b*l
n(c*(e*x+d)^n))/b/n)^n)+(-d*g+e*f)^2*(e*x+d)*GAMMA(1+n,(-a-b*ln(c*(e*x+d)^n
))/b/n)*(a+b*ln(c*(e*x+d)^n))^n/e^3/exp(a/b/n)/((c*(e*x+d)^n)^(1/n))/(((-a-
b*ln(c*(e*x+d)^n))/b/n)^n)
```

Rubi [A]
time = 0.27, antiderivative size = 348, normalized size of antiderivative = 1.00, number of steps used = 11, number of rules used = 6, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.250$, Rules used = {2448, 2436, 2337, 2212, 2437, 2347}

$$\frac{g2^{-n}e^{-\frac{2a}{bn}}(d+ex)^2(ef-dg)\left(c(d+ex)^n\right)^{-2/n}(a+b\log(c(d+ex)^n))^n\left(-\frac{a+b\log(c(d+ex)^n)}{bn}\right)^{-n}\text{Gamma}\left(n+1,-\frac{2(a+b\log(c(d+ex)^n))}{bn}\right)}{e^3}+\frac{e^{-\frac{a}{bn}}(d+ex)(ef-dg)^2\left(c(d+ex)^n\right)^{-1/n}(a+b\log(c(d+ex)^n))^n\left(-\frac{a+b\log(c(d+ex)^n)}{bn}\right)^{-n}\text{Gamma}\left(n+1,-\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{e^3}+\frac{g^2 3^{-n-1}e^{-\frac{3a}{bn}}(d+ex)^3\left(c(d+ex)^n\right)^{-3/n}(a+b\log(c(d+ex)^n))^n\left(-\frac{a+b\log(c(d+ex)^n)}{bn}\right)^{-n}\text{Gamma}\left(n+1,-\frac{3(a+b\log(c(d+ex)^n))}{bn}\right)}{e^3}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)^2*(a + b*Log[c*(d + e*x)^n])^n,x]
```

```
[Out] (3^(-1 - n)*g^2*(d + e*x)^3*Gamma[1 + n, (-3*(a + b*Log[c*(d + e*x)^n]))/(b
*n)]*(a + b*Log[c*(d + e*x)^n])^n)/(e^3*E^((3*a)/(b*n))*(c*(d + e*x)^n)^(3/
n)*(-((a + b*Log[c*(d + e*x)^n])/(b*n)))^n) + (g*(e*f - d*g)*(d + e*x)^2*Ga
mma[1 + n, (-2*(a + b*Log[c*(d + e*x)^n]))/(b*n)]*(a + b*Log[c*(d + e*x)^n]
)^n)/(2^n*e^3*E^((2*a)/(b*n))*(c*(d + e*x)^n)^(2/n)*(-((a + b*Log[c*(d + e*
x)^n])/(b*n)))^n) + ((e*f - d*g)^2*(d + e*x)*Gamma[1 + n, -((a + b*Log[c*(d
 + e*x)^n])/(b*n))]*(a + b*Log[c*(d + e*x)^n])^n)/(e^3*E^(a/(b*n))*(c*(d +
e*x)^n)^n^(-1)*(-((a + b*Log[c*(d + e*x)^n])/(b*n)))^n)
```

Rule 2212

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))*((c_.) + (d_.)*(x_))^(m_), x_Symbol]
:> Simp[(-F^(g*(e - c*(f/d))))*((c + d*x)^FracPart[m]/(d*((-f)*g*(Log[F]/d)
)^(IntPart[m] + 1)*((-f)*g*Log[F]*((c + d*x)/d))^FracPart[m]))*Gamma[m + 1,
 ((-f)*g*(Log[F]/d))*(c + d*x)], x] /; FreeQ[{F, c, d, e, f, g, m}, x] &&
!IntegerQ[m]
```

Rule 2337

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
```

```
{a, b, c, n, p}, x]
```

Rule 2347

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_)*((d_.)*(x_))^(m_.), x_Symbol
] :> Dist[(d*x)^(m + 1)/(d*n*(c*x^n)^((m + 1)/n)), Subst[Int[E^(((m + 1)/n)
*x)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b, c, d, m, n, p}, x]
```

Rule 2436

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2437

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[(f*(x/d))^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2448

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q*(a + b*Log[c*(d
 + e*x)^n])^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f -
 d*g, 0] && IGtQ[q, 0]
```

Rubi steps

$$\int (f+gx)^2\left(a+b\log\left(c(d+ex)^n\right)\right)^n\,dx=\int\left(\frac{(ef-dg)^2\left(a+b\log\left(c(d+ex)^n\right)\right)^n}{e^2}+\frac{2g(ef-dg)(d+ex)}{}\right.$$

$$=\frac{g^2\int(d+ex)^2\left(a+b\log\left(c(d+ex)^n\right)\right)^n\,dx}{e^2}+\frac{(2g(ef-dg))\int(d}{}$$

$$=\frac{g^2\text{Subst}\left(\int x^2(a+b\log\left(cx^n\right))^n\,dx,x,d+ex\right)}{e^3}+\frac{(2g(ef-dg))\text{S}}{}$$

$$=\frac{\left(g^2(d+ex)^3\left(c(d+ex)^n\right)^{-3/n}\right)\text{Subst}\left(\int e^{\frac{3x}{n}}(a+bx)^n\,dx,x,\log\right.}{e^3n}$$

$$=\frac{3^{-1-n}e^{-\frac{3a}{bn}}g^2(d+ex)^3\left(c(d+ex)^n\right)^{-3/n}\Gamma\left(1+n,-\frac{3(a+b\log(c(d+ex}{bn}\right.}{e^3}$$

Mathematica [A]
time = 0.37, size = 262, normalized size = 0.75

$$\frac{2^{-n}3^{-1-n}e^{-\frac{3a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-3/n}\left(2^ng^2(d+ex)^2\Gamma\left(1+n,-\frac{3(a+b\log(c(d+ex)^n))}{bn}\right)+3^{1+n}e^{\frac{a}{bn}}(ef-dg)\left(c(d+ex)^n\right)^{\frac{1}{n}}\left(g(d+ex)\Gamma\left(1+n,-\frac{2(a+b\log(c(d+ex)^n))}{bn}\right)+2^ne^{\frac{a}{bn}}(ef-dg)\left(c(d+ex)^n\right)^{\frac{1}{n}}\Gamma\left(1+n,-\frac{a+b\log(c(d+ex)^n)}{bn}\right)\right)\right)\left(a+b\log\left(c(d+ex)^n\right)\right)^n\left(-\frac{a+b\log(c(d+ex)^n)}{bn}\right)^{-n}}{e^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)^2*(a + b*Log[c*(d + e*x)^n])^n,x]
```

```
[Out] (3^(-1 - n)*(d + e*x)*(2^n*g^2*(d + e*x)^2*Gamma[1 + n, (-3*(a + b*Log[c*(d
 + e*x)^n]))/(b*n)] + 3^(1 + n)*E^(a/(b*n))*(e*f - d*g)*(c*(d + e*x)^n)^n^(
-1)*(g*(d + e*x)*Gamma[1 + n, (-2*(a + b*Log[c*(d + e*x)^n]))/(b*n)] + 2^n*
E^(a/(b*n))*(e*f - d*g)*(c*(d + e*x)^n)^n^(-1)*Gamma[1 + n, -((a + b*Log[c*
(d + e*x)^n])/(b*n))]))*(a + b*Log[c*(d + e*x)^n])^n)/(2^n*e^3*E^((3*a)/(b*
n))*(c*(d + e*x)^n)^(3/n)*(-((a + b*Log[c*(d + e*x)^n])/(b*n)))^n)
```

Maple [F]
time = 0.13, size = 0, normalized size = 0.00

$$\int (gx+f)^2 \left(a+b\ln\left(c(ex+d)^n\right)\right)^n \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^2*(a+b*ln(c*(e*x+d)^n))^n,x)
```

```
[Out] int((g*x+f)^2*(a+b*ln(c*(e*x+d)^n))^n,x)
```

Maxima [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2*(a+b*log(c*(e*x+d)^n))^n,x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError >> ECL says: In function CAR, the value of t
he first argument is  0which is not of the expected type LIST
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2*(a+b*log(c*(e*x+d)^n))^n,x, algorithm="fricas")
```

```
[Out] integral((g^2*x^2 + 2*f*g*x + f^2)*(b*log((x*e + d)^n*c) + a)^n, x)
```

Sympy [**F**]
time = 0.00, size = 0, normalized size = 0.00

$$\int (a + b\log{(c(d + ex)^n)})^n (f + gx)^2 \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**2*(a+b*ln(c*(e*x+d)**n))**n,x)
[Out] Integral((a + b*log(c*(d + e*x)**n))**n*(f + g*x)**2, x)
```

Giac [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2*(a+b*log(c*(e*x+d)^n))^n,x, algorithm="giac")
[Out] integrate((g*x + f)^2*(b*log((x*e + d)^n*c) + a)^n, x)
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.00

$$\int (f + g\,x)^2 \left(a + b\,\ln\left(c\,(d + e\,x)^n\right)\right)^n dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)^2*(a + b*log(c*(d + e*x)^n))^n,x)
[Out] int((f + g*x)^2*(a + b*log(c*(d + e*x)^n))^n, x)
```

3.172 $\int (f+gx)\left(a+b\log\left(c(d+ex)^n\right)\right)^n\,dx$

Optimal. Leaf size=225

$$\frac{2^{-1-n}e^{-\frac{2a}{bn}}g(d+ex)^2\left(c(d+ex)^n\right)^{-2/n}\Gamma\left(1+n,-\frac{2(a+b\log(c(d+ex)^n))}{bn}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)^n\left(-\frac{a+b\log(c(d+ex)}{bn}\right.}{e^2}$$

```
[Out] 2^(-1-n)*g*(e*x+d)^2*GAMMA(1+n,-2*(a+b*ln(c*(e*x+d)^n))/b/n)*(a+b*ln(c*(e*x
+d)^n))^n/e^2/exp(2*a/b/n)/((c*(e*x+d)^n)^(2/n))/(((-a-b*ln(c*(e*x+d)^n))/b
/n)^n)+(-d*g+e*f)*(e*x+d)*GAMMA(1+n,(-a-b*ln(c*(e*x+d)^n))/b/n)*(a+b*ln(c*(
e*x+d)^n))^n/e^2/exp(a/b/n)/((c*(e*x+d)^n)^(1/n))/(((-a-b*ln(c*(e*x+d)^n))/
b/n)^n)
```

Rubi [A]

time = 0.15, antiderivative size = 225, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.273$, Rules used = {2448, 2436, 2337, 2212, 2437, 2347}

$$\frac{e^{-\frac{a}{bn}}(d+ex)(ef-dg)\left(c(d+ex)^n\right)^{-1/n}\left(a+b\log\left(c(d+ex)^n\right)\right)^n\left(-\frac{a+b\log(c(d+ex)^n)}{bn}\right)^{-n}\text{Gamma}\left(n+1,-\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{e^2}+\frac{g2^{-n-1}e^{-\frac{2a}{bn}}(d+ex)^2\left(c(d+ex)^n\right)^{-2/n}\left(a+b\log\left(c(d+ex)^n\right)\right)^n\left(-\frac{a+b\log(c(d+ex)^n)}{bn}\right)^{-n}\text{Gamma}\left(n+1,-\frac{2(a+b\log(c(d+ex)^n))}{bn}\right)}{e^2}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)*(a + b*Log[c*(d + e*x)^n])^n,x]
```

```
[Out] (2^(-1 - n)*g*(d + e*x)^2*Gamma[1 + n, (-2*(a + b*Log[c*(d + e*x)^n]))/(b*n
)]*(a + b*Log[c*(d + e*x)^n])^n)/(e^2*E^((2*a)/(b*n))*(c*(d + e*x)^n)^(2/n)
*(-((a + b*Log[c*(d + e*x)^n])/(b*n)))^n) + ((e*f - d*g)*(d + e*x)*Gamma[1
+ n, -((a + b*Log[c*(d + e*x)^n])/(b*n))]*(a + b*Log[c*(d + e*x)^n])^n)/(e^
2*E^(a/(b*n))*(c*(d + e*x)^n)^n^(-1)*(-((a + b*Log[c*(d + e*x)^n])/(b*n)))^
n)
```

Rule 2212

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))*((c_.) + (d_.)*(x_))^(m_), x_Symbol]
:> Simp[(-F^(g*(e - c*(f/d))))*((c + d*x)^FracPart[m]/(d*((-f)*g*(Log[F]/d)
)^(IntPart[m] + 1)*((-f)*g*Log[F]*((c + d*x)/d))^FracPart[m]))*Gamma[m + 1,
 ((-f)*g*(Log[F]/d))*(c + d*x)], x] /; FreeQ[{F, c, d, e, f, g, m}, x] &&
!IntegerQ[m]
```

Rule 2337

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2347

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_)*((d_.)*(x_))^(m_.), x_Symbol
] :> Dist[(d*x)^(m + 1)/(d*n*(c*x^n)^((m + 1)/n)), Subst[Int[E^(((m + 1)/n)
*x)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b, c, d, m, n, p}, x]
```

Rule 2436

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2437

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[(f*(x/d))^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2448

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q*(a + b*Log[c*(d
 + e*x)^n])^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f -
 d*g, 0] && IGtQ[q, 0]
```

Rubi steps

$$\int (f+gx)\left(a+b\log\left(c(d+ex)^n\right)\right)^n\,dx = \int \left(\frac{(ef-dg)\left(a+b\log\left(c(d+ex)^n\right)\right)^n}{e}+\frac{g(d+ex)\left(a+b\log\left(c\right.\right.}{e}\right.$$

$$=\frac{g\int (d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^n\,dx}{e}+\frac{(ef-dg)\int\left(a+b\log\right.}{e}$$

$$=\frac{g\text{Subst}\left(\int x(a+b\log\left(cx^n\right))^n\,dx,x,d+ex\right)}{e^2}+\frac{(ef-dg)\text{Subst}\left(\int\right.}{}$$

$$=\frac{\left(g(d+ex)^2\left(c(d+ex)^n\right)^{-2/n}\right)\text{Subst}\left(\int e^{\frac{2x}{n}}(a+bx)^n\,dx,x,\log\left(c\right.\right.}{e^2n}$$

$$=\frac{2^{-1-n}e^{-\frac{2a}{bn}}g(d+ex)^2\left(c(d+ex)^n\right)^{-2/n}\Gamma\left(1+n,-\frac{2(a+b\log(c(d+ex)^n}{bn}\right.}{e^2}$$

Mathematica [A]

time = 0.14, size = 181, normalized size = 0.80

$$\frac{2^{-1-n}e^{-\frac{2a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-2/n}\left(g(d+ex)\Gamma\left(1+n,-\frac{2(a+b\log(c(d+ex)^n))}{bn}\right)+2^{1+n}e^{\frac{a}{bn}}(ef-dg)\left(c(d+ex)^n\right)^{\frac{1}{n}}\Gamma\left(1+n,-\frac{a+b\log(c(d+ex)^n)}{bn}\right)\right)\left(a+b\log\left(c(d+ex)^n\right)\right)^n\left(-\frac{a+b\log(c(d+ex)^n)}{bn}\right)^{-n}}{e^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)*(a + b*Log[c*(d + e*x)^n])^n,x]
```

```
[Out] (2^(-1 - n)*(d + e*x)*(g*(d + e*x)*Gamma[1 + n, (-2*(a + b*Log[c*(d + e*x)^
n]))/(b*n)] + 2^(1 + n)*E^(a/(b*n))*(e*f - d*g)*(c*(d + e*x)^n)^n^(-1)*Gamm
a[1 + n, -((a + b*Log[c*(d + e*x)^n])/(b*n))])*(a + b*Log[c*(d + e*x)^n])^n
)/(e^2*E^((2*a)/(b*n))*(c*(d + e*x)^n)^(2/n)*(-((a + b*Log[c*(d + e*x)^n])/
(b*n)))^n)
```

Maple [F]
time = 0.04, size = 0, normalized size = 0.00

$$\int (gx+f)\left(a+b\ln\left(c(ex+d)^{n}\right)\right)^{n}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(a+b*ln(c*(e*x+d)^n))^n,x)
```

```
[Out] int((g*x+f)*(a+b*ln(c*(e*x+d)^n))^n,x)
```

Maxima [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*log(c*(e*x+d)^n))^n,x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError >> ECL says: In function CAR, the value of t
he first argument is  0which is not of the expected type LIST
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*log(c*(e*x+d)^n))^n,x, algorithm="fricas")
```

```
[Out] integral((g*x + f)*(b*log((x*e + d)^n*c) + a)^n, x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \left(a+b\log\left(c(d+ex)^{n}\right)\right)^{n}(f+gx)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*ln(c*(e*x+d)**n))**n,x)
```

```
[Out] Integral((a + b*log(c*(d + e*x)**n))**n*(f + g*x), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*log(c*(e*x+d)^n))^n,x, algorithm="giac")
```

```
[Out] integrate((g*x + f)*(b*log((x*e + d)^n*c) + a)^n, x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int (f+g\,x)\,\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)^n\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)*(a + b*log(c*(d + e*x)^n))^n,x)
```

```
[Out] int((f + g*x)*(a + b*log(c*(d + e*x)^n))^n, x)
```

3.173 $\int (a+b\log (c(d+ex)^n))^n \, dx$

Optimal. Leaf size=103

$$\frac{e^{-\frac{a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\Gamma\left(1+n,-\frac{a+b\log(c(d+ex)^n)}{bn}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)^n\left(-\frac{a+b\log(c(d+ex)^n)}{bn}\right)^{-n}}{e}$$

```
[Out] (e*x+d)*GAMMA(1+n,(-a-b*ln(c*(e*x+d)^n))/b/n)*(a+b*ln(c*(e*x+d)^n))^n/e/exp
(a/b/n)/((c*(e*x+d)^n)^(1/n))/(((-a-b*ln(c*(e*x+d)^n))/b/n)^n)
```

Rubi [A]
time = 0.04, antiderivative size = 103, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}} = 0.188$, Rules used = {2436, 2337, 2212}

$$\frac{e^{-\frac{a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\left(a+b\log\left(c(d+ex)^n\right)\right)^n\left(-\frac{a+b\log(c(d+ex)^n)}{bn}\right)^{-n}\text{Gamma}\left(n+1,-\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{e}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^n,x]
```

```
[Out] ((d + e*x)*Gamma[1 + n, -((a + b*Log[c*(d + e*x)^n])/(b*n))]*(a + b*Log[c*(
d + e*x)^n])^n)/(e*E^(a/(b*n))*(c*(d + e*x)^n)^n^(-1)*(-((a + b*Log[c*(d +
e*x)^n])/(b*n)))^n)
```

Rule 2212

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))*((c_.) + (d_.)*(x_))^(m_), x_Symbol]
:> Simp[(-F^(g*(e - c*(f/d))))*((c + d*x)^FracPart[m]/(d*((-f)*g*(Log[F]/d)
)^(IntPart[m] + 1)*((-f)*g*Log[F]*((c + d*x)/d))^FracPart[m]))*Gamma[m + 1,
 ((-f)*g*(Log[F]/d))*(c + d*x)], x] /; FreeQ[{F, c, d, e, f, g, m}, x] &&
!IntegerQ[m]
```

Rule 2337

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2436

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rubi steps

$$\int (a+b\log(c(d+ex)^n))^n\,dx = \frac{\text{Subst}\left(\int (a+b\log(cx^n))^n\,dx, x, d+ex\right)}{e} = \frac{\left((d+ex)(c(d+ex)^n)^{-1/n}\right)\text{Subst}\left(\int e^{\frac{x}{n}}(a+bx)^n\,dx, x, \log(c(d+ex)^n)\right)}{en} = \frac{e^{-\frac{a}{bn}}(d+ex)(c(d+ex)^n)^{-1/n}\,\Gamma\left(1+n, -\frac{a+b\log(c(d+ex)^n)}{bn}\right)(a+b\log(c(d+$$

Mathematica [A]
time = 0.05, size = 103, normalized size = 1.00

$$\frac{e^{-\frac{a}{bn}}(d+ex)(c(d+ex)^n)^{-1/n}\,\Gamma\left(1+n, -\frac{a+b\log(c(d+ex)^n)}{bn}\right)(a+b\log(c(d+ex)^n))^n\left(-\frac{a+b\log(c(d+ex)^n)}{bn}\right)^{-n}}{e}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^n,x]
```

```
[Out] ((d + e*x)*Gamma[1 + n, -((a + b*Log[c*(d + e*x)^n])/(b*n))]*(a + b*Log[c*(
d + e*x)^n])^n)/(e*E^(a/(b*n))*(c*(d + e*x)^n)^n^(-1)*(-((a + b*Log[c*(d +
e*x)^n])/(b*n)))^n)
```

Maple [F]
time = 0.04, size = 0, normalized size = 0.00

$$\int (a+b\ln(c(ex+d)^n))^n\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))^n,x)
```

```
[Out] int((a+b*ln(c*(e*x+d)^n))^n,x)
```

Maxima [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^n,x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError >> ECL says: In function CAR, the value of t
he first argument is  0which is not of the expected type LIST
```

Fricas [A]
time = 0.08, size = 60, normalized size = 0.58

$$e^{\left(-\frac{bn^2\log\left(-\frac{1}{bn}\right)+b\log(c)+a}{bn}-1\right)}\Gamma\left(n+1,-\frac{bn\log(xe+d)+b\log(c)+a}{bn}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^n,x, algorithm="fricas")
```

```
[Out] e^(-(b*n^2*log(-1/(b*n)) + b*log(c) + a)/(b*n) - 1)*gamma(n + 1, -(b*n*log(
x*e + d) + b*log(c) + a)/(b*n))
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int (a+b\log(c(d+ex)^n))^n\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**n,x)
```

```
[Out] Integral((a + b*log(c*(d + e*x)**n))**n, x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^n,x, algorithm="giac")
```

```
[Out] integrate((b*log((x*e + d)^n*c) + a)^n, x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int (a+b\,\ln(c\,(d+e\,x)^n))^n\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))^n,x)
```

```
[Out] int((a + b*log(c*(d + e*x)^n))^n, x)
```

3.174 $\int \frac{(a+b\log(c(d+ex)^n))^n}{f+gx}\,dx$

Optimal. Leaf size=27

$$\operatorname{Int}\left(\frac{(a+b\log\left(c(d+ex)^n\right))^n}{f+gx},x\right)$$

[Out] Unintegrable((a+b*ln(c*(e*x+d)^n))^n/(g*x+f),x)

Rubi [A]
time = 0.02, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int \frac{(a+b\log\left(c(d+ex)^n\right))^n}{f+gx}\,dx$$

Verification is not applicable to the result.

[In] Int[(a + b*Log[c*(d + e*x)^n])^n/(f + g*x),x]

[Out] Defer[Int][(a + b*Log[c*(d + e*x)^n])^n/(f + g*x), x]

Rubi steps

$$\int \frac{(a+b\log\left(c(d+ex)^n\right))^n}{f+gx}\,dx = \int \frac{(a+b\log\left(c(d+ex)^n\right))^n}{f+gx}\,dx$$

Mathematica [A]
time = 0.15, size = 0, normalized size = 0.00

$$\int \frac{(a+b\log\left(c(d+ex)^n\right))^n}{f+gx}\,dx$$

Verification is not applicable to the result.

[In] Integrate[(a + b*Log[c*(d + e*x)^n])^n/(f + g*x),x]

[Out] Integrate[(a + b*Log[c*(d + e*x)^n])^n/(f + g*x), x]

Maple [A]
time = 0.17, size = 0, normalized size = 0.00

$$\int \frac{(a+b\ln\left(c(ex+d)^n\right))^n}{gx+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))^n/(g*x+f),x)
```

```
[Out] int((a+b*ln(c*(e*x+d)^n))^n/(g*x+f),x)
```

Maxima [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^n/(g*x+f),x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError >> ECL says: In function CAR, the value of t
he first argument is  0which is not of the expected type LIST
```

Fricas [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^n/(g*x+f),x, algorithm="fricas")
```

```
[Out] integral((b*log((x*e + d)^n*c) + a)^n/(g*x + f), x)
```

Sympy [A]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(a + b \log \left(c \left(d + e x\right)^{n}\right)\right)^{n}}{f + g x}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**n/(g*x+f),x)
```

```
[Out] Integral((a + b*log(c*(d + e*x)**n))**n/(f + g*x), x)
```

Giac [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^n/(g*x+f),x, algorithm="giac")
```

```
[Out] integrate((b*log((x*e + d)^n*c) + a)^n/(g*x + f), x)
```

Mupad [A]
time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{(a+b\ln(c(d+ex)^n))^n}{f+gx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))^n/(f + g*x),x)
[Out] int((a + b*log(c*(d + e*x)^n))^n/(f + g*x), x)
```

3.175 $\int \frac{(h+ix)^4(a+b\log(c(e+fx)))}{de+dfx}\,dx$

Optimal. Leaf size=315

$$-\frac{4bi(fh-ei)^3x}{df^4}-\frac{3bi^2(fh-ei)^2(e+fx)^2}{2df^5}-\frac{4bi^3(fh-ei)(e+fx)^3}{9df^5}-\frac{bi^4(e+fx)^4}{16df^5}-\frac{b(fh-ei)^4\log^2(e+fx}{2df^5}$$

```
[Out] -4*b*i*(-e*i+f*h)^3*x/d/f^4-3/2*b*i^2*(-e*i+f*h)^2*(f*x+e)^2/d/f^5-4/9*b*i^
3*(-e*i+f*h)*(f*x+e)^3/d/f^5-1/16*b*i^4*(f*x+e)^4/d/f^5-1/2*b*(-e*i+f*h)^4*
ln(f*x+e)^2/d/f^5+4*i*(-e*i+f*h)^3*(f*x+e)*(a+b*ln(c*(f*x+e)))/d/f^5+3*i^2*
(-e*i+f*h)^2*(f*x+e)^2*(a+b*ln(c*(f*x+e)))/d/f^5+4/3*i^3*(-e*i+f*h)*(f*x+e)
^3*(a+b*ln(c*(f*x+e)))/d/f^5+1/4*i^4*(f*x+e)^4*(a+b*ln(c*(f*x+e)))/d/f^5+(-
e*i+f*h)^4*ln(f*x+e)*(a+b*ln(c*(f*x+e)))/d/f^5
```

Rubi [A]
time = 0.36, antiderivative size = 315, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}} = 0.167$, Rules used = {2458, 12, 45, 2372, 2338}

$$\frac{4i^3(e+fx)^3(fh-ei)(a+b\log(c(e+fx)))}{3df^5}+\frac{3i^2(e+fx)^2(fh-ei)^2(a+b\log(c(e+fx)))}{df^5}+\frac{(fh-ei)^4\log(e+fx)(a+b\log(c(e+fx)))}{df^5}+\frac{4i(e+fx)(fh-ei)^3(a+b\log(c(e+fx)))}{df^5}+\frac{i^4(e+fx)^4(a+b\log(c(e+fx)))}{4df^5}-\frac{4bi^3(e+fx)^3(fh-ei)}{9df^5}-\frac{3bi^2(e+fx)^2(fh-ei)^2}{2df^5}-\frac{b(fh-ei)^4\log^2(e+fx)}{2df^5}-\frac{bi^4(e+fx)^4}{16df^5}-\frac{4bix(fh-ei)^3}{df^4}$$

Antiderivative was successfully verified.

```
[In] Int[((h + i*x)^4*(a + b*Log[c*(e + f*x)]))/(d*e + d*f*x),x]
```

```
[Out] (-4*b*i*(f*h - e*i)^3*x)/(d*f^4) - (3*b*i^2*(f*h - e*i)^2*(e + f*x)^2)/(2*d
*f^5) - (4*b*i^3*(f*h - e*i)*(e + f*x)^3)/(9*d*f^5) - (b*i^4*(e + f*x)^4)/(
16*d*f^5) - (b*(f*h - e*i)^4*Log[e + f*x]^2)/(2*d*f^5) + (4*i*(f*h - e*i)^3
*(e + f*x)*(a + b*Log[c*(e + f*x)]))/(d*f^5) + (3*i^2*(f*h - e*i)^2*(e + f*
x)^2*(a + b*Log[c*(e + f*x)]))/(d*f^5) + (4*i^3*(f*h - e*i)*(e + f*x)^3*(a
+ b*Log[c*(e + f*x)]))/(3*d*f^5) + (i^4*(e + f*x)^4*(a + b*Log[c*(e + f*x)]
))/(4*d*f^5) + ((f*h - e*i)^4*Log[e + f*x]*(a + b*Log[c*(e + f*x)]))/(d*f^5
)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2338

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2372

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*(x_)^(m_.)*((d_) + (e_.)*(x_)^(r_
.))^(q_.), x_Symbol] :> With[{u = IntHide[x^m*(d + e*x^r)^q, x]}, Dist[a +
b*Log[c*x^n], u, x] - Dist[b*n, Int[SimplifyIntegrand[u/x, x], x], x]] /; F
reeQ[{a, b, c, d, e, n, r}, x] && IGtQ[q, 0] && IntegerQ[m] &&  !(EqQ[q, 1]
 && EqQ[m, -1])
```

Rule 2458

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[(g*(x/e))^q*((e*h - d*i)/e + i*(x/e))^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rubi steps

$$\int \frac{(h+175x)^4(a+b\log(c(e+fx)))}{de+dfx}\,dx = \frac{\text{Subst}\left(\int \frac{\left(\frac{-175e+fh}{f}+\frac{175x}{f}\right)^4(a+b\log(cx))}{dx}\,dx, x, e+fx\right)}{f}$$

$$= \frac{\text{Subst}\left(\int \frac{\left(\frac{-175e+fh}{f}+\frac{175x}{f}\right)^4(a+b\log(cx))}{x}\,dx, x, e+fx\right)}{df}$$

$$= -\frac{\left(\frac{8400(175e-fh)^3(e+fx)}{f^4} - \frac{1102500(175e-fh)^2(e+fx)^2}{f^4} + \frac{85750000(175e-fh)}{f^4}\right.}{}$$

$$= -\frac{\left(\frac{8400(175e-fh)^3(e+fx)}{f^4} - \frac{1102500(175e-fh)^2(e+fx)^2}{f^4} + \frac{85750000(175e-fh)}{f^4}\right.}{}$$

$$= \frac{700b(175e-fh)^3x}{df^4} - \frac{91875b(175e-fh)^2(e+fx)^2}{2df^5} + \frac{2143750}{}$$

$$= \frac{700b(175e-fh)^3x}{df^4} - \frac{91875b(175e-fh)^2(e+fx)^2}{2df^5} + \frac{2143750}{}$$

Mathematica [A]

time = 0.38, size = 589, normalized size = 1.87

$$\frac{72a^2f^4h^4-288a^2ef^3h^3i+432a^2e^2f^2h^2i^2-288a^2e^3fhi^3+72a^2e^4i^4+576abf^4h^3ix-576b^2f^4h^3ix-864abef^3h^2i^2x+1296b^2ef^3h^2i^2x+576abe^2f^2hi^3x-1056b^2e^2f^2hi^3x-144abe^3fi^4x+300b^2e^3fi^4x+432abf^4h^2i^2x^2-216b^2f^4h^2i^2x^2-288abef^3hi^3x^2+240b^2ef^3hi^3x^2+72abe^2f^2i^4x^2-78b^2e^2f^2i^4x^2+192abf^4hi^3x^3-64b^2f^4hi^3x^3-48abef^3i^4x^3+28b^2ef^3i^4x^3+36abf^4i^4x^4-9b^2f^4i^4x^4-12b^2e^2i^2(36f^2h^2-40efhi+13e^2i^2)\log(e+fx)+12b(12a(fh-ei)^4+bi(-12e^4i^3-12e^3fi^2(-4h+ix)+6e^2f^2i(-12h^2+8hix+i^2x^2)+4ef^3(12h^3-18h^2ix-6hi^2x^2-i^3x^3)+f^4x(48h^3+36h^2ix+16hi^2x^2+3i^3x^3)))\log(c(e+fx))+72b^2(fh-ei)^4\log^2(c(e+fx))}{144bdf^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[((h + i*x)^4*(a + b*Log[c*(e + f*x)]))/(d*e + d*f*x),x]
```

```
[Out] (72*a^2*f^4*h^4 - 288*a^2*e*f^3*h^3*i + 432*a^2*e^2*f^2*h^2*i^2 - 288*a^2*e
^3*f*h*i^3 + 72*a^2*e^4*i^4 + 576*a*b*f^4*h^3*i*x - 576*b^2*f^4*h^3*i*x - 8
64*a*b*e*f^3*h^2*i^2*x + 1296*b^2*e*f^3*h^2*i^2*x + 576*a*b*e^2*f^2*h*i^3*x
 - 1056*b^2*e^2*f^2*h*i^3*x - 144*a*b*e^3*f*i^4*x + 300*b^2*e^3*f*i^4*x + 4
32*a*b*f^4*h^2*i^2*x^2 - 216*b^2*f^4*h^2*i^2*x^2 - 288*a*b*e*f^3*h*i^3*x^2
+ 240*b^2*e*f^3*h*i^3*x^2 + 72*a*b*e^2*f^2*i^4*x^2 - 78*b^2*e^2*f^2*i^4*x^2
 + 192*a*b*f^4*h*i^3*x^3 - 64*b^2*f^4*h*i^3*x^3 - 48*a*b*e*f^3*i^4*x^3 + 28
*b^2*e*f^3*i^4*x^3 + 36*a*b*f^4*i^4*x^4 - 9*b^2*f^4*i^4*x^4 - 12*b^2*e^2*i^
2*(36*f^2*h^2 - 40*e*f*h*i + 13*e^2*i^2)*Log[e + f*x] + 12*b*(12*a*(f*h - e
*i)^4 + b*i*(-12*e^4*i^3 - 12*e^3*f*i^2*(-4*h + i*x) + 6*e^2*f^2*i*(-12*h^2
 + 8*h*i*x + i^2*x^2) + 4*e*f^3*(12*h^3 - 18*h^2*i*x - 6*h*i^2*x^2 - i^3*x^
3) + f^4*x*(48*h^3 + 36*h^2*i*x + 16*h*i^2*x^2 + 3*i^3*x^3)))*Log[c*(e + f*
x)] + 72*b^2*(f*h - e*i)^4*Log[c*(e + f*x)]^2)/(144*b*d*f^5)
```

Maple [B] Leaf count of result is larger than twice the leaf count of optimal. 987 vs. $2(303) = 606$.
time = 0.68, size = 988, normalized size = 3.14 Too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((i*x+h)^4*(a+b*ln(c*(f*x+e)))/(d*f*x+d*e),x,method=_RETURNVERBOSE)
```

```
[Out] 1/c/f*(1/c^3/f^4/d*b*i^4*(1/4*(c*f*x+c*e)^4*ln(c*f*x+c*e)-1/16*(c*f*x+c*e)^
4)+6*c/f^2/d*a*e^2*h^2*i^2*ln(c*f*x+c*e)-12/c/f^3/d*b*e*h*i^3*(1/2*(c*f*x+c
*e)^2*ln(c*f*x+c*e)-1/4*(c*f*x+c*e)^2)+3*c/f^2/d*b*e^2*h^2*i^2*ln(c*f*x+c*e
)^2-2*c/f^3/d*b*e^3*h*i^3*ln(c*f*x+c*e)^2-2*c/f/d*b*e*h^3*i*ln(c*f*x+c*e)^2
-4*c/f/d*a*e*h^3*i*ln(c*f*x+c*e)-4*c/f^3/d*a*e^3*h*i^3*ln(c*f*x+c*e)-6/c/f^
3/d*a*e*h*i^3*(c*f*x+c*e)^2-4/3/c^2/f^4/d*a*e*i^4*(c*f*x+c*e)^3+3/c/f^2/d*a
*h^2*i^2*(c*f*x+c*e)^2-12/f^2/d*a*e*h^2*i^2*(c*f*x+c*e)+4/c^2/f^3/d*b*h*i^3
*(1/3*(c*f*x+c*e)^3*ln(c*f*x+c*e)-1/9*(c*f*x+c*e)^3)+12/f^3/d*a*e^2*h*i^3*(
c*f*x+c*e)+c/f^4/d*a*e^4*i^4*ln(c*f*x+c*e)+4/f/d*a*h^3*i*(c*f*x+c*e)-4/f^4/
d*a*e^3*i^4*(c*f*x+c*e)+1/4/c^3/f^4/d*a*i^4*(c*f*x+c*e)^4-4/f^4/d*b*e^3*i^4
*((c*f*x+c*e)*ln(c*f*x+c*e)-c*f*x-c*e)+4/f/d*b*h^3*i*((c*f*x+c*e)*ln(c*f*x+
c*e)-c*f*x-c*e)+6/c/f^4/d*b*e^2*i^4*(1/2*(c*f*x+c*e)^2*ln(c*f*x+c*e)-1/4*(c
*f*x+c*e)^2)+6/c/f^2/d*b*h^2*i^2*(1/2*(c*f*x+c*e)^2*ln(c*f*x+c*e)-1/4*(c*f*
x+c*e)^2)+1/2*c/d*b*h^4*ln(c*f*x+c*e)^2+c/d*a*h^4*ln(c*f*x+c*e)+4/3/c^2/f^3
/d*a*h*i^3*(c*f*x+c*e)^3-12/f^2/d*b*e*h^2*i^2*((c*f*x+c*e)*ln(c*f*x+c*e)-c*
f*x-c*e)+3/c/f^4/d*a*e^2*i^4*(c*f*x+c*e)^2+12/f^3/d*b*e^2*h*i^3*((c*f*x+c*e
)*ln(c*f*x+c*e)-c*f*x-c*e)+1/2*c/f^4/d*b*e^4*i^4*ln(c*f*x+c*e)^2-4/c^2/f^4/
d*b*e*i^4*(1/3*(c*f*x+c*e)^3*ln(c*f*x+c*e)-1/9*(c*f*x+c*e)^3))
```

Maxima [**B**] Both result and optimal contain complex but leaf count of result is larger than twice the leaf count of optimal. 744 vs. $2(296) = 592$.
time = 0.32, size = 744, normalized size = 2.36

$$-\frac{1}{2}\,bh^4\left(\frac{2\,\log\left(cfx+ce\right)\log\left(dfx+de\right)}{df}-\frac{\log\left(fx+e\right)^2+2\,\log\left(fx+e\right)\log\left(c\right)}{df}\right)+4i\,bh^3\left(\frac{x}{df}-\frac{e\log\left(fx+e\right)}{df^2}\right)\log\left(cfx+ce\right)+4i\,ah^3\left(\frac{x}{df}-\frac{e\log\left(fx+e\right)}{df^2}\right)-3\,bh^2\left(\frac{fx^2-2\,xe}{df^2}+\frac{2\,e^2\log\left(fx+e\right)}{df^3}\right)\log\left(cfx+ce\right)+\frac{bh^4\log\left(cfx+ce\right)\log\left(dfx+de\right)}{df}-3\,ah^2\left(\frac{fx^2-2\,xe}{df^2}+\frac{2\,e^2\log\left(fx+e\right)}{df^3}\right)-\frac{2}{3}i\,bh\left(\frac{2\,f^2x^3-3\,fx^2e+6\,xe^2}{df^3}-\frac{6\,e^3\log\left(fx+e\right)}{df^4}\right)\log\left(cfx+ce\right)+\frac{ah^4\log\left(dfx+de\right)}{df}-\frac{2}{3}i\,ah\left(\frac{2\,f^2x^3-3\,fx^2e+6\,xe^2}{df^3}-\frac{6\,e^3\log\left(fx+e\right)}{df^4}\right)+\frac{1}{12}\,b\left(\frac{3\,f^3x^4-4\,f^2x^3e+6\,fx^2e^2-12\,xe^3}{df^4}+\frac{12\,e^4\log\left(fx+e\right)}{df^5}\right)\log\left(cfx+ce\right)+\frac{2i\left(e\log\left(fx+e\right)^2-2\,fx+2\,e\log\left(fx+e\right)\right)bh^3}{df^2}+\frac{1}{12}\,a\left(\frac{3\,f^3x^4-4\,f^2x^3e+6\,fx^2e^2-12\,xe^3}{df^4}+\frac{12\,e^4\log\left(fx+e\right)}{df^5}\right)+\frac{3\left(f^2x^2-6\,fxe+2\,e^2\log\left(fx+e\right)^2+6\,e^2\log\left(fx+e\right)\right)bh^2}{2\,df^3}+\frac{i\left(4\,f^3x^3-15\,f^2x^2e+66\,fxe^2-18\,e^3\log\left(fx+e\right)^2-66\,e^3\log\left(fx+e\right)\right)bh}{9\,df^4}-\frac{\left(9\,f^4x^4-28\,f^3x^3e+78\,f^2x^2e^2-300\,fxe^3+72\,e^4\log\left(fx+e\right)^2+300\,e^4\log\left(fx+e\right)\right)b}{144\,df^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^4*(a+b*log(c*(f*x+e)))/(d*f*x+d*e),x, algorithm="maxima")
```

```
[Out] -1/2*b*h^4*(2*log(c*f*x + c*e)*log(d*f*x + d*e)/(d*f) - (log(f*x + e)^2 + 2
*log(f*x + e)*log(c))/(d*f)) + 4*I*b*h^3*(x/(d*f) - e*log(f*x + e)/(d*f^2))
*log(c*f*x + c*e) + 4*I*a*h^3*(x/(d*f) - e*log(f*x + e)/(d*f^2)) - 3*b*h^2*
((f*x^2 - 2*x*e)/(d*f^2) + 2*e^2*log(f*x + e)/(d*f^3))*log(c*f*x + c*e) + b
*h^4*log(c*f*x + c*e)*log(d*f*x + d*e)/(d*f) - 3*a*h^2*((f*x^2 - 2*x*e)/(d*
f^2) + 2*e^2*log(f*x + e)/(d*f^3)) - 2/3*I*b*h*((2*f^2*x^3 - 3*f*x^2*e + 6*
x*e^2)/(d*f^3) - 6*e^3*log(f*x + e)/(d*f^4))*log(c*f*x + c*e) + a*h^4*log(d
*f*x + d*e)/(d*f) - 2/3*I*a*h*((2*f^2*x^3 - 3*f*x^2*e + 6*x*e^2)/(d*f^3) -
6*e^3*log(f*x + e)/(d*f^4)) + 1/12*b*((3*f^3*x^4 - 4*f^2*x^3*e + 6*f*x^2*e^
2 - 12*x*e^3)/(d*f^4) + 12*e^4*log(f*x + e)/(d*f^5))*log(c*f*x + c*e) + 2*I
*(e*log(f*x + e)^2 - 2*f*x + 2*e*log(f*x + e))*b*h^3/(d*f^2) + 1/12*a*((3*f
^3*x^4 - 4*f^2*x^3*e + 6*f*x^2*e^2 - 12*x*e^3)/(d*f^4) + 12*e^4*log(f*x + e
)/(d*f^5)) + 3/2*(f^2*x^2 - 6*f*x*e + 2*e^2*log(f*x + e)^2 + 6*e^2*log(f*x
+ e))*b*h^2/(d*f^3) + 1/9*I*(4*f^3*x^3 - 15*f^2*x^2*e + 66*f*x*e^2 - 18*e^3
*log(f*x + e)^2 - 66*e^3*log(f*x + e))*b*h/(d*f^4) - 1/144*(9*f^4*x^4 - 28*
f^3*x^3*e + 78*f^2*x^2*e^2 - 300*f*x*e^3 + 72*e^4*log(f*x + e)^2 + 300*e^4*
log(f*x + e))*b/(d*f^5)
```

Fricas [**A**]
time = 0.39, size = 408, normalized size = 1.30

$$-\frac{576\left(-i\,a+i\,b\right)f^4h^3x+216\left(2\,a-b\right)f^4h^2x^2+64\left(3i\,a-i\,b\right)f^4hx^3-9\left(4\,a-b\right)f^4x^4+12\left(12\,a-25\,b\right)fxe^3-72\left(bf^4h^4-4i\,bf^3h^3e-6\,bf^2h^2e^2+4i\,bfhe^3+be^4\right)\log\left(cfx+ce\right)^2+6\left(16\left(6i\,a-11i\,b\right)f^2hx-\left(12\,a-13\,b\right)f^2x^2\right)e^2-4\left(108\left(2\,a-3\,b\right)f^3h^2x-12\left(-6i\,a+5i\,b\right)f^3hx^2-\left(12\,a-7\,b\right)f^3x^3\right)e-12\left(12\,af^4h^4+48i\,bf^4h^3x-36\,bf^4h^2x^2-16i\,bf^4hx^3+3\,bf^4x^4+\left(12\,a-25\,b\right)e^4-4\left(2\left(-6i\,a+11i\,b\right)fh+3\,bfx\right)e^3-6\left(6\left(2\,a-3\,b\right)f^2h^2+8i\,bf^2hx-bf^2x^2\right)e^2-4\left(12\left(i\,a-i\,b\right)f^3h^3-18\,bf^3h^2x-6i\,bf^3hx^2+bf^3x^3\right)e\right)\log\left(cfx+ce\right)}{144\,df^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^4*(a+b*log(c*(f*x+e)))/(d*f*x+d*e),x, algorithm="fricas")
```

```
[Out] -1/144*(576*(-I*a + I*b)*f^4*h^3*x + 216*(2*a - b)*f^4*h^2*x^2 + 64*(3*I*a
- I*b)*f^4*h*x^3 - 9*(4*a - b)*f^4*x^4 + 12*(12*a - 25*b)*f*x*e^3 - 72*(b*f
^4*h^4 - 4*I*b*f^3*h^3*e - 6*b*f^2*h^2*e^2 + 4*I*b*f*h*e^3 + b*e^4)*log(c*f
*x + c*e)^2 + 6*(16*(6*I*a - 11*I*b)*f^2*h*x - (12*a - 13*b)*f^2*x^2)*e^2 -
 4*(108*(2*a - 3*b)*f^3*h^2*x - 12*(-6*I*a + 5*I*b)*f^3*h*x^2 - (12*a - 7*b
)*f^3*x^3)*e - 12*(12*a*f^4*h^4 + 48*I*b*f^4*h^3*x - 36*b*f^4*h^2*x^2 - 16*
I*b*f^4*h*x^3 + 3*b*f^4*x^4 + (12*a - 25*b)*e^4 - 4*(2*(-6*I*a + 11*I*b)*f*
h + 3*b*f*x)*e^3 - 6*(6*(2*a - 3*b)*f^2*h^2 + 8*I*b*f^2*h*x - b*f^2*x^2)*e^
2 - 4*(12*(I*a - I*b)*f^3*h^3 - 18*b*f^3*h^2*x - 6*I*b*f^3*h*x^2 + b*f^3*x^
3)*e)*log(c*f*x + c*e))/(d*f^5)
```

Sympy [B] Leaf count of result is larger than twice the leaf count of optimal. 682 vs. $2(289) = 578$.
time = 1.03, size = 682, normalized size = 2.17

$$x^{4}\left(\frac{ai^{4}}{4df}-\frac{bi^{4}}{16df}\right)+x^{3}\left(-\frac{aei^{4}}{3df^{2}}+\frac{4ahi^{3}}{3df}+\frac{7bei^{4}}{36df^{2}}-\frac{4bhi^{3}}{9df}\right)+x^{2}\left(\frac{ae^{2}i^{4}}{2df^{3}}-\frac{2aehi^{3}}{df^{2}}+\frac{3ah^{2}i^{2}}{df}-\frac{13be^{2}i^{4}}{24df^{3}}+\frac{5behi^{3}}{3df^{2}}-\frac{3bh^{2}i^{2}}{2df}\right)+x\left(-\frac{ae^{3}i^{4}}{df^{4}}+\frac{4ae^{2}hi^{3}}{df^{3}}-\frac{6aeh^{2}i^{2}}{df^{2}}+\frac{4ah^{3}i}{df}+\frac{25be^{3}i^{4}}{12df^{4}}-\frac{22be^{2}hi^{3}}{3df^{3}}+\frac{9beh^{2}i^{2}}{df^{2}}-\frac{4bh^{3}i}{df}\right)+\frac{\left(-12be^{3}i^{4}x+48be^{2}fhi^{3}x+6be^{2}fi^{4}x^{2}-72bef^{2}h^{2}i^{2}x-24bef^{2}hi^{3}x^{2}-4bef^{2}i^{4}x^{3}+48bf^{3}h^{3}ix+36bf^{3}h^{2}i^{2}x^{2}+16bf^{3}hi^{3}x^{3}+3bf^{3}i^{4}x^{4}\right)\log\left(c\left(e+fx\right)\right)}{12df^{4}}+\frac{\left(be^{4}i^{4}-4be^{3}fhi^{3}+6be^{2}f^{2}h^{2}i^{2}-4bef^{3}h^{3}i+bf^{4}h^{4}\right)\log\left(c\left(e+fx\right)\right)^{2}}{2df^{5}}+\frac{\left(12ae^{4}i^{4}-48ae^{3}fhi^{3}+72ae^{2}f^{2}h^{2}i^{2}-48aef^{3}h^{3}i+12af^{4}h^{4}-25be^{4}i^{4}+88be^{3}fhi^{3}-108be^{2}f^{2}h^{2}i^{2}+48bef^{3}h^{3}i\right)\log\left(e+fx\right)}{12df^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)**4*(a+b*ln(c*(f*x+e)))/(d*f*x+d*e),x)
```

```
[Out] x**4*(a*i**4/(4*d*f) - b*i**4/(16*d*f)) + x**3*(-a*e*i**4/(3*d*f**2) + 4*a*
h*i**3/(3*d*f) + 7*b*e*i**4/(36*d*f**2) - 4*b*h*i**3/(9*d*f)) + x**2*(a*e**
2*i**4/(2*d*f**3) - 2*a*e*h*i**3/(d*f**2) + 3*a*h**2*i**2/(d*f) - 13*b*e**2
*i**4/(24*d*f**3) + 5*b*e*h*i**3/(3*d*f**2) - 3*b*h**2*i**2/(2*d*f)) + x*(-
a*e**3*i**4/(d*f**4) + 4*a*e**2*h*i**3/(d*f**3) - 6*a*e*h**2*i**2/(d*f**2)
+ 4*a*h**3*i/(d*f) + 25*b*e**3*i**4/(12*d*f**4) - 22*b*e**2*h*i**3/(3*d*f**
3) + 9*b*e*h**2*i**2/(d*f**2) - 4*b*h**3*i/(d*f)) + (-12*b*e**3*i**4*x + 48
*b*e**2*f*h*i**3*x + 6*b*e**2*f*i**4*x**2 - 72*b*e*f**2*h**2*i**2*x - 24*b*
e*f**2*h*i**3*x**2 - 4*b*e*f**2*i**4*x**3 + 48*b*f**3*h**3*i*x + 36*b*f**3*
h**2*i**2*x**2 + 16*b*f**3*h*i**3*x**3 + 3*b*f**3*i**4*x**4)*log(c*(e + f*x
))/(12*d*f**4) + (b*e**4*i**4 - 4*b*e**3*f*h*i**3 + 6*b*e**2*f**2*h**2*i**2
 - 4*b*e*f**3*h**3*i + b*f**4*h**4)*log(c*(e + f*x))**2/(2*d*f**5) + (12*a*
e**4*i**4 - 48*a*e**3*f*h*i**3 + 72*a*e**2*f**2*h**2*i**2 - 48*a*e*f**3*h**
3*i + 12*a*f**4*h**4 - 25*b*e**4*i**4 + 88*b*e**3*f*h*i**3 - 108*b*e**2*f**
2*h**2*i**2 + 48*b*e*f**3*h**3*i)*log(e + f*x)/(12*d*f**5)
```

Giac [B] Both result and optimal contain complex but leaf count of result is larger than twice the leaf count of optimal. 664 vs. $2(296) = 592$.
time = 5.87, size = 664, normalized size = 2.11

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^4*(a+b*log(c*(f*x+e)))/(d*f*x+d*e),x, algorithm="giac")
```

```
[Out] 1/144*(72*b*f^4*h^4*log(c*f*x + c*e)^2 + 576*I*b*f^4*h^3*x*log(c*f*x + c*e)
 - 432*b*f^4*h^2*x^2*log(c*f*x + c*e) - 192*I*b*f^4*h*x^3*log(c*f*x + c*e)
+ 36*b*f^4*x^4*log(c*f*x + c*e) - 288*I*b*f^3*h^3*e*log(c*f*x + c*e)^2 + 14
4*a*f^4*h^4*log(f*x + e) + 576*I*a*f^4*h^3*x - 576*I*b*f^4*h^3*x - 432*a*f^
4*h^2*x^2 + 216*b*f^4*h^2*x^2 - 192*I*a*f^4*h*x^3 + 64*I*b*f^4*h*x^3 + 36*a
*f^4*x^4 - 9*b*f^4*x^4 + 864*b*f^3*h^2*x*e*log(c*f*x + c*e) + 288*I*b*f^3*h
*x^2*e*log(c*f*x + c*e) - 48*b*f^3*x^3*e*log(c*f*x + c*e) - 576*I*a*f^3*h^3
*e*log(f*x + e) + 576*I*b*f^3*h^3*e*log(f*x + e) + 864*a*f^3*h^2*x*e - 1296
*b*f^3*h^2*x*e + 288*I*a*f^3*h*x^2*e - 240*I*b*f^3*h*x^2*e - 48*a*f^3*x^3*e
 + 28*b*f^3*x^3*e - 432*b*f^2*h^2*e^2*log(c*f*x + c*e)^2 - 576*I*b*f^2*h*x*
e^2*log(c*f*x + c*e) + 72*b*f^2*x^2*e^2*log(c*f*x + c*e) - 864*a*f^2*h^2*e^
```

```
2*log(f*x + e) + 1296*b*f^2*h^2*e^2*log(f*x + e) - 576*I*a*f^2*h*x*e^2 + 10
56*I*b*f^2*h*x*e^2 + 72*a*f^2*x^2*e^2 - 78*b*f^2*x^2*e^2 + 288*I*b*f*h*e^3*
log(c*f*x + c*e)^2 - 144*b*f*x*e^3*log(c*f*x + c*e) + 576*I*a*f*h*e^3*log(f
*x + e) - 1056*I*b*f*h*e^3*log(f*x + e) - 144*a*f*x*e^3 + 300*b*f*x*e^3 + 7
2*b*e^4*log(c*f*x + c*e)^2 + 144*a*e^4*log(f*x + e) - 300*b*e^4*log(f*x + e
))/(d*f^5)
```

Mupad [B]
time = 0.55, size = 661, normalized size = 2.10

$$x^3\left(\frac{i^3\,(12\,a\,f\,h+b\,e\,i-4\,b\,f\,h)}{9\,d\,f^2}-\frac{e\,i^4\,(4\,a-b)}{12\,d\,f^2}\right)-x^2\left(\frac{e\left(\frac{i^3\,(12\,a\,f\,h+b\,e\,i-4\,b\,f\,h)}{3\,d\,f^2}-\frac{e\,i^4\,(4\,a-b)}{4\,d\,f^2}\right)}{2\,f}-\frac{i^2\,(12\,a\,f^2\,h^2-b\,e^2\,i^2-6\,b\,f^2\,h^2+4\,b\,e\,f\,h\,i)}{4\,d\,f^3}\right)+x\left(\frac{12\,b\,e^3\,i^4+48\,a\,f^3\,h^3\,i-48\,b\,f^3\,h^3\,i-48\,b\,e^2\,f\,h\,i^3+72\,b\,e\,f^2\,h^2\,i^2}{12\,d\,f^4}+\frac{e\left(\frac{e\left(\frac{i^3\,(12\,a\,f\,h+b\,e\,i-4\,b\,f\,h)}{3\,d\,f^2}-\frac{e\,i^4\,(4\,a-b)}{4\,d\,f^2}\right)}{f}-\frac{i^2\,(12\,a\,f^2\,h^2-b\,e^2\,i^2-6\,b\,f^2\,h^2+4\,b\,e\,f\,h\,i)}{2\,d\,f^3}\right)}{f}\right)+f\,\ln\left(c\,(e+f\,x)\right)\left(\frac{b\,i^4\,x^4}{4\,d\,f^2}+\frac{b\,i^2\,x^2\,(e^2\,i^2-4\,e\,f\,h\,i+6\,f^2\,h^2)}{2\,d\,f^4}-\frac{b\,i^3\,x^3\,(e\,i-4\,f\,h)}{3\,d\,f^3}-\frac{b\,i\,x\,(e^3\,i^3-4\,e^2\,f\,h\,i^2+6\,e\,f^2\,h^2\,i-4\,f^3\,h^3)}{d\,f^5}\right)+\frac{\ln\left(e+f\,x\right)\,(12\,a\,e^4\,i^4+12\,a\,f^4\,h^4-25\,b\,e^4\,i^4-48\,a\,e\,f^3\,h^3\,i-48\,a\,e^3\,f\,h\,i^3+48\,b\,e\,f^3\,h^3\,i+88\,b\,e^3\,f\,h\,i^3+72\,a\,e^2\,f^2\,h^2\,i^2-108\,b\,e^2\,f^2\,h^2\,i^2)}{12\,d\,f^5}+\frac{b\,\ln\left(c\,(e+f\,x)\right)^2\,(e^4\,i^4-4\,e^3\,f\,h\,i^3+6\,e^2\,f^2\,h^2\,i^2-4\,e\,f^3\,h^3\,i+f^4\,h^4)}{2\,d\,f^5}+\frac{i^4\,x^4\,(4\,a-b)}{16\,d\,f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((h + i*x)^4*(a + b*log(c*(e + f*x))))/(d*e + d*f*x),x)
```

```
[Out] x^3*((i^3*(12*a*f*h + b*e*i - 4*b*f*h))/(9*d*f^2) - (e*i^4*(4*a - b))/(12*d
*f^2)) - x^2*((e*((i^3*(12*a*f*h + b*e*i - 4*b*f*h))/(3*d*f^2) - (e*i^4*(4*
a - b))/(4*d*f^2)))/(2*f) - (i^2*(12*a*f^2*h^2 - b*e^2*i^2 - 6*b*f^2*h^2 +
4*b*e*f*h*i))/(4*d*f^3)) + x*((12*b*e^3*i^4 + 48*a*f^3*h^3*i - 48*b*f^3*h^3
*i - 48*b*e^2*f*h*i^3 + 72*b*e*f^2*h^2*i^2)/(12*d*f^4) + (e*((e*((i^3*(12*a
*f*h + b*e*i - 4*b*f*h))/(3*d*f^2) - (e*i^4*(4*a - b))/(4*d*f^2)))/f - (i^2
*(12*a*f^2*h^2 - b*e^2*i^2 - 6*b*f^2*h^2 + 4*b*e*f*h*i))/(2*d*f^3)))/f) + f
*log(c*(e + f*x))*((b*i^4*x^4)/(4*d*f^2) + (b*i^2*x^2*(e^2*i^2 + 6*f^2*h^2
- 4*e*f*h*i))/(2*d*f^4) - (b*i^3*x^3*(e*i - 4*f*h))/(3*d*f^3) - (b*i*x*(e^3
*i^3 - 4*f^3*h^3 + 6*e*f^2*h^2*i - 4*e^2*f*h*i^2))/(d*f^5)) + (log(e + f*x)
*(12*a*e^4*i^4 + 12*a*f^4*h^4 - 25*b*e^4*i^4 - 48*a*e*f^3*h^3*i - 48*a*e^3*
f*h*i^3 + 48*b*e*f^3*h^3*i + 88*b*e^3*f*h*i^3 + 72*a*e^2*f^2*h^2*i^2 - 108*
b*e^2*f^2*h^2*i^2))/(12*d*f^5) + (b*log(c*(e + f*x))^2*(e^4*i^4 + f^4*h^4 +
 6*e^2*f^2*h^2*i^2 - 4*e*f^3*h^3*i - 4*e^3*f*h*i^3))/(2*d*f^5) + (i^4*x^4*(
4*a - b))/(16*d*f)
```

3.176 $\int \frac{(h+ix)^3(a+b\log(c(e+fx)))}{de+dfx}\,dx$

Optimal. Leaf size=244

$$-\frac{3bi(fh-ei)^2x}{df^3}-\frac{3bi^2(fh-ei)(e+fx)^2}{4df^4}-\frac{bi^3(e+fx)^3}{9df^4}-\frac{b(fh-ei)^3\log^2(e+fx)}{2df^4}+\frac{3i(fh-ei)^2(e+fx)(a}{df^4}$$

```
[Out] -3*b*i*(-e*i+f*h)^2*x/d/f^3-3/4*b*i^2*(-e*i+f*h)*(f*x+e)^2/d/f^4-1/9*b*i^3*
(f*x+e)^3/d/f^4-1/2*b*(-e*i+f*h)^3*ln(f*x+e)^2/d/f^4+3*i*(-e*i+f*h)^2*(f*x+
e)*(a+b*ln(c*(f*x+e)))/d/f^4+3/2*i^2*(-e*i+f*h)*(f*x+e)^2*(a+b*ln(c*(f*x+e)
))/d/f^4+1/3*i^3*(f*x+e)^3*(a+b*ln(c*(f*x+e)))/d/f^4+(-e*i+f*h)^3*ln(f*x+e)
*(a+b*ln(c*(f*x+e)))/d/f^4
```

Rubi [A]

time = 0.28, antiderivative size = 244, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}} = 0.200$, Rules used = {2458, 12, 45, 2372, 14, 2338}

$$\frac{3i^2(e+fx)^2(fh-ei)(a+b\log(c(e+fx)))}{2df^4}+\frac{(fh-ei)^3\log(e+fx)(a+b\log(c(e+fx)))}{df^4}+\frac{3i(e+fx)(fh-ei)^2(a+b\log(c(e+fx)))}{df^4}+\frac{i^3(e+fx)^3(a+b\log(c(e+fx)))}{3df^4}-\frac{3bi^2(e+fx)^2(fh-ei)}{4df^4}-\frac{b(fh-ei)^3\log^2(e+fx)}{2df^4}-\frac{bi^3(e+fx)^3}{9df^4}-\frac{3bix(fh-ei)^2}{df^3}$$

Antiderivative was successfully verified.

```
[In] Int[((h + i*x)^3*(a + b*Log[c*(e + f*x)]))/(d*e + d*f*x),x]
```

```
[Out] (-3*b*i*(f*h - e*i)^2*x)/(d*f^3) - (3*b*i^2*(f*h - e*i)*(e + f*x)^2)/(4*d*f
^4) - (b*i^3*(e + f*x)^3)/(9*d*f^4) - (b*(f*h - e*i)^3*Log[e + f*x]^2)/(2*d
*f^4) + (3*i*(f*h - e*i)^2*(e + f*x)*(a + b*Log[c*(e + f*x)]))/(d*f^4) + (3
*i^2*(f*h - e*i)*(e + f*x)^2*(a + b*Log[c*(e + f*x)]))/(2*d*f^4) + (i^3*(e
+ f*x)^3*(a + b*Log[c*(e + f*x)]))/(3*d*f^4) + ((f*h - e*i)^3*Log[e + f*x]*
(a + b*Log[c*(e + f*x)]))/(d*f^4)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] &&  !LinearQ[u, x] &&  !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
```

```
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2338

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2372

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*(x_)^(m_.)*((d_) + (e_.)*(x_)^(r_
.))^(q_.), x_Symbol] :> With[{u = IntHide[x^m*(d + e*x^r)^q, x]}, Dist[a +
b*Log[c*x^n], u, x] - Dist[b*n, Int[SimplifyIntegrand[u/x, x], x], x]] /; F
reeQ[{a, b, c, d, e, n, r}, x] && IGtQ[q, 0] && IntegerQ[m] &&  !(EqQ[q, 1]
 && EqQ[m, -1])
```

Rule 2458

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[(g*(x/e))^q*((e*h - d*i)/e + i*(x/e))^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rubi steps

$$\int \frac{(h+176x)^3(a+b\log(c(e+fx)))}{de+dfx}\,dx = \frac{\text{Subst}\left(\int \frac{\left(\frac{-176e+fh}{f}+\frac{176x}{f}\right)^3(a+b\log(cx))}{dx}\,dx, x, e+fx\right)}{f}$$

$$= \frac{\text{Subst}\left(\int \frac{\left(\frac{-176e+fh}{f}+\frac{176x}{f}\right)^3(a+b\log(cx))}{x}\,dx, x, e+fx\right)}{df}$$

$$= \frac{\left(\frac{1584(176e-fh)^2(e+fx)}{f^3} - \frac{139392(176e-fh)(e+fx)^2}{f^3} + \frac{5451776(e+fx)^3}{f^3} - \frac{3(176e}{}\right.}{3df}$$

$$= \frac{\left(\frac{1584(176e-fh)^2(e+fx)}{f^3} - \frac{139392(176e-fh)(e+fx)^2}{f^3} + \frac{5451776(e+fx)^3}{f^3} - \frac{3(176e}{}\right.}{3df}$$

$$= \frac{\left(\frac{1584(176e-fh)^2(e+fx)}{f^3} - \frac{139392(176e-fh)(e+fx)^2}{f^3} + \frac{5451776(e+fx)^3}{f^3} - \frac{3(176e}{}\right.}{3df}$$

$$= \frac{\left(\frac{1584(176e-fh)^2(e+fx)}{f^3} - \frac{139392(176e-fh)(e+fx)^2}{f^3} + \frac{5451776(e+fx)^3}{f^3} - \frac{3(176e}{}\right.}{3df}$$

$$= -\frac{528b(176e-fh)^2x}{df^3} + \frac{23232b(176e-fh)(e+fx)^2}{df^4} - \frac{5451776b}{9d}$$

Mathematica [A]
time = 0.21, size = 375, normalized size = 1.54

$$\frac{18a^2f^3h^3 - 54a^2ef^2h^2i + 54a^2e^2fhi^2 - 18a^2e^3i^3 + 108abf^3h^2ix - 108b^2f^3h^2ix - 108abef^2hi^2x + 162b^2ef^2hi^2x + 36abe^2fi^3x - 66b^2e^2fi^3x + 54abf^3hi^2x^2 - 27b^2f^3hi^2x^2 - 18abef^2i^3x^2 + 15b^2ef^2i^3x^2 + 12abf^3i^3x^3 - 4b^2f^3i^3x^3 + 6b^2e^2i^2(-9fh+5ei)\log(e+fx) + 6b(6a(fh-ei)^3 + bi(6e^3i^2 + 6e^2fi(-3h+ix) + 3ef^2(6h^2-6hix-i^2x^2) + f^3x(18h^2+9hix+2i^2x^2)))\log(c(e+fx)) + 18b^2(fh-ei)^3\log^2(c(e+fx))}{36bdf^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[((h + i*x)^3*(a + b*Log[c*(e + f*x)]))/(d*e + d*f*x),x]
```

```
[Out] (18*a^2*f^3*h^3 - 54*a^2*e*f^2*h^2*i + 54*a^2*e^2*f*h*i^2 - 18*a^2*e^3*i^3
+ 108*a*b*f^3*h^2*i*x - 108*b^2*f^3*h^2*i*x - 108*a*b*e*f^2*h*i^2*x + 162*b
^2*e*f^2*h*i^2*x + 36*a*b*e^2*f*i^3*x - 66*b^2*e^2*f*i^3*x + 54*a*b*f^3*h*i
^2*x^2 - 27*b^2*f^3*h*i^2*x^2 - 18*a*b*e*f^2*i^3*x^2 + 15*b^2*e*f^2*i^3*x^2
 + 12*a*b*f^3*i^3*x^3 - 4*b^2*f^3*i^3*x^3 + 6*b^2*e^2*i^2*(-9*f*h + 5*e*i)*
Log[e + f*x] + 6*b*(6*a*(f*h - e*i)^3 + b*i*(6*e^3*i^2 + 6*e^2*f*i*(-3*h +
i*x) + 3*e*f^2*(6*h^2 - 6*h*i*x - i^2*x^2) + f^3*x*(18*h^2 + 9*h*i*x + 2*i^
2*x^2)))*Log[c*(e + f*x)] + 18*b^2*(f*h - e*i)^3*Log[c*(e + f*x)]^2)/(36*b*
d*f^4)
```

Maple [B] Leaf count of result is larger than twice the leaf count of optimal. 620 vs. $2(234) = 468$.
time = 0.56, size = 621, normalized size = 2.55 Too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((i*x+h)^3*(a+b*ln(c*(f*x+e)))/(d*f*x+d*e),x,method=_RETURNVERBOSE)
```

```
[Out] 1/c/f*(-c/f^3/d*a*e^3*i^3*ln(c*f*x+c*e)+3*c/f^2/d*a*e^2*h*i^2*ln(c*f*x+c*e)
-3*c/f/d*a*e*h^2*i*ln(c*f*x+c*e)+c/d*a*h^3*ln(c*f*x+c*e)+3/f^3/d*a*e^2*i^3*
(c*f*x+c*e)-6/f^2/d*a*e*h*i^2*(c*f*x+c*e)+3/f/d*a*h^2*i*(c*f*x+c*e)-3/2/c/f
^3/d*a*e*i^3*(c*f*x+c*e)^2+3/2/c/f^2/d*a*h*i^2*(c*f*x+c*e)^2+1/3/c^2/f^3/d*
a*i^3*(c*f*x+c*e)^3-1/2*c/f^3/d*b*e^3*i^3*ln(c*f*x+c*e)^2+3/2*c/f^2/d*b*e^2
*h*i^2*ln(c*f*x+c*e)^2-3/2*c/f/d*b*e*h^2*i*ln(c*f*x+c*e)^2+1/2*c/d*b*h^3*ln
(c*f*x+c*e)^2+3/f^3/d*b*e^2*i^3*((c*f*x+c*e)*ln(c*f*x+c*e)-c*f*x-c*e)-6/f^2
/d*b*e*h*i^2*((c*f*x+c*e)*ln(c*f*x+c*e)-c*f*x-c*e)+3/f/d*b*h^2*i*((c*f*x+c*
e)*ln(c*f*x+c*e)-c*f*x-c*e)-3/c/f^3/d*b*e*i^3*(1/2*(c*f*x+c*e)^2*ln(c*f*x+c
*e)-1/4*(c*f*x+c*e)^2)+3/c/f^2/d*b*h*i^2*(1/2*(c*f*x+c*e)^2*ln(c*f*x+c*e)-1
/4*(c*f*x+c*e)^2)+1/c^2/f^3/d*b*i^3*(1/3*(c*f*x+c*e)^3*ln(c*f*x+c*e)-1/9*(c
*f*x+c*e)^3))
```

Maxima [B] Both result and optimal contain complex but leaf count of result is larger than twice the leaf count of optimal. 537 vs. 2(231) = 462.
time = 0.31, size = 537, normalized size = 2.20

$$-\frac{1}{2}bh^3\left(\frac{2\log(cfx+ce)\log(dfx+de)}{df}-\frac{\log(fx+e)^2+2\log(fx+e)\log(c)}{df}\right)+3i\,bh^2\left(\frac{x}{df}-\frac{e\log(fx+e)}{df^2}\right)\log(cfx+ce)+3i\,ah^2\left(\frac{x}{df}-\frac{e\log(fx+e)}{df^2}\right)-\frac{3}{2}bh\left(\frac{fx^2-2xe}{df^2}+\frac{2e^2\log(fx+e)}{df^3}\right)\log(cfx+ce)+\frac{bh^3\log(cfx+ce)\log(dfx+de)}{df}-\frac{3}{2}ah\left(\frac{fx^2-2xe}{df^2}+\frac{2e^2\log(fx+e)}{df^3}\right)-\frac{1}{6}i\,b\left(\frac{2f^2x^3-3fx^2e+6xe^2}{df^3}-\frac{6e^3\log(fx+e)}{df^4}\right)\log(cfx+ce)+\frac{ah^3\log(dfx+de)}{df}-\frac{1}{6}i\,a\left(\frac{2f^2x^3-3fx^2e+6xe^2}{df^3}-\frac{6e^3\log(fx+e)}{df^4}\right)+\frac{3i\left(e\log(fx+e)^2-2fx+2e\log(fx+e)\right)bh^2}{2df^2}+\frac{3\left(f^2x^2-6fxe+2e^2\log(fx+e)^2+6e^2\log(fx+e)\right)bh}{4df^3}+\frac{i\left(4f^3x^3-15f^2x^2e+66fxe^2-18e^3\log(fx+e)^2-66e^3\log(fx+e)\right)b}{36df^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^3*(a+b*log(c*(f*x+e)))/(d*f*x+d*e),x, algorithm="maxima")
```

```
[Out] -1/2*b*h^3*(2*log(c*f*x + c*e)*log(d*f*x + d*e)/(d*f) - (log(f*x + e)^2 + 2
*log(f*x + e)*log(c))/(d*f)) + 3*I*b*h^2*(x/(d*f) - e*log(f*x + e)/(d*f^2))
*log(c*f*x + c*e) + 3*I*a*h^2*(x/(d*f) - e*log(f*x + e)/(d*f^2)) - 3/2*b*h*
((f*x^2 - 2*x*e)/(d*f^2) + 2*e^2*log(f*x + e)/(d*f^3))*log(c*f*x + c*e) + b
*h^3*log(c*f*x + c*e)*log(d*f*x + d*e)/(d*f) - 3/2*a*h*((f*x^2 - 2*x*e)/(d*
f^2) + 2*e^2*log(f*x + e)/(d*f^3)) - 1/6*I*b*((2*f^2*x^3 - 3*f*x^2*e + 6*x*
e^2)/(d*f^3) - 6*e^3*log(f*x + e)/(d*f^4))*log(c*f*x + c*e) + a*h^3*log(d*f
*x + d*e)/(d*f) - 1/6*I*a*((2*f^2*x^3 - 3*f*x^2*e + 6*x*e^2)/(d*f^3) - 6*e^
3*log(f*x + e)/(d*f^4)) + 3/2*I*(e*log(f*x + e)^2 - 2*f*x + 2*e*log(f*x + e
))*b*h^2/(d*f^2) + 3/4*(f^2*x^2 - 6*f*x*e + 2*e^2*log(f*x + e)^2 + 6*e^2*lo
g(f*x + e))*b*h/(d*f^3) + 1/36*I*(4*f^3*x^3 - 15*f^2*x^2*e + 66*f*x*e^2 - 1
8*e^3*log(f*x + e)^2 - 66*e^3*log(f*x + e))*b/(d*f^4)
```

Fricas [A]
time = 0.40, size = 269, normalized size = 1.10

$$-\frac{108(-ia+ib)f^3h^2x+27(2a-b)f^3hx^2+4(3ia-ib)f^3x^3+6(6ia-11ib)fxe^2-18(bf^3h^3-3ibf^2h^2e-3bfhe^2+ibe^3)\log(cfx+ce)^2-3(18(2a-3b)f^2hx-(-6ia+5ib)f^2x^2)e-6(6af^3h^3+18ibf^3h^2x-9bf^3hx^2-2ibf^3x^3-(-6ia+11ib)e^3-3(3(2a-3b)fh+2ibfx)e^2-3(6(ia-ib)f^2h^2-6bf^2hx-ibf^2x^2)e)\log(cfx+ce)}{36df^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^3*(a+b*log(c*(f*x+e)))/(d*f*x+d*e),x, algorithm="fricas")
```

```
[Out] -1/36*(108*(-I*a + I*b)*f^3*h^2*x + 27*(2*a - b)*f^3*h*x^2 + 4*(3*I*a - I*b
)*f^3*x^3 + 6*(6*I*a - 11*I*b)*f*x*e^2 - 18*(b*f^3*h^3 - 3*I*b*f^2*h^2*e -
3*b*f*h*e^2 + I*b*e^3)*log(c*f*x + c*e)^2 - 3*(18*(2*a - 3*b)*f^2*h*x - (-6
*I*a + 5*I*b)*f^2*x^2)*e - 6*(6*a*f^3*h^3 + 18*I*b*f^3*h^2*x - 9*b*f^3*h*x^
2 - 2*I*b*f^3*x^3 - (-6*I*a + 11*I*b)*e^3 - 3*(3*(2*a - 3*b)*f*h + 2*I*b*f*
x)*e^2 - 3*(6*(I*a - I*b)*f^2*h^2 - 6*b*f^2*h*x - I*b*f^2*x^2)*e)*log(c*f*x
 + c*e))/(d*f^4)
```

Sympy [A]
time = 0.72, size = 427, normalized size = 1.75

$$x^3\left(\frac{ai^3}{3df}-\frac{bi^3}{9df}\right)+x^2\left(-\frac{aei^3}{2df^2}+\frac{3ahi^2}{2df}+\frac{5bei^3}{12df^2}-\frac{3bhi^2}{4df}\right)+x\left(\frac{ae^2i^3}{df^3}-\frac{3aehi^2}{df^2}+\frac{3ah^2i}{df}-\frac{11be^2i^3}{6df^3}+\frac{9behi^2}{2df^2}-\frac{3bh^2i}{df}\right)+\frac{(6be^2i^3x-18befhi^2x-3befi^3x^2+18bf^2h^2ix+9bf^2hi^2x^2+2bf^2i^3x^3)\log(c(e+fx))}{6df^3}+\frac{(-be^3i^3+3be^2fhi^2-3bef^2h^2i+bf^3h^3)\log(c(e+fx))^2}{2df^4}-\frac{(6ae^3i^3-18ae^2fhi^2+18aef^2h^2i-6af^3h^3-11be^3i^3+27be^2fhi^2-18bef^2h^2i)\log(e+fx)}{6df^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)**3*(a+b*ln(c*(f*x+e)))/(d*f*x+d*e),x)
```

```
[Out] x**3*(a*i**3/(3*d*f) - b*i**3/(9*d*f)) + x**2*(-a*e*i**3/(2*d*f**2) + 3*a*h
*i**2/(2*d*f) + 5*b*e*i**3/(12*d*f**2) - 3*b*h*i**2/(4*d*f)) + x*(a*e**2*i*
*3/(d*f**3) - 3*a*e*h*i**2/(d*f**2) + 3*a*h**2*i/(d*f) - 11*b*e**2*i**3/(6*
d*f**3) + 9*b*e*h*i**2/(2*d*f**2) - 3*b*h**2*i/(d*f)) + (6*b*e**2*i**3*x -
18*b*e*f*h*i**2*x - 3*b*e*f*i**3*x**2 + 18*b*f**2*h**2*i*x + 9*b*f**2*h*i**
2*x**2 + 2*b*f**2*i**3*x**3)*log(c*(e + f*x))/(6*d*f**3) + (-b*e**3*i**3 +
3*b*e**2*f*h*i**2 - 3*b*e*f**2*h**2*i + b*f**3*h**3)*log(c*(e + f*x))**2/(2
*d*f**4) - (6*a*e**3*i**3 - 18*a*e**2*f*h*i**2 + 18*a*e*f**2*h**2*i - 6*a*f
**3*h**3 - 11*b*e**3*i**3 + 27*b*e**2*f*h*i**2 - 18*b*e*f**2*h**2*i)*log(e
+ f*x)/(6*d*f**4)
```

Giac [A]
time = 5.97, size = 424, normalized size = 1.74

$$\frac{18\,bf^3h^3\log(cfx+ce)^2+108i\,bf^3h^2x\log(cfx+ce)-54\,bf^3hx^2\log(cfx+ce)-12i\,bf^3x^3\log(cfx+ce)-54i\,bf^2h^2e\log(cfx+ce)^2+36\,af^3h^3\log(fx+e)+108i\,af^3h^2x-108i\,bf^3h^2x-54\,af^3hx^2+27\,bf^3hx^2-12i\,af^3x^3+4i\,bf^3x^3+108\,bf^2hxe\log(cfx+ce)+18i\,bf^2x^2e\log(cfx+ce)-108i\,af^2h^2e\log(fx+e)+108i\,bf^2h^2e\log(fx+e)+108\,af^2hxe-162\,bf^2hxe+18i\,af^2x^2e-15i\,bf^2x^2e-54\,bfhe^2\log(cfx+ce)^2-36i\,bfxe^2\log(cfx+ce)-108\,afhe^2\log(fx+e)+162\,bfhe^2\log(fx+e)-36i\,afxe^2+66i\,bfxe^2+18i\,be^3\log(cfx+ce)^2+36i\,ae^3\log(fx+e)-66i\,be^3\log(fx+e)}{36\,df^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^3*(a+b*log(c*(f*x+e)))/(d*f*x+d*e),x, algorithm="giac")
```

```
[Out] 1/36*(18*b*f^3*h^3*log(c*f*x + c*e)^2 + 108*I*b*f^3*h^2*x*log(c*f*x + c*e)
- 54*b*f^3*h*x^2*log(c*f*x + c*e) - 12*I*b*f^3*x^3*log(c*f*x + c*e) - 54*I*
b*f^2*h^2*e*log(c*f*x + c*e)^2 + 36*a*f^3*h^3*log(f*x + e) + 108*I*a*f^3*h^
2*x - 108*I*b*f^3*h^2*x - 54*a*f^3*h*x^2 + 27*b*f^3*h*x^2 - 12*I*a*f^3*x^3
+ 4*I*b*f^3*x^3 + 108*b*f^2*h*x*e*log(c*f*x + c*e) + 18*I*b*f^2*x^2*e*log(c
*f*x + c*e) - 108*I*a*f^2*h^2*e*log(f*x + e) + 108*I*b*f^2*h^2*e*log(f*x +
e) + 108*a*f^2*h*x*e - 162*b*f^2*h*x*e + 18*I*a*f^2*x^2*e - 15*I*b*f^2*x^2*
e - 54*b*f*h*e^2*log(c*f*x + c*e)^2 - 36*I*b*f*x*e^2*log(c*f*x + c*e) - 108
*a*f*h*e^2*log(f*x + e) + 162*b*f*h*e^2*log(f*x + e) - 36*I*a*f*x*e^2 + 66*
I*b*f*x*e^2 + 18*I*b*e^3*log(c*f*x + c*e)^2 + 36*I*a*e^3*log(f*x + e) - 66*
I*b*e^3*log(f*x + e))/(d*f^4)
```

Mupad [B]
time = 0.41, size = 393, normalized size = 1.61

$$x^2\left(\frac{i^2\,\left(6\,a\,f\,h+b\,e\,i-3\,b\,f\,h\right)}{4\,d\,f^2}-\frac{e\,i^3\,\left(3\,a-b\right)}{6\,d\,f^2}\right)-x\,\left(\frac{e\,\left(\frac{i^2\,\left(6\,a\,f\,h+b\,e\,i-3\,b\,f\,h\right)}{2\,d\,f^2}-\frac{e\,i^3\,\left(3\,a-b\right)}{3\,d\,f^2}\right)}{f}-\frac{i\,\left(3\,a\,f^2\,h^2-b\,e^2\,i^2-3\,b\,f^2\,h^2+3\,b\,e\,f\,h\,i\right)}{d\,f^3}\right)+f\,\ln\left(c\,\left(e+f\,x\right)\right)\,\left(\frac{b\,i^3\,x^3}{3\,d\,f^2}+\frac{b\,i\,x\,\left(e^2\,i^2-3\,e\,f\,h\,i+3\,f^2\,h^2\right)}{d\,f^4}-\frac{b\,i^2\,x^2\,\left(e\,i-3\,f\,h\right)}{2\,d\,f^3}\right)+\frac{\ln\left(e+f\,x\right)\,\left(6\,a\,f^3\,h^3-6\,a\,e^3\,i^3+11\,b\,e^3\,i^3-18\,a\,e\,f^2\,h^2\,i+18\,a\,e^2\,f\,h\,i^2+18\,b\,e\,f^2\,h^2\,i-27\,b\,e^2\,f\,h\,i^2\right)}{6\,d\,f^4}+\frac{i^3\,x^3\,\left(3\,a-b\right)}{9\,d\,f}-\frac{b\,\ln\left(c\,\left(e+f\,x\right)\right)^2\,\left(e^3\,i^3-3\,e^2\,f\,h\,i^2+3\,e\,f^2\,h^2\,i-f^3\,h^3\right)}{2\,d\,f^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((h + i*x)^3*(a + b*log(c*(e + f*x))))/(d*e + d*f*x),x)
```

```
[Out] x^2*((i^2*(6*a*f*h + b*e*i - 3*b*f*h))/(4*d*f^2) - (e*i^3*(3*a - b))/(6*d*f
^2)) - x*((e*((i^2*(6*a*f*h + b*e*i - 3*b*f*h))/(2*d*f^2) - (e*i^3*(3*a - b
))/(3*d*f^2)))/f - (i*(3*a*f^2*h^2 - b*e^2*i^2 - 3*b*f^2*h^2 + 3*b*e*f*h*i)
)/(d*f^3)) + f*log(c*(e + f*x))*((b*i^3*x^3)/(3*d*f^2) + (b*i*x*(e^2*i^2 +
3*f^2*h^2 - 3*e*f*h*i))/(d*f^4) - (b*i^2*x^2*(e*i - 3*f*h))/(2*d*f^3)) + (l
og(e + f*x)*(6*a*f^3*h^3 - 6*a*e^3*i^3 + 11*b*e^3*i^3 - 18*a*e*f^2*h^2*i +
18*a*e^2*f*h*i^2 + 18*b*e*f^2*h^2*i - 27*b*e^2*f*h*i^2))/(6*d*f^4) + (i^3*x
^3*(3*a - b))/(9*d*f) - (b*log(c*(e + f*x))^2*(e^3*i^3 - f^3*h^3 + 3*e*f^2*
h^2*i - 3*e^2*f*h*i^2))/(2*d*f^4)
```

3.177 $\int \frac{(h+ix)^2(a+b\log(c(e+fx)))}{de+dfx}\,dx$

Optimal. Leaf size=157

$$-\frac{b(4fh-3ei+fix)^2}{4df^3}-\frac{b(fh-ei)^2\log^2(e+fx)}{2df^3}+\frac{2i(fh-ei)(e+fx)(a+b\log(c(e+fx)))}{df^3}+\frac{i^2(e+fx)^2(a}{}$$

```
[Out] -1/4*b*(f*i*x-3*e*i+4*f*h)^2/d/f^3-1/2*b*(-e*i+f*h)^2*ln(f*x+e)^2/d/f^3+2*i
*(-e*i+f*h)*(f*x+e)*(a+b*ln(c*(f*x+e)))/d/f^3+1/2*i^2*(f*x+e)^2*(a+b*ln(c*(
f*x+e)))/d/f^3+(-e*i+f*h)^2*ln(f*x+e)*(a+b*ln(c*(f*x+e)))/d/f^3
```

Rubi [A]

time = 0.19, antiderivative size = 157, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}} = 0.200$, Rules used = {2458, 12, 45, 2372, 14, 2338}

$$\frac{(fh-ei)^2\log(e+fx)(a+b\log(c(e+fx)))}{df^3}+\frac{2i(e+fx)(fh-ei)(a+b\log(c(e+fx)))}{df^3}+\frac{i^2(e+fx)^2(a+b\log(c(e+fx)))}{2df^3}-\frac{b(-3ei+4fh+fix)^2}{4df^3}-\frac{b(fh-ei)^2\log^2(e+fx)}{2df^3}$$

Antiderivative was successfully verified.

```
[In] Int[((h + i*x)^2*(a + b*Log[c*(e + f*x)]))/(d*e + d*f*x),x]
```

```
[Out] -1/4*(b*(4*f*h - 3*e*i + f*i*x)^2)/(d*f^3) - (b*(f*h - e*i)^2*Log[e + f*x]^
2)/(2*d*f^3) + (2*i*(f*h - e*i)*(e + f*x)*(a + b*Log[c*(e + f*x)]))/(d*f^3)
 + (i^2*(e + f*x)^2*(a + b*Log[c*(e + f*x)]))/(2*d*f^3) + ((f*h - e*i)^2*Lo
g[e + f*x]*(a + b*Log[c*(e + f*x)]))/(d*f^3)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] &&  !LinearQ[u, x] &&  !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2338

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2372

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*(x_)^(m_.)*((d_) + (e_.)*(x_)^(r_
.))^(q_.), x_Symbol] :> With[{u = IntHide[x^m*(d + e*x^r)^q, x]}, Dist[a +
b*Log[c*x^n], u, x] - Dist[b*n, Int[SimplifyIntegrand[u/x, x], x], x]] /; F
reeQ[{a, b, c, d, e, n, r}, x] && IGtQ[q, 0] && IntegerQ[m] && !(EqQ[q, 1]
 && EqQ[m, -1])
```

Rule 2458

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[(g*(x/e))^q*((e*h - d*i)/e + i*(x/e))^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rubi steps

$$\int \frac{(h+177x)^2(a+b\log(c(e+fx)))}{de+dfx}\,dx = \frac{\text{Subst}\left(\int \frac{\left(\frac{-177e+fh}{f}+\frac{177x}{f}\right)^2(a+b\log(cx))}{dx}\,dx, x, e+fx\right)}{f}$$

$$= \frac{\text{Subst}\left(\int \frac{\left(\frac{-177e+fh}{f}+\frac{177x}{f}\right)^2(a+b\log(cx))}{x}\,dx, x, e+fx\right)}{df}$$

$$= -\frac{\left(\frac{708(177e-fh)(e+fx)}{f^2}-\frac{31329(e+fx)^2}{f^2}-\frac{2(177e-fh)^2\log(e+fx)}{f^2}\right)(a+b\,\mathrm{l}}{2df}$$

$$= -\frac{\left(\frac{708(177e-fh)(e+fx)}{f^2}-\frac{31329(e+fx)^2}{f^2}-\frac{2(177e-fh)^2\log(e+fx)}{f^2}\right)(a+b\,\mathrm{l}}{2df}$$

$$= -\frac{\left(\frac{708(177e-fh)(e+fx)}{f^2}-\frac{31329(e+fx)^2}{f^2}-\frac{2(177e-fh)^2\log(e+fx)}{f^2}\right)(a+b\,\mathrm{l}}{2df}$$

$$= -\frac{b(531e-4fh-177fx)^2}{4df^3} - \frac{\left(\frac{708(177e-fh)(e+fx)}{f^2}-\frac{31329(e+fx)^2}{f^2}-\right.}{}$$

$$= -\frac{b(531e-4fh-177fx)^2}{4df^3} - \frac{b(177e-fh)^2\log^2(e+fx)}{2df^3} - \frac{\left(\frac{70}{}\right.}{}$$

Mathematica [A]
time = 0.11, size = 214, normalized size = 1.36

$$\frac{2a^2f^2h^2-4a^2efhi+2a^2e^2i^2+8abf^2hix-8b^2f^2hix-4abefi^2x+6b^2efi^2x+2abf^2i^2x^2-b^2f^2i^2x^2-2b^2e^2i^2\log(e+fx)+2b(2a(fh-ei)^2+bi(-2e^2i+ef(4h-2ix)+f^2x(4h+ix)))\log(c(e+fx))+2b^2(fh-ei)^2\log^2(c(e+fx))}{4bdf^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[((h + i*x)^2*(a + b*Log[c*(e + f*x)]))/(d*e + d*f*x),x]
```

```
[Out] (2*a^2*f^2*h^2 - 4*a^2*e*f*h*i + 2*a^2*e^2*i^2 + 8*a*b*f^2*h*i*x - 8*b^2*f^
2*h*i*x - 4*a*b*e*f*i^2*x + 6*b^2*e*f*i^2*x + 2*a*b*f^2*i^2*x^2 - b^2*f^2*i
^2*x^2 - 2*b^2*e^2*i^2*Log[e + f*x] + 2*b*(2*a*(f*h - e*i)^2 + b*i*(-2*e^2*
i + e*f*(4*h - 2*i*x) + f^2*x*(4*h + i*x)))*Log[c*(e + f*x)] + 2*b^2*(f*h -
 e*i)^2*Log[c*(e + f*x)]^2)/(4*b*d*f^3)
```

Maple [B] Leaf count of result is larger than twice the leaf count of optimal. 337 vs. 2(151) = 302.
time = 0.48, size = 338, normalized size = 2.15

method	result
norman	$\frac{(2ae^2i^2-4aefhi+2af^2h^2-3be^2i^2+4befhi)\ln(c(fx+e))}{2df^3}+\frac{b(e^2i^2-2efhi+f^2h^2)\ln(c(fx+e))^2}{2df^3}-\frac{i(2aei-4afh-3be}{2df^2}$
risch	$\frac{b\ln(c(fx+e))^2e^2i^2}{2df^3}-\frac{b\ln(c(fx+e))^2ehi}{df^2}+\frac{b\ln(c(fx+e))^2h^2}{2df}-\frac{bix(-fix+2ei-4fh)\ln(c(fx+e))}{2df^2}+\frac{ai^2x^2}{2df}-\frac{bi^2}{4a}$
derivativedivides	$\frac{ca\,e^2i^2\ln(cfx+ce)}{f^2d}-\frac{2caehi\ln(cfx+ce)}{fd}+\frac{ca\,h^2\ln(cfx+ce)}{d}-\frac{2ae\,i^2(cfx+ce)}{f^2d}+\frac{2ahi(cfx+ce)}{fd}+\frac{a\,i^2(cfx+ce)^2}{2cf^2d}+\frac{cb\,e^2i^2\ln(cfx+ce)^2}{2f^2d}$
default	$\frac{ca\,e^2i^2\ln(cfx+ce)}{f^2d}-\frac{2caehi\ln(cfx+ce)}{fd}+\frac{ca\,h^2\ln(cfx+ce)}{d}-\frac{2ae\,i^2(cfx+ce)}{f^2d}+\frac{2ahi(cfx+ce)}{fd}+\frac{a\,i^2(cfx+ce)^2}{2cf^2d}+\frac{cb\,e^2i^2\ln(cfx+ce)^2}{2f^2d}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((i*x+h)^2*(a+b*ln(c*(f*x+e)))/(d*f*x+d*e),x,method=_RETURNVERBOSE)
```

```
[Out] 1/c/f*(c/f^2/d*a*e^2*i^2*ln(c*f*x+c*e)-2*c/f/d*a*e*h*i*ln(c*f*x+c*e)+c/d*a*
h^2*ln(c*f*x+c*e)-2/f^2/d*a*e*i^2*(c*f*x+c*e)+2/f/d*a*h*i*(c*f*x+c*e)+1/2/c
/f^2/d*a*i^2*(c*f*x+c*e)^2+1/2*c/f^2/d*b*e^2*i^2*ln(c*f*x+c*e)^2-c/f/d*b*e*
h*i*ln(c*f*x+c*e)^2+1/2*c/d*b*h^2*ln(c*f*x+c*e)^2-2/f^2/d*b*e*i^2*((c*f*x+c
*e)*ln(c*f*x+c*e)-c*f*x-c*e)+2/f/d*b*h*i*((c*f*x+c*e)*ln(c*f*x+c*e)-c*f*x-c
*e)+1/c/f^2/d*b*i^2*(1/2*(c*f*x+c*e)^2*ln(c*f*x+c*e)-1/4*(c*f*x+c*e)^2))
```

Maxima [B] Both result and optimal contain complex but leaf count of result is larger than twice the leaf count of optimal. 360 vs. 2(155) = 310.
time = 0.33, size = 360, normalized size = 2.29

$$-\frac{1}{2}bh^2\left(\frac{2\log(cfx+ce)\log(dfx+de)}{df}-\frac{\log(fx+e)^2+2\log(fx+e)\log(c)}{df}\right)+2i\,bh\left(\frac{x}{df}-\frac{e\log(fx+e)}{df^2}\right)\log(cfx+ce)+2i\,ah\left(\frac{x}{df}-\frac{e\log(fx+e)}{df^2}\right)-\frac{1}{2}b\left(\frac{fx^2-2xe}{df^2}+\frac{2e^2\log(fx+e)}{df^3}\right)\log(cfx+ce)+\frac{bh^2\log(cfx+ce)\log(dfx+de)}{df}-\frac{1}{2}a\left(\frac{fx^2-2xe}{df^2}+\frac{2e^2\log(fx+e)}{df^3}\right)+\frac{ah^2\log(dfx+de)}{df}+\frac{i\left(e\log(fx+e)^2-2fx+2e\log(fx+e)\right)bh}{df^2}+\frac{\left(f^2x^2-6fxe+2e^2\log(fx+e)^2+6e^2\log(fx+e)\right)b}{4df^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^2*(a+b*log(c*(f*x+e)))/(d*f*x+d*e),x, algorithm="maxima")
```

```
[Out] -1/2*b*h^2*(2*log(c*f*x + c*e)*log(d*f*x + d*e)/(d*f) - (log(f*x + e)^2 + 2
*log(f*x + e)*log(c))/(d*f)) + 2*I*b*h*(x/(d*f) - e*log(f*x + e)/(d*f^2))*l
og(c*f*x + c*e) + 2*I*a*h*(x/(d*f) - e*log(f*x + e)/(d*f^2)) - 1/2*b*((f*x^
2 - 2*x*e)/(d*f^2) + 2*e^2*log(f*x + e)/(d*f^3))*log(c*f*x + c*e) + b*h^2*l
og(c*f*x + c*e)*log(d*f*x + d*e)/(d*f) - 1/2*a*((f*x^2 - 2*x*e)/(d*f^2) + 2
*e^2*log(f*x + e)/(d*f^3)) + a*h^2*log(d*f*x + d*e)/(d*f) + I*(e*log(f*x +
e)^2 - 2*f*x + 2*e*log(f*x + e))*b*h/(d*f^2) + 1/4*(f^2*x^2 - 6*f*x*e + 2*e
^2*log(f*x + e)^2 + 6*e^2*log(f*x + e))*b/(d*f^3)
```

Fricas [A]
time = 0.39, size = 156, normalized size = 0.99

$$-\frac{8\,(-i\,a+i\,b)f^2hx+(2\,a-b)f^2x^2-2\,(2\,a-3\,b)fxe-2\,(bf^2h^2-2i\,bfhe-be^2)\log\left(cfx+ce\right)^2-2\,(2\,af^2h^2+4i\,bf^2hx-bf^2x^2-(2\,a-3\,b)e^2-2\,(2\,(i\,a-i\,b)fh-bfx)e)\log\left(cfx+ce\right)}{4\,df^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^2*(a+b*log(c*(f*x+e)))/(d*f*x+d*e),x, algorithm="fricas")
```

```
[Out] -1/4*(8*(-I*a + I*b)*f^2*h*x + (2*a - b)*f^2*x^2 - 2*(2*a - 3*b)*f*x*e - 2*
(b*f^2*h^2 - 2*I*b*f*h*e - b*e^2)*log(c*f*x + c*e)^2 - 2*(2*a*f^2*h^2 + 4*I
*b*f^2*h*x - b*f^2*x^2 - (2*a - 3*b)*e^2 - 2*(2*(I*a - I*b)*f*h - b*f*x)*e)
*log(c*f*x + c*e))/(d*f^3)
```

Sympy [A]
time = 0.44, size = 226, normalized size = 1.44

$$x^2\left(\frac{ai^2}{2df}-\frac{bi^2}{4df}\right)+x\left(-\frac{aei^2}{df^2}+\frac{2ahi}{df}+\frac{3bei^2}{2df^2}-\frac{2bhi}{df}\right)+\frac{(-2bei^2x+4bfhix+bfi^2x^2)\log\left(c(e+fx)\right)}{2df^2}+\frac{(be^2i^2-2befhi+bf^2h^2)\log\left(c(e+fx)\right)^2}{2df^3}+\frac{(2ae^2i^2-4aefhi+2af^2h^2-3be^2i^2+4befhi)\log\left(e+fx\right)}{2df^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)**2*(a+b*ln(c*(f*x+e)))/(d*f*x+d*e),x)
```

```
[Out] x**2*(a*i**2/(2*d*f) - b*i**2/(4*d*f)) + x*(-a*e*i**2/(d*f**2) + 2*a*h*i/(d
*f) + 3*b*e*i**2/(2*d*f**2) - 2*b*h*i/(d*f)) + (-2*b*e*i**2*x + 4*b*f*h*i*x
 + b*f*i**2*x**2)*log(c*(e + f*x))/(2*d*f**2) + (b*e**2*i**2 - 2*b*e*f*h*i
+ b*f**2*h**2)*log(c*(e + f*x))**2/(2*d*f**3) + (2*a*e**2*i**2 - 4*a*e*f*h*
i + 2*a*f**2*h**2 - 3*b*e**2*i**2 + 4*b*e*f*h*i)*log(e + f*x)/(2*d*f**3)
```

Giac [A]
time = 5.30, size = 235, normalized size = 1.50

$$\frac{2\,bf^2h^2\log\left(cfx+ce\right)^2+8i\,bf^2hx\log\left(cfx+ce\right)-2\,bf^2x^2\log\left(cfx+ce\right)-4i\,bfhe\log\left(cfx+ce\right)^2+4\,af^2h^2\log\left(fx+e\right)+8i\,af^2hx-8i\,bf^2hx-2\,af^2x^2+bf^2x^2+4\,bfxe\log\left(cfx+ce\right)-8i\,afhe\log\left(fx+e\right)+8i\,bfhe\log\left(fx+e\right)+4\,afxe-6\,bfxe-2\,be^2\log\left(cfx+ce\right)^2-4\,ae^2\log\left(fx+e\right)+6\,be^2\log\left(fx+e\right)}{4\,df^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^2*(a+b*log(c*(f*x+e)))/(d*f*x+d*e),x, algorithm="giac")
```

```
[Out] 1/4*(2*b*f^2*h^2*log(c*f*x + c*e)^2 + 8*I*b*f^2*h*x*log(c*f*x + c*e) - 2*b*
f^2*x^2*log(c*f*x + c*e) - 4*I*b*f*h*e*log(c*f*x + c*e)^2 + 4*a*f^2*h^2*log
(f*x + e) + 8*I*a*f^2*h*x - 8*I*b*f^2*h*x - 2*a*f^2*x^2 + b*f^2*x^2 + 4*b*f
*x*e*log(c*f*x + c*e) - 8*I*a*f*h*e*log(f*x + e) + 8*I*b*f*h*e*log(f*x + e)
 + 4*a*f*x*e - 6*b*f*x*e - 2*b*e^2*log(c*f*x + c*e)^2 - 4*a*e^2*log(f*x + e
) + 6*b*e^2*log(f*x + e))/(d*f^3)
```

Mupad [B]
time = 0.35, size = 208, normalized size = 1.32

$$x\left(\frac{i\,(2\,a\,f\,h+b\,e\,i-2\,b\,f\,h)}{d\,f^2}-\frac{e\,i^2\,(2\,a-b)}{2\,d\,f^2}\right)+f\,\ln\left(c\,(e+f\,x)\right)\,\left(\frac{b\,i^2\,x^2}{2\,d\,f^2}-\frac{b\,i\,x\,(e\,i-2\,f\,h)}{d\,f^3}\right)+\frac{\ln\left(e+f\,x\right)\,\left(2\,a\,e^2\,i^2+2\,a\,f^2\,h^2-3\,b\,e^2\,i^2-4\,a\,e\,f\,h\,i+4\,b\,e\,f\,h\,i\right)}{2\,d\,f^3}+\frac{b\ln\left(c\,(e+f\,x)\right)^2\,\left(e^2\,i^2-2\,e\,f\,h\,i+f^2\,h^2\right)}{2\,d\,f^3}+\frac{i^2\,x^2\,(2\,a-b)}{4\,d\,f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((h + i*x)^2*(a + b*log(c*(e + f*x))))/(d*e + d*f*x),x)
```

```
[Out] x*((i*(2*a*f*h + b*e*i - 2*b*f*h))/(d*f^2) - (e*i^2*(2*a - b))/(2*d*f^2)) +
 f*log(c*(e + f*x))*((b*i^2*x^2)/(2*d*f^2) - (b*i*x*(e*i - 2*f*h))/(d*f^3))
 + (log(e + f*x)*(2*a*e^2*i^2 + 2*a*f^2*h^2 - 3*b*e^2*i^2 - 4*a*e*f*h*i + 4
*b*e*f*h*i))/(2*d*f^3) + (b*log(c*(e + f*x))^2*(e^2*i^2 + f^2*h^2 - 2*e*f*h
*i))/(2*d*f^3) + (i^2*x^2*(2*a - b))/(4*d*f)
```

3.178 $\int \frac{(h+ix)(a+b\log(c(e+fx)))}{de+dfx}\,dx$

Optimal. Leaf size=79

$$\frac{aix}{df}-\frac{bix}{df}+\frac{bi(e+fx)\log(c(e+fx))}{df^2}+\frac{(fh-ei)(a+b\log(c(e+fx)))^2}{2bdf^2}$$

```
[Out] a*i*x/d/f-b*i*x/d/f+b*i*(f*x+e)*ln(c*(f*x+e))/d/f^2+1/2*(-e*i+f*h)*(a+b*ln(
c*(f*x+e)))^2/b/d/f^2
```

Rubi [A]
time = 0.09, antiderivative size = 79, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.179, Rules used = {2458, 12, 2388, 2338, 2332}

$$\frac{(fh-ei)(a+b\log(c(e+fx)))^2}{2bdf^2}+\frac{aix}{df}+\frac{bi(e+fx)\log(c(e+fx))}{df^2}-\frac{bix}{df}$$

Antiderivative was successfully verified.

```
[In] Int[((h + i*x)*(a + b*Log[c*(e + f*x)]))/(d*e + d*f*x),x]
```

```
[Out] (a*i*x)/(d*f) - (b*i*x)/(d*f) + (b*i*(e + f*x)*Log[c*(e + f*x)])/(d*f^2) +
((f*h - e*i)*(a + b*Log[c*(e + f*x)])^2)/(2*b*d*f^2)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 2332

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2338

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2388

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.))
/(x_), x_Symbol] :> Dist[d, Int[(d + e*x)^(q - 1)*((a + b*Log[c*x^n])^p/x),
 x], x] + Dist[e, Int[(d + e*x)^(q - 1)*(a + b*Log[c*x^n])^p, x], x] /; Fre
eQ[{a, b, c, d, e, n}, x] && IGtQ[p, 0] && GtQ[q, 0] && IntegerQ[2*q]
```

Rule 2458

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[(g*(x/e))^q*((e*h - d*i)/e + i*(x/e))^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rubi steps

$$\int \frac{(h+178x)(a+b\log(c(e+fx)))}{de+dfx}\,dx = \frac{\text{Subst}\left(\int \frac{\left(\frac{-178e+fh}{f}+\frac{178x}{f}\right)(a+b\log(cx))}{dx}\,dx,x,e+fx\right)}{f}$$

$$= \frac{\text{Subst}\left(\int \frac{\left(\frac{-178e+fh}{f}+\frac{178x}{f}\right)(a+b\log(cx))}{x}\,dx,x,e+fx\right)}{df}$$

$$= \frac{178\text{Subst}(\int(a+b\log(cx))\,dx,x,e+fx)}{df^2} - \frac{(178e-fh)\text{Subst}\left(\int \frac{a}{\ldots}\right.}{d\ldots}$$

$$= \frac{178ax}{df} - \frac{(178e-fh)(a+b\log(c(e+fx)))^2}{2bdf^2} + \frac{(178b)\text{Subst}(\int \log\ldots}{df\ldots}$$

$$= \frac{178ax}{df} - \frac{178bx}{df} + \frac{178b(e+fx)\log(c(e+fx))}{df^2} - \frac{(178e-fh)(a+\ldots}{2\ldots}$$

Mathematica [A]
time = 0.04, size = 66, normalized size = 0.84

$$\frac{2afix-2bfix+2bi(e+fx)\log(c(e+fx))+\frac{(fh-ei)(a+b\log(c(e+fx)))^2}{b}}{2df^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((h + i*x)*(a + b*Log[c*(e + f*x)]))/(d*e + d*f*x),x]
```

```
[Out] (2*a*f*i*x - 2*b*f*i*x + 2*b*i*(e + f*x)*Log[c*(e + f*x)] + ((f*h - e*i)*(a
 + b*Log[c*(e + f*x)])^2)/b)/(2*d*f^2)
```

Maple [A]
time = 0.39, size = 142, normalized size = 1.80

method	result
norman	$\frac{i(a-b)x}{df}+\frac{bix\ln(c(fx+e))}{df}-\frac{(aei-afh-bei)\ln(c(fx+e))}{d\,f^2}-\frac{b(ei-fh)\ln(c(fx+e))^2}{2d\,f^2}$

risch	$-\frac{b\ln(c(fx+e))^2 ei}{2d\,f^2}+\frac{b\ln(c(fx+e))^2 h}{2df}+\frac{bix\ln(c(fx+e))}{df}-\frac{\ln(fx+e)aei}{d\,f^2}+\frac{\ln(fx+e)ah}{df}+\frac{\ln(fx+e)bei}{d\,f^2}+\frac{aix}{df}$
derivativedivides	$\frac{-\frac{acei\ln(cfx+ce)}{fd}+\frac{ahc\ln(cfx+ce)}{d}+\frac{ai(cfx+ce)}{fd}-\frac{bcei\ln(cfx+ce)^2}{2fd}+\frac{bhc\ln(cfx+ce)^2}{2d}+\frac{bi((cfx+ce)\ln(cfx+ce)-cfx-ce)}{fd}}{cf}$
default	$\frac{-\frac{acei\ln(cfx+ce)}{fd}+\frac{ahc\ln(cfx+ce)}{d}+\frac{ai(cfx+ce)}{fd}-\frac{bcei\ln(cfx+ce)^2}{2fd}+\frac{bhc\ln(cfx+ce)^2}{2d}+\frac{bi((cfx+ce)\ln(cfx+ce)-cfx-ce)}{fd}}{cf}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((i*x+h)*(a+b*ln(c*(f*x+e)))/(d*f*x+d*e),x,method=_RETURNVERBOSE)
```

```
[Out] 1/c/f*(-1/f/d*a*c*e*i*ln(c*f*x+c*e)+1/d*a*h*c*ln(c*f*x+c*e)+1/f/d*a*i*(c*f*
x+c*e)-1/2/f/d*b*c*e*i*ln(c*f*x+c*e)^2+1/2/d*b*h*c*ln(c*f*x+c*e)^2+1/f/d*b*
i*((c*f*x+c*e)*ln(c*f*x+c*e)-c*f*x-c*e))
```

Maxima [B] Both result and optimal contain complex but leaf count of result is larger than twice the leaf count of optimal. 216 vs. $2(79) = 158$.
time = 0.33, size = 216, normalized size = 2.73

$$-\frac{1}{2}\,bh\left(\frac{2\,\log\left(cfx+ce\right)\log\left(dfx+de\right)}{df}-\frac{\log\left(fx+e\right)^2+2\,\log\left(fx+e\right)\log\left(c\right)}{df}\right)+i\,b\left(\frac{x}{df}-\frac{e\log\left(fx+e\right)}{df^2}\right)\log\left(cfx+ce\right)+i\,a\left(\frac{x}{df}-\frac{e\log\left(fx+e\right)}{df^2}\right)+\frac{bh\log\left(cfx+ce\right)\log\left(dfx+de\right)}{df}+\frac{ah\log\left(dfx+de\right)}{df}+\frac{i\left(e\log\left(fx+e\right)^2-2\,fx+2\,e\log\left(fx+e\right)\right)b}{2\,df^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)*(a+b*log(c*(f*x+e)))/(d*f*x+d*e),x, algorithm="maxima")
```

```
[Out] -1/2*b*h*(2*log(c*f*x + c*e)*log(d*f*x + d*e)/(d*f) - (log(f*x + e)^2 + 2*l
og(f*x + e)*log(c))/(d*f)) + I*b*(x/(d*f) - e*log(f*x + e)/(d*f^2))*log(c*f
*x + c*e) + I*a*(x/(d*f) - e*log(f*x + e)/(d*f^2)) + b*h*log(c*f*x + c*e)*l
og(d*f*x + d*e)/(d*f) + a*h*log(d*f*x + d*e)/(d*f) + 1/2*I*(e*log(f*x + e)^
2 - 2*f*x + 2*e*log(f*x + e))*b/(d*f^2)
```

Fricas [A]
time = 0.38, size = 77, normalized size = 0.97

$$-\frac{2\left(-i\,a+i\,b\right)fx-\left(bfh-i\,be\right)\log\left(cfx+ce\right)^2-2\left(afh+i\,bfx-\left(i\,a-i\,b\right)e\right)\log\left(cfx+ce\right)}{2\,df^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)*(a+b*log(c*(f*x+e)))/(d*f*x+d*e),x, algorithm="fricas")
```

```
[Out] -1/2*(2*(-I*a + I*b)*f*x - (b*f*h - I*b*e)*log(c*f*x + c*e)^2 - 2*(a*f*h +
I*b*f*x - (I*a - I*b)*e)*log(c*f*x + c*e))/(d*f^2)
```

Sympy [A]
time = 0.22, size = 85, normalized size = 1.08

$$\frac{bix\log\left(c(e+fx)\right)}{df}+x\left(\frac{ai}{df}-\frac{bi}{df}\right)+\frac{\left(-bei+bfh\right)\log\left(c(e+fx)\right)^2}{2df^2}-\frac{\left(aei-afh-bei\right)\log\left(e+fx\right)}{df^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)*(a+b*ln(c*(f*x+e)))/(d*f*x+d*e),x)
```

```
[Out] b*i*x*log(c*(e + f*x))/(d*f) + x*(a*i/(d*f) - b*i/(d*f)) + (-b*e*i + b*f*h)
*log(c*(e + f*x))**2/(2*d*f**2) - (a*e*i - a*f*h - b*e*i)*log(e + f*x)/(d*f
**2)
```

Giac [A]
time = 5.47, size = 103, normalized size = 1.30

$$\frac{bfh\log\left(cfx+ce\right)^2+2ibfx\log\left(cfx+ce\right)-ibe\log\left(cfx+ce\right)^2+2afh\log\left(fx+e\right)+2iafx-2ibfx-2iae\log\left(fx+e\right)+2ibe\log\left(fx+e\right)}{2\,df^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)*(a+b*log(c*(f*x+e)))/(d*f*x+d*e),x, algorithm="giac")
```

```
[Out] 1/2*(b*f*h*log(c*f*x + c*e)^2 + 2*I*b*f*x*log(c*f*x + c*e) - I*b*e*log(c*f*
x + c*e)^2 + 2*a*f*h*log(f*x + e) + 2*I*a*f*x - 2*I*b*f*x - 2*I*a*e*log(f*x
 + e) + 2*I*b*e*log(f*x + e))/(d*f^2)
```

Mupad [B]
time = 0.64, size = 100, normalized size = 1.27

$$\frac{2\,a\,f\,i\,x-2\,b\,f\,i\,x-b\,e\,i\ln\left(c\,e+c\,f\,x\right)^2+b\,f\,h\ln\left(c\,e+c\,f\,x\right)^2-2\,a\,e\,i\,\ln\left(e+f\,x\right)+2\,a\,f\,h\,\ln\left(e+f\,x\right)+2\,b\,e\,i\,\ln\left(e+f\,x\right)+2\,b\,f\,i\,x\,\ln\left(c\,e+c\,f\,x\right)}{2\,d\,f^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((h + i*x)*(a + b*log(c*(e + f*x))))/(d*e + d*f*x),x)
```

```
[Out] (2*a*f*i*x - 2*b*f*i*x - b*e*i*log(c*e + c*f*x)^2 + b*f*h*log(c*e + c*f*x)^
2 - 2*a*e*i*log(e + f*x) + 2*a*f*h*log(e + f*x) + 2*b*e*i*log(e + f*x) + 2*
b*f*i*x*log(c*e + c*f*x))/(2*d*f^2)
```

3.179 $\int \frac{a+b\log(c(e+fx))}{de+dfx}\,dx$

Optimal. Leaf size=27

$$\frac{(a+b\log(c(e+fx)))^2}{2bdf}$$

```
[Out] 1/2*(a+b*ln(c*(f*x+e)))^2/b/d/f
```

Rubi [A]
time = 0.03, antiderivative size = 27, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.130$, Rules used = {2437, 12, 2338}

$$\frac{(a+b\log(c(e+fx)))^2}{2bdf}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(e + f*x)])/(d*e + d*f*x),x]
```

```
[Out] (a + b*Log[c*(e + f*x)])^2/(2*b*d*f)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 2338

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2437

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[(f*(x/d))^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rubi steps

$$\int \frac{a+b\log(c(e+fx))}{de+dfx}\,dx = \frac{\text{Subst}\left(\int \frac{a+b\log(cx)}{dx}\,dx, x, e+fx\right)}{f}$$
$$= \frac{\text{Subst}\left(\int \frac{a+b\log(cx)}{x}\,dx, x, e+fx\right)}{df}$$
$$= \frac{(a+b\log(c(e+fx)))^2}{2bdf}$$

Mathematica [A]
time = 0.00, size = 27, normalized size = 1.00

$$\frac{(a+b\log(c(e+fx)))^2}{2bdf}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(e + f*x)])/(d*e + d*f*x),x]
```

```
[Out] (a + b*Log[c*(e + f*x)])^2/(2*b*d*f)
```

Maple [A]
time = 0.29, size = 42, normalized size = 1.56

method	result	size
risch	$\frac{b\ln(c(fx+e))^2}{2df}+\frac{a\ln(fx+e)}{df}$	35
norman	$\frac{a\ln(c(fx+e))}{df}+\frac{b\ln(c(fx+e))^2}{2df}$	37
derivativedivides	$\frac{\frac{ca\ln(cfx+ce)}{d}+\frac{cb\ln(cfx+ce)^2}{2d}}{cf}$	42
default	$\frac{\frac{ca\ln(cfx+ce)}{d}+\frac{cb\ln(cfx+ce)^2}{2d}}{cf}$	42

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(f*x+e)))/(d*f*x+d*e),x,method=_RETURNVERBOSE)
```

```
[Out] 1/c/f*(c/d*a*ln(c*f*x+c*e)+1/2*c/d*b*ln(c*f*x+c*e)^2)
```

Maxima [B] Leaf count of result is larger than twice the leaf count of optimal. 108 vs. 2(26) = 52.
time = 0.31, size = 108, normalized size = 4.00

$$-\frac{1}{2}b\left(\frac{2\log(cfx+ce)\log(dfx+de)}{df}-\frac{\log(fx+e)^2+2\log(fx+e)\log(c)}{df}\right)+\frac{b\log(cfx+ce)\log(dfx+de)}{df}+\frac{a\log(dfx+de)}{df}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(f*x+e)))/(d*f*x+d*e),x, algorithm="maxima")
```

```
[Out] -1/2*b*(2*log(c*f*x + c*e)*log(d*f*x + d*e)/(d*f) - (log(f*x + e)^2 + 2*log
(f*x + e)*log(c))/(d*f)) + b*log(c*f*x + c*e)*log(d*f*x + d*e)/(d*f) + a*lo
g(d*f*x + d*e)/(d*f)
```

Fricas [A]
time = 0.37, size = 36, normalized size = 1.33

$$\frac{b\log\left(cfx+ce\right)^2+2\,a\log\left(cfx+ce\right)}{2\,df}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(f*x+e)))/(d*f*x+d*e),x, algorithm="fricas")
```

```
[Out] 1/2*(b*log(c*f*x + c*e)^2 + 2*a*log(c*f*x + c*e))/(d*f)
```

Sympy [A]
time = 0.09, size = 31, normalized size = 1.15

$$\frac{a\log\left(de+dfx\right)}{df}+\frac{b\log\left(c(e+fx)\right)^2}{2df}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(f*x+e)))/(d*f*x+d*e),x)
```

```
[Out] a*log(d*e + d*f*x)/(d*f) + b*log(c*(e + f*x))**2/(2*d*f)
```

Giac [A]
time = 3.63, size = 33, normalized size = 1.22

$$\frac{b\log\left(cfx+ce\right)^2+2\,a\log\left(fx+e\right)}{2\,df}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(f*x+e)))/(d*f*x+d*e),x, algorithm="giac")
```

```
[Out] 1/2*(b*log(c*f*x + c*e)^2 + 2*a*log(f*x + e))/(d*f)
```

Mupad [B]
time = 0.35, size = 31, normalized size = 1.15

$$\frac{b\ln\left(c\,e+c\,f\,x\right)^2+2\,a\,\ln\left(e+f\,x\right)}{2\,d\,f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(e + f*x)))/(d*e + d*f*x),x)
```

```
[Out] (2*a*log(e + f*x) + b*log(c*e + c*f*x)^2)/(2*d*f)
```

3.180 $\int \frac{a+b\log(c(e+fx))}{(de+dfx)(h+ix)}\,dx$

Optimal. Leaf size=87

$$-\frac{(a+b\log(c(e+fx)))\log\left(1+\frac{fh-ei}{i(e+fx)}\right)}{d(fh-ei)}+\frac{b\text{Li}_2\left(-\frac{fh-ei}{i(e+fx)}\right)}{d(fh-ei)}$$

```
[Out] -(a+b*ln(c*(f*x+e)))*ln(1+(-e*i+f*h)/i/(f*x+e))/d/(-e*i+f*h)+b*polylog(2,(e
*i-f*h)/i/(f*x+e))/d/(-e*i+f*h)
```

Rubi [A]
time = 0.12, antiderivative size = 87, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}} = 0.133$, Rules used = {2458, 12, 2379, 2438}

$$\frac{b\text{PolyLog}\left(2,-\frac{fh-ei}{i(e+fx)}\right)}{d(fh-ei)}-\frac{\log\left(\frac{fh-ei}{i(e+fx)}+1\right)(a+b\log(c(e+fx)))}{d(fh-ei)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(e + f*x)])/((d*e + d*f*x)*(h + i*x)),x]
```

```
[Out] -(((a + b*Log[c*(e + f*x)])*Log[1 + (f*h - e*i)/(i*(e + f*x))])/(d*(f*h - e
*i))) + (b*PolyLog[2, -((f*h - e*i)/(i*(e + f*x)))])/(d*(f*h - e*i))
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 2379

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((x_)*((d_) + (e_.)*(x_)^(r
_.))), x_Symbol] :> Simp[(-Log[1 + d/(e*x^r)])*((a + b*Log[c*x^n])^p/(d*r))
, x] + Dist[b*n*(p/(d*r)), Int[Log[1 + d/(e*x^r)]*((a + b*Log[c*x^n])^(p -
1)/x), x], x] /; FreeQ[{a, b, c, d, e, n, r}, x] && IGtQ[p, 0]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2458

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
```

```
[(g*(x/e))^q*((e*h - d*i)/e + i*(x/e))^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rubi steps

$$\int \frac{a+b\log(c(e+fx))}{(h+180x)(de+dfx)}\,dx = \frac{\text{Subst}\left(\int \frac{a+b\log(cx)}{dx\left(\frac{-180e+fh}{f}+\frac{180x}{f}\right)}\,dx, x, e+fx\right)}{f}$$

$$= \frac{\text{Subst}\left(\int \frac{a+b\log(cx)}{x\left(\frac{-180e+fh}{f}+\frac{180x}{f}\right)}\,dx, x, e+fx\right)}{df}$$

$$= -\frac{\text{Subst}\left(\int \frac{a+b\log(cx)}{x}\,dx, x, e+fx\right)}{d(180e-fh)} + \frac{180\text{Subst}\left(\int \frac{a+b\log(cx)}{\frac{-180e+fh}{f}+\frac{180x}{f}}\,dx, x, e+f\right.}{df(180e-fh)}$$

$$= \frac{\log\left(-\frac{f(h+180x)}{180e-fh}\right)(a+b\log(c(e+fx)))}{d(180e-fh)} - \frac{(a+b\log(c(e+fx)))^2}{2bd(180e-fh)} - \frac{b\text{Subst}}{}$$

$$= \frac{\log\left(-\frac{f(h+180x)}{180e-fh}\right)(a+b\log(c(e+fx)))}{d(180e-fh)} - \frac{(a+b\log(c(e+fx)))^2}{2bd(180e-fh)} + \frac{b\text{Li}_2\left(\frac{18}{1}\right.}{d(180e}$$

Mathematica [A]
time = 0.05, size = 91, normalized size = 1.05

$$\frac{(a+b\log(c(e+fx)))\left(a+b\log(c(e+fx))-2b\log\left(\frac{f(h+ix)}{fh-ei}\right)\right)-2b^2\text{Li}_2\left(\frac{i(e+fx)}{-fh+ei}\right)}{2bd(fh-ei)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(e + f*x)])/((d*e + d*f*x)*(h + i*x)),x]
```

```
[Out] ((a + b*Log[c*(e + f*x)])*(a + b*Log[c*(e + f*x)] - 2*b*Log[(f*(h + i*x))/(
f*h - e*i)]) - 2*b^2*PolyLog[2, (i*(e + f*x))/(-(f*h) + e*i)])/(2*b*d*(f*h
- e*i))
```

Maple [B] Leaf count of result is larger than twice the leaf count of optimal. 214 vs. 2(86) = 172.
time = 1.08, size = 215, normalized size = 2.47

method	result

risch	$-\frac{a\ln(fx+e)}{d(ei-fh)}+\frac{a\ln(ix+h)}{d(ei-fh)}-\frac{b\ln(cfx+ce)^2}{2d(ei-fh)}+\frac{b\,\mathrm{dilog}\left(\frac{-cei+hcf+i(cfx+ce)}{-cei+hcf}\right)}{d(ei-fh)}+\frac{b\ln(cfx+ce)\ln\left(\frac{-cei+hcf+i(cfx+}{-cei+hcf}\right.}{d(ei-fh)}$
derivativedivides	$\frac{\frac{cfa\ln(cei-hcf-i(cfx+ce))}{d(ei-fh)}-\frac{cfa\ln(cfx+ce)}{d(ei-fh)}+\frac{cfb\,\mathrm{dilog}\left(\frac{-cei+hcf+i(cfx+ce)}{-cei+hcf}\right)}{d(ei-fh)}+\frac{cfb\ln(cfx+ce)\ln\left(\frac{-cei+hcf+i(cfx+ce)}{-cei+hcf}\right)}{d(ei-fh)}-\frac{cf}{}}{cf}$
default	$\frac{\frac{cfa\ln(cei-hcf-i(cfx+ce))}{d(ei-fh)}-\frac{cfa\ln(cfx+ce)}{d(ei-fh)}+\frac{cfb\,\mathrm{dilog}\left(\frac{-cei+hcf+i(cfx+ce)}{-cei+hcf}\right)}{d(ei-fh)}+\frac{cfb\ln(cfx+ce)\ln\left(\frac{-cei+hcf+i(cfx+ce)}{-cei+hcf}\right)}{d(ei-fh)}-\frac{cf}{}}{cf}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(f*x+e)))/(d*f*x+d*e)/(i*x+h),x,method=_RETURNVERBOSE)
```

```
[Out] 1/c/f*(c*f/d*a/(e*i-f*h)*ln(c*e*i-h*c*f-i*(c*f*x+c*e))-c*f/d*a/(e*i-f*h)*ln
(c*f*x+c*e)+c*f/d*b/(e*i-f*h)*dilog((-c*e*i+h*c*f+i*(c*f*x+c*e))/(-c*e*i+c*
f*h))+c*f/d*b/(e*i-f*h)*ln(c*f*x+c*e)*ln((-c*e*i+h*c*f+i*(c*f*x+c*e))/(-c*e
*i+c*f*h))-1/2*c*f/d*b*ln(c*f*x+c*e)^2/(e*i-f*h))
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(f*x+e)))/(d*f*x+d*e)/(i*x+h),x, algorithm="maxima")
```

```
[Out] a*(log(f*x + e)/(d*f*h - I*d*e) - log(h + I*x)/(d*f*h - I*d*e)) - b*integra
te((I*log(f*x + e) + I*log(c))/(d*f*x^2 - I*d*h*e + (-I*d*f*h + d*e)*x), x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(f*x+e)))/(d*f*x+d*e)/(i*x+h),x, algorithm="fricas")
```

```
[Out] integral((-I*b*log(c*f*x + c*e) - I*a)/(-I*d*f*h*x + d*f*x^2 + (-I*d*h + d*
x)*e), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{a}{eh+eix+fhx+fix^2}\,dx+\int \frac{b\log(ce+cfx)}{eh+eix+fhx+fix^2}\,dx}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(f*x+e)))/(d*f*x+d*e)/(i*x+h),x)
```

```
[Out] (Integral(a/(e*h + e*i*x + f*h*x + f*i*x**2), x) + Integral(b*log(c*e + c*f
*x)/(e*h + e*i*x + f*h*x + f*i*x**2), x))/d
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(f*x+e)))/(d*f*x+d*e)/(i*x+h),x, algorithm="giac")
```

```
[Out] integrate((b*log((f*x + e)*c) + a)/((d*f*x + d*e)*(h + I*x)), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{a+b\,\ln\left(c\,\left(e+f\,x\right)\right)}{\left(h+i\,x\right)\,\left(d\,e+d\,f\,x\right)} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(e + f*x)))/((h + i*x)*(d*e + d*f*x)),x)
```

```
[Out] int((a + b*log(c*(e + f*x)))/((h + i*x)*(d*e + d*f*x)), x)
```

3.181 $\int \frac{a+b\log(c(e+fx))}{(de+dfx)(h+ix)^2}\,dx$

Optimal. Leaf size=151

$$-\frac{i(e+fx)(a+b\log(c(e+fx)))}{d(fh-ei)^2(h+ix)}+\frac{bf\log(h+ix)}{d(fh-ei)^2}-\frac{f(a+b\log(c(e+fx)))\log\left(1+\frac{fh-ei}{i(e+fx)}\right)}{d(fh-ei)^2}+\frac{bf\text{Li}_2\left(-\frac{fh-ei}{i(e+fx)}\right)}{d(fh-ei)^2}$$

```
[Out] -i*(f*x+e)*(a+b*ln(c*(f*x+e)))/d/(-e*i+f*h)^2/(i*x+h)+b*f*ln(i*x+h)/d/(-e*i
+f*h)^2-f*(a+b*ln(c*(f*x+e)))*ln(1+(-e*i+f*h)/i/(f*x+e))/d/(-e*i+f*h)^2+b*f
*polylog(2,(e*i-f*h)/i/(f*x+e))/d/(-e*i+f*h)^2
```

Rubi [A]
time = 0.22, antiderivative size = 151, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 7, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}} = 0.233$, Rules used = {2458, 12, 2389, 2379, 2438, 2351, 31}

$$\frac{bf\text{PolyLog}\left(2,-\frac{fh-ei}{i(e+fx)}\right)}{d(fh-ei)^2}-\frac{f\log\left(\frac{fh-ei}{i(e+fx)}+1\right)(a+b\log(c(e+fx)))}{d(fh-ei)^2}-\frac{i(e+fx)(a+b\log(c(e+fx)))}{d(h+ix)(fh-ei)^2}+\frac{bf\log(h+ix)}{d(fh-ei)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(e + f*x)])/((d*e + d*f*x)*(h + i*x)^2),x]
```

```
[Out] -((i*(e + f*x)*(a + b*Log[c*(e + f*x)]))/(d*(f*h - e*i)^2*(h + i*x))) + (b*
f*Log[h + i*x])/(d*(f*h - e*i)^2) - (f*(a + b*Log[c*(e + f*x)])*Log[1 + (f*
h - e*i)/(i*(e + f*x))])/(d*(f*h - e*i)^2) + (b*f*PolyLog[2, -((f*h - e*i)/
(i*(e + f*x)))])/(d*(f*h - e*i)^2)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 2351

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_) + (e_.)*(x_)^(r_.))^(q_), x
_Symbol] :> Simp[x*(d + e*x^r)^(q + 1)*((a + b*Log[c*x^n])/d), x] - Dist[b*
(n/d), Int[(d + e*x^r)^(q + 1), x], x] /; FreeQ[{a, b, c, d, e, n, q, r}, x
] && EqQ[r*(q + 1) + 1, 0]
```

Rule 2379

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((x_)*((d_) + (e_.)*(x_)^(r
_.))), x_Symbol] :> Simp[(-Log[1 + d/(e*x^r)])*((a + b*Log[c*x^n])^p/(d*r))
, x] + Dist[b*n*(p/(d*r)), Int[Log[1 + d/(e*x^r)]*((a + b*Log[c*x^n])^(p -
1)/x), x], x] /; FreeQ[{a, b, c, d, e, n, r}, x] && IGtQ[p, 0]
```

Rule 2389

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_))/
(x_), x_Symbol] :> Dist[1/d, Int[(d + e*x)^(q + 1)*((a + b*Log[c*x^n])^p/x)
, x], x] - Dist[e/d, Int[(d + e*x)^q*(a + b*Log[c*x^n])^p, x], x] /; FreeQ[
{a, b, c, d, e, n}, x] && IGtQ[p, 0] && LtQ[q, -1] && IntegerQ[2*q]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2458

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[(g*(x/e))^q*((e*h - d*i)/e + i*(x/e))^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rubi steps

$$\int \frac{a+b\log(c(e+fx))}{(h+181x)^2(de+dfx)}\,dx = \frac{\text{Subst}\left(\int \frac{a+b\log(cx)}{dx\left(\frac{-181e+fh}{f}+\frac{181x}{f}\right)^2}\,dx, x, e+fx\right)}{f}$$

$$= \frac{\text{Subst}\left(\int \frac{a+b\log(cx)}{x\left(\frac{-181e+fh}{f}+\frac{181x}{f}\right)^2}\,dx, x, e+fx\right)}{df}$$

$$= -\frac{\text{Subst}\left(\int \frac{a+b\log(cx)}{x\left(\frac{-181e+fh}{f}+\frac{181x}{f}\right)}\,dx, x, e+fx\right)}{d(181e-fh)} + \frac{181\text{Subst}\left(\int \frac{a+b\log(cx)}{\left(\frac{-181e+fh}{f}+\frac{181x}{f}\right)^2}\,dx\right.}{df(181e-fh)}$$

$$= -\frac{181(e+fx)(a+b\log(c(e+fx)))}{d(181e-fh)^2(h+181x)} - \frac{181\text{Subst}\left(\int \frac{a+b\log(cx)}{\frac{-181e+fh}{f}+\frac{181x}{f}}\,dx, x, e+f\right.}{d(181e-fh)^2}$$

$$= \frac{bf\log(h+181x)}{d(181e-fh)^2} - \frac{181(e+fx)(a+b\log(c(e+fx)))}{d(181e-fh)^2(h+181x)} - \frac{f\log\left(-\frac{f(h+181x)}{181e-fh}\right)}{d(181}$$

$$= \frac{bf\log(h+181x)}{d(181e-fh)^2} - \frac{181(e+fx)(a+b\log(c(e+fx)))}{d(181e-fh)^2(h+181x)} - \frac{f\log\left(-\frac{f(h+181x)}{181e-fh}\right)}{d(181}$$

Mathematica [A]
time = 0.11, size = 141, normalized size = 0.93

$$\frac{\frac{2(fh-ei)(a+b\log(c(e+fx)))}{h+ix}+\frac{f(a+b\log(c(e+fx)))^2}{b}-2bf(\log(e+fx)-\log(h+ix))-2f(a+b\log(c(e+fx)))\log\left(\frac{f(h+ix)}{fh-ei}\right)-2bf\text{Li}_2\left(\frac{i(e+fx)}{-fh+ei}\right)}{2d(fh-ei)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(e + f*x)])/((d*e + d*f*x)*(h + i*x)^2),x]
```

```
[Out] ((2*(f*h - e*i)*(a + b*Log[c*(e + f*x)]))/(h + i*x) + (f*(a + b*Log[c*(e +
f*x)])^2)/b - 2*b*f*(Log[e + f*x] - Log[h + i*x]) - 2*f*(a + b*Log[c*(e + f
*x)])*Log[(f*(h + i*x))/(f*h - e*i)] - 2*b*f*PolyLog[2, (i*(e + f*x))/(-(f*
h) + e*i)])/(2*d*(f*h - e*i)^2)
```

Maple [B] Leaf count of result is larger than twice the leaf count of optimal. 371 vs. 2(150) = 300.
time = 1.18, size = 372, normalized size = 2.46

method	result

risch	$\frac{af\ln(fx+e)}{d(ei-fh)^2} - \frac{a}{d(ei-fh)(ix+h)} - \frac{af\ln(ix+h)}{d(ei-fh)^2} + \frac{bf\ln(-cei+hcf+i(cfx+ce))}{d(ei-fh)^2} - \frac{bcf^2 i\ln(cfx+ce)x}{d(ei-fh)^2(cfix+hcf)} - \frac{\cdots}{d(\cdots}$
derivativedivides	$\frac{\frac{c^2f^2a}{d(ei-fh)(cei-hcf-i(cfx+ce))} - \frac{cf^2a\ln(cei-hcf-i(cfx+ce))}{d(ei-fh)^2} + \frac{cf^2a\ln(cfx+ce)}{d(ei-fh)^2} - \frac{cf^2b\,\mathrm{dilog}\left(\frac{-cei+hcf+i(cfx+ce)}{-cei+hcf}\right)}{d(ei-fh)^2} - \frac{cf^2b\ln\cdots}{\cdots}}{cf}$
default	$\frac{\frac{c^2f^2a}{d(ei-fh)(cei-hcf-i(cfx+ce))} - \frac{cf^2a\ln(cei-hcf-i(cfx+ce))}{d(ei-fh)^2} + \frac{cf^2a\ln(cfx+ce)}{d(ei-fh)^2} - \frac{cf^2b\,\mathrm{dilog}\left(\frac{-cei+hcf+i(cfx+ce)}{-cei+hcf}\right)}{d(ei-fh)^2} - \frac{cf^2b\ln\cdots}{\cdots}}{cf}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(f*x+e)))/(d*f*x+d*e)/(i*x+h)^2,x,method=_RETURNVERBOSE)
```

```
[Out] 1/c/f*(c^2*f^2/d*a/(e*i-f*h)/(c*e*i-h*c*f-i*(c*f*x+c*e))-c*f^2/d*a/(e*i-f*h
)^2*ln(c*e*i-h*c*f-i*(c*f*x+c*e))+c*f^2/d*a/(e*i-f*h)^2*ln(c*f*x+c*e)-c*f^2
/d*b/(e*i-f*h)^2*dilog((-c*e*i+h*c*f+i*(c*f*x+c*e))/(-c*e*i+c*f*h))-c*f^2/d
*b/(e*i-f*h)^2*ln(c*f*x+c*e)*ln((-c*e*i+h*c*f+i*(c*f*x+c*e))/(-c*e*i+c*f*h)
)+c*f^2/d*b/(e*i-f*h)^2*ln(c*e*i-h*c*f-i*(c*f*x+c*e))+c*f^2/d*b/(e*i-f*h)^2
*i*ln(c*f*x+c*e)*(c*f*x+c*e)/(c*e*i-h*c*f-i*(c*f*x+c*e))+1/2*c*f^2/d*b*ln(c
*f*x+c*e)^2/(e*i-f*h)^2)
```

Maxima [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(f*x+e)))/(d*f*x+d*e)/(i*x+h)^2,x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError >> ECL says: THROW: The catch RAT-ERR is und
efined.
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(f*x+e)))/(d*f*x+d*e)/(i*x+h)^2,x, algorithm="fricas")
```

```
[Out] integral((b*log(c*f*x + c*e) + a)/(d*f*h^2*x + 2*I*d*f*h*x^2 - d*f*x^3 + (d
*h^2 + 2*I*d*h*x - d*x^2)*e), x)
```

Sympy [F(-1)] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(f*x+e)))/(d*f*x+d*e)/(i*x+h)**2,x)
```

```
[Out] Timed out
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(f*x+e)))/(d*f*x+d*e)/(i*x+h)^2,x, algorithm="giac")
```

```
[Out] integrate((b*log((f*x + e)*c) + a)/((d*f*x + d*e)*(h + I*x)^2), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{a+b\ln\left(c\left(e+f\,x\right)\right)}{{\left(h+i\,x\right)}^2\,\left(d\,e+d\,f\,x\right)} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(e + f*x)))/((h + i*x)^2*(d*e + d*f*x)),x)
```

```
[Out] int((a + b*log(c*(e + f*x)))/((h + i*x)^2*(d*e + d*f*x)), x)
```

3.182 $\int \frac{a+b\log(c(e+fx))}{(de+dfx)(h+ix)^3}\,dx$

Optimal. Leaf size=250

$$-\frac{bf}{2d(fh-ei)^2(h+ix)}-\frac{bf^2\log(e+fx)}{2d(fh-ei)^3}+\frac{a+b\log(c(e+fx))}{2d(fh-ei)(h+ix)^2}-\frac{fi(e+fx)(a+b\log(c(e+fx)))}{d(fh-ei)^3(h+ix)}+\frac{3bf^2\mathrm{l}}{2d(}$$

```
[Out] -1/2*b*f/d/(-e*i+f*h)^2/(i*x+h)-1/2*b*f^2*ln(f*x+e)/d/(-e*i+f*h)^3+1/2*(a+b
*ln(c*(f*x+e)))/d/(-e*i+f*h)/(i*x+h)^2-f*i*(f*x+e)*(a+b*ln(c*(f*x+e)))/d/(-
e*i+f*h)^3/(i*x+h)+3/2*b*f^2*ln(i*x+h)/d/(-e*i+f*h)^3-f^2*(a+b*ln(c*(f*x+e)
))*ln(1+(-e*i+f*h)/i/(f*x+e))/d/(-e*i+f*h)^3+b*f^2*polylog(2,(e*i-f*h)/i/(f
*x+e))/d/(-e*i+f*h)^3
```

Rubi [A]
time = 0.37, antiderivative size = 250, normalized size of antiderivative = 1.00, number of steps used = 11, number of rules used = 9, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}} = 0.300$, Rules used = {2458, 12, 2389, 2379, 2438, 2351, 31, 2356, 46}

$$\frac{bf^2\text{PolyLog}\left(2,-\frac{fh-ei}{i(e+fx)}\right)}{d(fh-ei)^3}-\frac{f^2\log\left(\frac{fh-ei}{i(e+fx)}+1\right)(a+b\log(c(e+fx)))}{d(fh-ei)^3}-\frac{fi(e+fx)(a+b\log(c(e+fx)))}{d(h+ix)(fh-ei)^3}+\frac{a+b\log(c(e+fx))}{2d(h+ix)^2(fh-ei)}-\frac{bf^2\log(e+fx)}{2d(fh-ei)^3}+\frac{3bf^2\log(h+ix)}{2d(fh-ei)^3}-\frac{bf}{2d(h+ix)(fh-ei)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(e + f*x)])/((d*e + d*f*x)*(h + i*x)^3),x]
```

```
[Out] -1/2*(b*f)/(d*(f*h - e*i)^2*(h + i*x)) - (b*f^2*Log[e + f*x])/(2*d*(f*h - e
*i)^3) + (a + b*Log[c*(e + f*x)])/(2*d*(f*h - e*i)*(h + i*x)^2) - (f*i*(e +
 f*x)*(a + b*Log[c*(e + f*x)]))/(d*(f*h - e*i)^3*(h + i*x)) + (3*b*f^2*Log[
h + i*x])/(2*d*(f*h - e*i)^3) - (f^2*(a + b*Log[c*(e + f*x)])*Log[1 + (f*h
- e*i)/(i*(e + f*x))])/(d*(f*h - e*i)^3) + (b*f^2*PolyLog[2, -((f*h - e*i)/
(i*(e + f*x)))])/(d*(f*h - e*i)^3)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 46

```
Int[((a_) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[E
xpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m +
```

```
 n + 2, 0])
```

Rule 2351

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_) + (e_.)*(x_)^(r_.))^(q_), x
_Symbol] :> Simp[x*(d + e*x^r)^(q + 1)*((a + b*Log[c*x^n])/d), x] - Dist[b*
(n/d), Int[(d + e*x^r)^(q + 1), x], x] /; FreeQ[{a, b, c, d, e, n, q, r}, x
] && EqQ[r*(q + 1) + 1, 0]
```

Rule 2356

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.),
x_Symbol] :> Simp[(d + e*x)^(q + 1)*((a + b*Log[c*x^n])^p/(e*(q + 1))), x]
- Dist[b*n*(p/(e*(q + 1))), Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^(p -
1))/x, x], x] /; FreeQ[{a, b, c, d, e, n, p, q}, x] && GtQ[p, 0] && NeQ[q,
-1] && (EqQ[p, 1] || (IntegersQ[2*p, 2*q] &&  !IGtQ[q, 0]) || (EqQ[p, 2] &&
 NeQ[q, 1]))
```

Rule 2379

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((x_)*((d_) + (e_.)*(x_)^(r
_.))), x_Symbol] :> Simp[(-Log[1 + d/(e*x^r)])*((a + b*Log[c*x^n])^p/(d*r))
, x] + Dist[b*n*(p/(d*r)), Int[Log[1 + d/(e*x^r)]*((a + b*Log[c*x^n])^(p -
1)/x), x], x] /; FreeQ[{a, b, c, d, e, n, r}, x] && IGtQ[p, 0]
```

Rule 2389

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_))/
(x_), x_Symbol] :> Dist[1/d, Int[(d + e*x)^(q + 1)*((a + b*Log[c*x^n])^p/x)
, x], x] - Dist[e/d, Int[(d + e*x)^q*(a + b*Log[c*x^n])^p, x], x] /; FreeQ[
{a, b, c, d, e, n}, x] && IGtQ[p, 0] && LtQ[q, -1] && IntegerQ[2*q]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2458

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[(g*(x/e))^q*((e*h - d*i)/e + i*(x/e))^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rubi steps

$$\int \frac{a+b\log(c(e+fx))}{(h+182x)^3(de+dfx)}\,dx = \frac{\text{Subst}\left(\int \frac{a+b\log(cx)}{dx\left(\frac{-182e+fh}{f}+\frac{182x}{f}\right)^3}\,dx, x, e+fx\right)}{f}$$

$$= \frac{\text{Subst}\left(\int \frac{a+b\log(cx)}{x\left(\frac{-182e+fh}{f}+\frac{182x}{f}\right)^3}\,dx, x, e+fx\right)}{df}$$

$$= -\frac{\text{Subst}\left(\int \frac{a+b\log(cx)}{x\left(\frac{-182e+fh}{f}+\frac{182x}{f}\right)^2}\,dx, x, e+fx\right)}{d(182e-fh)} + \frac{182\text{Subst}\left(\int \frac{a+b\log(cx)}{\left(\frac{-182e+fh}{f}+\frac{182x}{f}\right)^3}\right.}{df(182e-fh}$$

$$= -\frac{a+b\log(c(e+fx))}{2d(182e-fh)(h+182x)^2} - \frac{182\text{Subst}\left(\int \frac{a+b\log(cx)}{\left(\frac{-182e+fh}{f}+\frac{182x}{f}\right)^2}\,dx, x, e+fx\right)}{d(182e-fh)^2}$$

$$= -\frac{a+b\log(c(e+fx))}{2d(182e-fh)(h+182x)^2} + \frac{182f(e+fx)(a+b\log(c(e+fx)))}{d(182e-fh)^3(h+182x)} + \frac{(182}{}$$

$$= -\frac{bf}{2d(182e-fh)^2(h+182x)} - \frac{3bf^2\log(h+182x)}{2d(182e-fh)^3} + \frac{bf^2\log(e+fx)}{2d(182e-fh)^3} - \frac{}{2d}$$

$$= -\frac{bf}{2d(182e-fh)^2(h+182x)} - \frac{3bf^2\log(h+182x)}{2d(182e-fh)^3} + \frac{bf^2\log(e+fx)}{2d(182e-fh)^3} - \frac{}{2d}$$

Mathematica [A]
time = 0.16, size = 226, normalized size = 0.90

$$\frac{\frac{(fh-ei)^2(a+b\log(c(e+fx)))}{(h+ix)^2} + \frac{2f(fh-ei)(a+b\log(c(e+fx)))}{h+ix} + \frac{f^2(a+b\log(c(e+fx)))^2}{b} - 2bf^2(\log(e+fx)-\log(h+ix)) - \frac{bf(fh-ei+f(h+ix)\log(e+fx)-f(h+ix)\log(h+ix))}{h+ix} - 2f^2(a+b\log(c(e+fx)))\log\left(\frac{f(h+ix)}{fh-ei}\right) - 2bf^2\text{Li}_2\left(\frac{i(e+fx)}{-fh+ei}\right)}{2d(fh-ei)^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(e + f*x)])/((d*e + d*f*x)*(h + i*x)^3),x]
```

```
[Out] (((f*h - e*i)^2*(a + b*Log[c*(e + f*x)]))/(h + i*x)^2 + (2*f*(f*h - e*i)*(a
 + b*Log[c*(e + f*x)]))/(h + i*x) + (f^2*(a + b*Log[c*(e + f*x)])^2)/b - 2*
b*f^2*(Log[e + f*x] - Log[h + i*x]) - (b*f*(f*h - e*i + f*(h + i*x)*Log[e +
 f*x] - f*(h + i*x)*Log[h + i*x]))/(h + i*x) - 2*f^2*(a + b*Log[c*(e + f*x)
])*Log[(f*(h + i*x))/(f*h - e*i)] - 2*b*f^2*PolyLog[2, (i*(e + f*x))/(-(f*h
) + e*i)])/(2*d*(f*h - e*i)^3)
```

Maple [B] Leaf count of result is larger than twice the leaf count of optimal. 704 vs. $2(241) = 482$.
time = 1.16, size = 705, normalized size = 2.82 Too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(f*x+e)))/(d*f*x+d*e)/(i*x+h)^3,x,method=_RETURNVERBOSE)
```

```
[Out] 1/c/f*(-c^2*f^3/d*a/(e*i-f*h)^2/(c*e*i-h*c*f-i*(c*f*x+c*e))+c*f^3/d*a/(e*i-
f*h)^3*ln(c*e*i-h*c*f-i*(c*f*x+c*e))-1/2*c^3*f^3/d*a/(e*i-f*h)/(c*e*i-h*c*f
-i*(c*f*x+c*e))^2-c*f^3/d*a/(e*i-f*h)^3*ln(c*f*x+c*e)+c*f^3/d*b/(e*i-f*h)^3
*dilog((-c*e*i+h*c*f+i*(c*f*x+c*e))/(-c*e*i+c*f*h))+c*f^3/d*b/(e*i-f*h)^3*l
n(c*f*x+c*e)*ln((-c*e*i+h*c*f+i*(c*f*x+c*e))/(-c*e*i+c*f*h))-3/2*c*f^3/d*b/
(e*i-f*h)^3*ln(c*e*i-h*c*f-i*(c*f*x+c*e))-c*f^3/d*b*i/(e*i-f*h)^3*ln(c*f*x+
c*e)*(c*f*x+c*e)/(c*e*i-h*c*f-i*(c*f*x+c*e))-1/2*c*f^3/d*b*ln(c*f*x+c*e)^2/
(e*i-f*h)^3+1/2*c^2*f^3/d*b/(e*i-f*h)^3*i/(c*e*i-h*c*f-i*(c*f*x+c*e))*e-1/2
*c^2*f^4/d*b/(e*i-f*h)^3/(c*e*i-h*c*f-i*(c*f*x+c*e))*h-c^2*f^3/d*b/(e*i-f*h
)^3*i^2*ln(c*f*x+c*e)*(c*f*x+c*e)/(c*e*i-h*c*f-i*(c*f*x+c*e))^2*e+c^2*f^4/d
*b/(e*i-f*h)^3*i*ln(c*f*x+c*e)*(c*f*x+c*e)/(c*e*i-h*c*f-i*(c*f*x+c*e))^2*h+
1/2*c*f^3/d*b/(e*i-f*h)^3*i^2*ln(c*f*x+c*e)*(c*f*x+c*e)^2/(c*e*i-h*c*f-i*(c
*f*x+c*e))^2)
```

Maxima [B] Both result and optimal contain complex but leaf count of result is larger than twice the leaf count of optimal. 522 vs. $2(240) = 480$.
time = 0.62, size = 522, normalized size = 2.09

$$\frac{i\left(\log\left(fx+e\right)\log\left(-\frac{fx+e}{ifh+e}+1\right)+\mathrm{Li}_2\left(\frac{fx+e}{ifh+e}\right)\right)bf^2}{-i\,df^3h^3-3\,df^2h^2e+3i\,dfhe^2+de^3}+\frac{(2i\,af^2+(2i\,f^2\log\left(c\right)-3i\,f^2)b)\log\left(-2i\,h+2\,x\right)}{-2i\,df^3h^3-6\,df^2h^2e+6i\,dfhe^2+2\,de^3}+\frac{16\left(3i\,af^2h^2+(i\,bf^2h^2-2\,bf^2hx-i\,bf^2x^2)\log\left(fx+e\right)^2+(3i\,f^2h^2\log\left(c\right)-i\,f^2h^2)b-(2\,af^2h+(2\,f^2h\log\left(c\right)-f^2h)b-((2i\,f\log\left(c\right)-i\,f)b+2i\,af)e)x+(-i\,b\log\left(c\right)-i\,a)e^2+(4\,afh+(4\,fh\log\left(c\right)-fh)b)e+(2i\,bf^2h^2\log\left(c\right)+2i\,af^2h^2+4\,bfhe+(-2i\,af^2+(-2i\,f^2\log\left(c\right)+3i\,f^2)b)x^2-2\,(2\,af^2h-i\,bfe+2\,(f^2h\log\left(c\right)-f^2h)b)x-i\,be^2)\log\left(fx+e\right)\right)}{32i\,df^3h^5+96\,df^2h^4e-96i\,dfh^3e^2-32\,dh^2e^3-32\,(i\,df^3h^3+3\,df^2h^2e-3i\,dfhe^2-de^3)x^2-64\,(df^3h^4-3i\,df^2h^3e-3\,dfh^2e^2+i\,dhe^3)x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(f*x+e)))/(d*f*x+d*e)/(i*x+h)^3,x, algorithm="maxima")
```

```
[Out] I*(log(f*x + e)*log(-(f*x + e)/(I*f*h + e) + 1) + dilog((f*x + e)/(I*f*h +
e)))*b*f^2/(-I*d*f^3*h^3 - 3*d*f^2*h^2*e + 3*I*d*f*h*e^2 + d*e^3) + (2*I*a*
f^2 + (2*I*f^2*log(c) - 3*I*f^2)*b)*log(-2*I*h + 2*x)/(-2*I*d*f^3*h^3 - 6*d
*f^2*h^2*e + 6*I*d*f*h*e^2 + 2*d*e^3) + 16*(3*I*a*f^2*h^2 + (I*b*f^2*h^2 -
2*b*f^2*h*x - I*b*f^2*x^2)*log(f*x + e)^2 + (3*I*f^2*h^2*log(c) - I*f^2*h^2
)*b - (2*a*f^2*h + (2*f^2*h*log(c) - f^2*h)*b - ((2*I*f*log(c) - I*f)*b + 2
*I*a*f)*e)*x + (-I*b*log(c) - I*a)*e^2 + (4*a*f*h + (4*f*h*log(c) - f*h)*b)
*e + (2*I*b*f^2*h^2*log(c) + 2*I*a*f^2*h^2 + 4*b*f*h*e + (-2*I*a*f^2 + (-2*
I*f^2*log(c) + 3*I*f^2)*b)*x^2 - 2*(2*a*f^2*h - I*b*f*e + 2*(f^2*h*log(c) -
 f^2*h)*b)*x - I*b*e^2)*log(f*x + e))/(32*I*d*f^3*h^5 + 96*d*f^2*h^4*e - 96
*I*d*f*h^3*e^2 - 32*d*h^2*e^3 - 32*(I*d*f^3*h^3 + 3*d*f^2*h^2*e - 3*I*d*f*h
*e^2 - d*e^3)*x^2 - 64*(d*f^3*h^4 - 3*I*d*f^2*h^3*e - 3*d*f*h^2*e^2 + I*d*h
*e^3)*x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(f*x+e)))/(d*f*x+d*e)/(i*x+h)^3,x, algorithm="fricas")
```

```
[Out] integral((I*b*log(c*f*x + c*e) + I*a)/(I*d*f*h^3*x - 3*d*f*h^2*x^2 - 3*I*d*
f*h*x^3 + d*f*x^4 + (I*d*h^3 - 3*d*h^2*x - 3*I*d*h*x^2 + d*x^3)*e), x)
```

Sympy [**F(-1)**] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(f*x+e)))/(d*f*x+d*e)/(i*x+h)**3,x)
```

```
[Out] Timed out
```

Giac [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(f*x+e)))/(d*f*x+d*e)/(i*x+h)^3,x, algorithm="giac")
```

```
[Out] integrate((b*log((f*x + e)*c) + a)/((d*f*x + d*e)*(h + I*x)^3), x)
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{a+b\,\ln\left(c\,\left(e+f\,x\right)\right)}{{\left(h+i\,x\right)}^3\,\left(d\,e+d\,f\,x\right)} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(e + f*x)))/((h + i*x)^3*(d*e + d*f*x)),x)
```

```
[Out] int((a + b*log(c*(e + f*x)))/((h + i*x)^3*(d*e + d*f*x)), x)
```

3.183 $\int \frac{(h+ix)^4(a+b\log(c(e+fx)))^2}{de+dfx}\,dx$

Optimal. Leaf size=579

$$-\frac{4abi(fh-ei)^3x}{df^4}+\frac{8b^2i(fh-ei)^3x}{df^4}+\frac{3b^2i^2(fh-ei)^2(e+fx)^2}{2df^5}+\frac{8b^2i^3(fh-ei)(e+fx)^3}{27df^5}+\frac{b^2i^4(e+fx)^4}{32df^5}+7($$

```
[Out] -4*a*b*i*(-e*i+f*h)^3*x/d/f^4+8*b^2*i*(-e*i+f*h)^3*x/d/f^4+3/2*b^2*i^2*(-e*
i+f*h)^2*(f*x+e)^2/d/f^5+8/27*b^2*i^3*(-e*i+f*h)*(f*x+e)^3/d/f^5+1/32*b^2*i
^4*(f*x+e)^4/d/f^5+7/12*b^2*(-e*i+f*h)^4*ln(f*x+e)^2/d/f^5-4*b^2*i*(-e*i+f*
h)^3*(f*x+e)*ln(c*(f*x+e))/d/f^5-4*b*i*(-e*i+f*h)^3*(f*x+e)*(a+b*ln(c*(f*x+
e)))/d/f^5-3*b*i^2*(-e*i+f*h)^2*(f*x+e)^2*(a+b*ln(c*(f*x+e)))/d/f^5-8/9*b*i
^3*(-e*i+f*h)*(f*x+e)^3*(a+b*ln(c*(f*x+e)))/d/f^5-1/8*b*i^4*(f*x+e)^4*(a+b*
ln(c*(f*x+e)))/d/f^5-7/6*b*(-e*i+f*h)^4*ln(f*x+e)*(a+b*ln(c*(f*x+e)))/d/f^5
+2*i*(-e*i+f*h)^3*(f*x+e)*(a+b*ln(c*(f*x+e)))^2/d/f^5+1/2*i^2*(-e*i+f*h)^2*
(f*x+e)^2*(a+b*ln(c*(f*x+e)))^2/d/f^5+1/3*(-e*i+f*h)*(i*x+h)^3*(a+b*ln(c*(f
*x+e)))^2/d/f^2+1/4*(i*x+h)^4*(a+b*ln(c*(f*x+e)))^2/d/f+1/3*(-e*i+f*h)^4*(a
+b*ln(c*(f*x+e)))^3/b/d/f^5
```

Rubi [A]
time = 1.07, antiderivative size = 579, normalized size of antiderivative = 1.00, number of steps used = 30, number of rules used = 15, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}} = 0.469$, Rules used = {2458, 12, 2388, 2339, 30, 2333, 2332, 2367, 2342, 2341, 2356, 45, 2372, 14, 2338}

$$-\frac{8bi^3(e+fx)^3(fh-ei)(a+b\log(c(e+fx)))}{9df^5}+\frac{i^2(e+fx)^2(fh-ei)^2(a+b\log(c(e+fx)))^2}{2df^5}-\frac{3bi^2(e+fx)^2(fh-ei)^2(a+b\log(c(e+fx)))}{df^5}+\frac{(fh-ei)^4(a+b\log(c(e+fx)))^3}{3bdf^5}-\frac{7b(fh-ei)^4\log(e+fx)(a+b\log(c(e+fx)))}{6df^5}+\frac{2i(e+fx)(fh-ei)^3(a+b\log(c(e+fx)))^2}{df^5}-\frac{4bi(e+fx)(fh-ei)^3(a+b\log(c(e+fx)))}{df^5}-\frac{bi^4(e+fx)^4(a+b\log(c(e+fx)))}{8df^5}+\frac{(h+ix)^3(fh-ei)(a+b\log(c(e+fx)))^2}{3df^2}+\frac{(h+ix)^4(a+b\log(c(e+fx)))^2}{4df}-\frac{4abix(fh-ei)^3}{df^4}-\frac{4b^2i(e+fx)(fh-ei)^3\log(c(e+fx))}{df^5}+\frac{8b^2i^3(e+fx)^3(fh-ei)}{27df^5}+\frac{3b^2i^2(e+fx)^2(fh-ei)^2}{2df^5}+\frac{7b^2(fh-ei)^4\log^2(e+fx)}{12df^5}+\frac{b^2i^4(e+fx)^4}{32df^5}+\frac{8b^2ix(fh-ei)^3}{df^4}$$

Antiderivative was successfully verified.

```
[In] Int[((h + i*x)^4*(a + b*Log[c*(e + f*x)])^2)/(d*e + d*f*x),x]
```

```
[Out] (-4*a*b*i*(f*h - e*i)^3*x)/(d*f^4) + (8*b^2*i*(f*h - e*i)^3*x)/(d*f^4) + (3
*b^2*i^2*(f*h - e*i)^2*(e + f*x)^2)/(2*d*f^5) + (8*b^2*i^3*(f*h - e*i)*(e +
 f*x)^3)/(27*d*f^5) + (b^2*i^4*(e + f*x)^4)/(32*d*f^5) + (7*b^2*(f*h - e*i)
^4*Log[e + f*x]^2)/(12*d*f^5) - (4*b^2*i*(f*h - e*i)^3*(e + f*x)*Log[c*(e +
 f*x)])/(d*f^5) - (4*b*i*(f*h - e*i)^3*(e + f*x)*(a + b*Log[c*(e + f*x)]))/
(d*f^5) - (3*b*i^2*(f*h - e*i)^2*(e + f*x)^2*(a + b*Log[c*(e + f*x)]))/(d*f
^5) - (8*b*i^3*(f*h - e*i)*(e + f*x)^3*(a + b*Log[c*(e + f*x)]))/(9*d*f^5)
- (b*i^4*(e + f*x)^4*(a + b*Log[c*(e + f*x)]))/(8*d*f^5) - (7*b*(f*h - e*i)
^4*Log[e + f*x]*(a + b*Log[c*(e + f*x)]))/(6*d*f^5) + (2*i*(f*h - e*i)^3*(e
 + f*x)*(a + b*Log[c*(e + f*x)])^2)/(d*f^5) + (i^2*(f*h - e*i)^2*(e + f*x)^
2*(a + b*Log[c*(e + f*x)])^2)/(2*d*f^5) + ((f*h - e*i)*(h + i*x)^3*(a + b*L
og[c*(e + f*x)])^2)/(3*d*f^2) + ((h + i*x)^4*(a + b*Log[c*(e + f*x)])^2)/(4
*d*f) + ((f*h - e*i)^4*(a + b*Log[c*(e + f*x)])^3)/(3*b*d*f^5)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] &&  !LinearQ[u, x] &&  !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2332

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2333

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2338

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2339

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] :> Dist[1/(
b*n), Subst[Int[x^p, x], x, a + b*Log[c*x^n]], x] /; FreeQ[{a, b, c, n, p},
 x]
```

Rule 2341

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_.)*(x_))^(m_.), x_Symbol] :>
Simp[(d*x)^(m + 1)*((a + b*Log[c*x^n])/(d*(m + 1))), x] - Simp[b*n*((d*x)^(
```

```
m + 1)/(d*(m + 1)^2)), x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[m, -1]
```

Rule 2342

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_.)*(x_))^(m_.), x_Symbo
l] :> Simp[(d*x)^(m + 1)*((a + b*Log[c*x^n])^p/(d*(m + 1))), x] - Dist[b*n*
(p/(m + 1)), Int[(d*x)^m*(a + b*Log[c*x^n])^(p - 1), x], x] /; FreeQ[{a, b,
 c, d, m, n}, x] && NeQ[m, -1] && GtQ[p, 0]
```

Rule 2356

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.),
x_Symbol] :> Simp[(d + e*x)^(q + 1)*((a + b*Log[c*x^n])^p/(e*(q + 1))), x]
- Dist[b*n*(p/(e*(q + 1))), Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^(p -
1))/x, x], x] /; FreeQ[{a, b, c, d, e, n, p, q}, x] && GtQ[p, 0] && NeQ[q,
-1] && (EqQ[p, 1] || (IntegersQ[2*p, 2*q] &&  !IGtQ[q, 0]) || (EqQ[p, 2] &&
 NeQ[q, 1]))
```

Rule 2367

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_)^(r_.))^(
q_.), x_Symbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*x^n])^p, (d + e*x
^r)^q, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n, p, q, r}, x]
&& IntegerQ[q] && (GtQ[q, 0] || (IGtQ[p, 0] && IntegerQ[r]))
```

Rule 2372

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*(x_)^(m_.)*((d_) + (e_.)*(x_)^(r_
.))^(q_.), x_Symbol] :> With[{u = IntHide[x^m*(d + e*x^r)^q, x]}, Dist[a +
b*Log[c*x^n], u, x] - Dist[b*n, Int[SimplifyIntegrand[u/x, x], x], x]] /; F
reeQ[{a, b, c, d, e, n, r}, x] && IGtQ[q, 0] && IntegerQ[m] &&  !(EqQ[q, 1]
 && EqQ[m, -1])
```

Rule 2388

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.))
/(x_), x_Symbol] :> Dist[d, Int[(d + e*x)^(q - 1)*((a + b*Log[c*x^n])^p/x),
 x], x] + Dist[e, Int[(d + e*x)^(q - 1)*(a + b*Log[c*x^n])^p, x], x] /; Fre
eQ[{a, b, c, d, e, n}, x] && IGtQ[p, 0] && GtQ[q, 0] && IntegerQ[2*q]
```

Rule 2458

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[(g*(x/e))^q*((e*h - d*i)/e + i*(x/e))^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
```

`*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]`

Rubi steps

$$\int \frac{(h+183x)^4(a+b\log(c(e+fx)))^2}{de+dfx}\,dx = \frac{\text{Subst}\left(\int \frac{\left(\frac{-183e+fh}{f}+\frac{183x}{f}\right)^4(a+b\log(cx))^2}{dx}\,dx,x,e+fx\right)}{f}$$

$$= \frac{\text{Subst}\left(\int \frac{\left(\frac{-183e+fh}{f}+\frac{183x}{f}\right)^4(a+b\log(cx))^2}{x}\,dx,x,e+fx\right)}{df}$$

$$= \frac{183\text{Subst}\left(\int \left(\frac{-183e+fh}{f}+\frac{183x}{f}\right)^3(a+b\log(cx))^2\,dx,x,e+fx\right)}{df^2}$$

$$= \frac{(h+183x)^4(a+b\log(c(e+fx)))^2}{4df} - \frac{b\text{Subst}\left(\int \frac{\left(\frac{-183e+fh}{f}+\frac{183x}{f}\right)}{x}\right.}{2}$$

$$= \frac{b\left(\frac{2928(183e-fh)^3(e+fx)}{f^4}-\frac{401868(183e-fh)^2(e+fx)^2}{f^4}+\frac{32685264(183e-fh)(}{f^4}\right.}{}$$

$$= \frac{b(183e-fh)\left(\frac{1098(183e-fh)^2(e+fx)}{f^3}-\frac{100467(183e-fh)(e+fx)^2}{f^3}+\frac{40856}{}\right.}{3df^2}$$

$$= -\frac{366b^2(183e-fh)^3x}{df^4}+\frac{100467b^2(183e-fh)^2(e+fx)^2}{4df^5}-13$$

$$= \frac{366ab(183e-fh)^3x}{df^4}-\frac{366b^2(183e-fh)^3x}{df^4}+\frac{100467b^2(183e-}{4d}$$

$$= \frac{732ab(183e-fh)^3x}{df^4}-\frac{732b^2(183e-fh)^3x}{df^4}+\frac{33489b^2(183e-}{df}$$

$$= \frac{732ab(183e-fh)^3x}{df^4}-\frac{1464b^2(183e-fh)^3x}{df^4}+\frac{100467b^2(183e}{2}$$

Mathematica [A]
time = 0.64, size = 733, normalized size = 1.27

Antiderivative was successfully verified.

```
[In] Integrate[((h + i*x)^4*(a + b*Log[c*(e + f*x)])^2)/(d*e + d*f*x),x]
```

```
[Out] (f*i*x*(72*a^2*(-12*e^3*i^3 + 6*e^2*f*i^2*(8*h + i*x) - 4*e*f^2*i*(18*h^2 +
 6*h*i*x + i^2*x^2) + f^3*(48*h^3 + 36*h^2*i*x + 16*h*i^2*x^2 + 3*i^3*x^3))
 - 12*a*b*(-300*e^3*i^3 + 6*e^2*f*i^2*(176*h + 13*i*x) - 4*e*f^2*i*(324*h^2
 + 60*h*i*x + 7*i^2*x^2) + f^3*(576*h^3 + 216*h^2*i*x + 64*h*i^2*x^2 + 9*i^
3*x^3)) + b^2*(-4980*e^3*i^3 + 30*e^2*f*i^2*(544*h + 23*i*x) - 4*e*f^2*i*(4
536*h^2 + 456*h*i*x + 37*i^2*x^2) + f^3*(6912*h^3 + 1296*h^2*i*x + 256*h*i^
2*x^2 + 27*i^3*x^3))) + 12*(72*a^2*(f*h - e*i)^4 - 12*a*b*e*i*(-48*f^3*h^3
+ 108*e*f^2*h^2*i - 88*e^2*f*h*i^2 + 25*e^3*i^3) + b^2*e*i*(-576*f^3*h^3 +
1512*e*f^2*h^2*i - 1360*e^2*f*h*i^2 + 415*e^3*i^3))*Log[e + f*x] + 12*b*f*i
*x*(12*a*(-12*e^3*i^3 + 6*e^2*f*i^2*(8*h + i*x) - 4*e*f^2*i*(18*h^2 + 6*h*i
*x + i^2*x^2) + f^3*(48*h^3 + 36*h^2*i*x + 16*h*i^2*x^2 + 3*i^3*x^3)) - b*(
-300*e^3*i^3 + 6*e^2*f*i^2*(176*h + 13*i*x) - 4*e*f^2*i*(324*h^2 + 60*h*i*x
 + 7*i^2*x^2) + f^3*(576*h^3 + 216*h^2*i*x + 64*h*i^2*x^2 + 9*i^3*x^3)))*Lo
g[c*(e + f*x)] + 72*b*(12*a*(f*h - e*i)^4 - b*i*(e + f*x)*(25*e^3*i^3 - e^2
*f*i^2*(88*h + 13*i*x) + e*f^2*i*(108*h^2 + 40*h*i*x + 7*i^2*x^2) - f^3*(48
*h^3 + 36*h^2*i*x + 16*h*i^2*x^2 + 3*i^3*x^3)))*Log[c*(e + f*x)]^2 + 288*b^
2*(f*h - e*i)^4*Log[c*(e + f*x)]^3)/(864*d*f^5)
```

Maple [B] Leaf count of result is larger than twice the leaf count of optimal. 1890 vs. $2(557) = 1114$.
time = 0.75, size = 1891, normalized size = 3.27

method	result
norman	$\frac{(72a^2e^4i^4-288a^2e^3fh\,i^3+432a^2e^2f^2h^2i^2-288a^2e\,f^3h^3i+72a^2h^4f^4-300ab\,e^4i^4+1056ab\,e^3fh\,i^3-1296ab\,e^2f^2h^2i^2+576}{72d\,f^5}$
risch	Expression too large to display
derivativedivides	Expression too large to display
default	Expression too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((i*x+h)^4*(a+b*ln(c*(f*x+e)))^2/(d*f*x+d*e),x,method=_RETURNVERBOSE)
```

```
[Out] 1/c/f*(24/f^3/d*a*b*e^2*h*i^3*((c*f*x+c*e)*ln(c*f*x+c*e)-c*f*x-c*e)+c/d*a*b
*h^4*ln(c*f*x+c*e)^2+12/f^3/d*b^2*e^2*h*i^3*((c*f*x+c*e)*ln(c*f*x+c*e)^2-2*
(c*f*x+c*e)*ln(c*f*x+c*e)+2*c*f*x+2*c*e)+8/f/d*a*b*h^3*i*((c*f*x+c*e)*ln(c*
f*x+c*e)-c*f*x-c*e)+3/c/f^2/d*a^2*h^2*i^2*(c*f*x+c*e)^2+4/c^2/f^3/d*b^2*h*i
^3*(1/3*(c*f*x+c*e)^3*ln(c*f*x+c*e)^2-2/9*(c*f*x+c*e)^3*ln(c*f*x+c*e)+2/27*
(c*f*x+c*e)^3)+12/f^3/d*a^2*e^2*h*i^3*(c*f*x+c*e)-12/f^2/d*a^2*e*h^2*i^2*(c
*f*x+c*e)-12/f^2/d*b^2*e*h^2*i^2*((c*f*x+c*e)*ln(c*f*x+c*e)^2-2*(c*f*x+c*e)
*ln(c*f*x+c*e)+2*c*f*x+2*c*e)+c/f^4/d*a^2*e^4*i^4*ln(c*f*x+c*e)-4/3/c^2/f^4
/d*a^2*e*i^4*(c*f*x+c*e)^3-8/f^4/d*a*b*e^3*i^4*((c*f*x+c*e)*ln(c*f*x+c*e)-c
*f*x-c*e)+3/c/f^4/d*a^2*e^2*i^4*(c*f*x+c*e)^2-4/c^2/f^4/d*b^2*e*i^4*(1/3*(c
```

```
*f*x+c*e)^3*ln(c*f*x+c*e)^2-2/9*(c*f*x+c*e)^3*ln(c*f*x+c*e)+2/27*(c*f*x+c*e
)^3)+6/c/f^4/d*b^2*e^2*i^4*(1/2*(c*f*x+c*e)^2*ln(c*f*x+c*e)^2-1/2*(c*f*x+c*
e)^2*ln(c*f*x+c*e)+1/4*(c*f*x+c*e)^2)+4/3/c^2/f^3/d*a^2*h*i^3*(c*f*x+c*e)^3
+2/c^3/f^4/d*a*b*i^4*(1/4*(c*f*x+c*e)^4*ln(c*f*x+c*e)-1/16*(c*f*x+c*e)^4)+1
/3*c/d*b^2*h^4*ln(c*f*x+c*e)^3+c/d*a^2*h^4*ln(c*f*x+c*e)-4/f^4/d*b^2*e^3*i^
4*((c*f*x+c*e)*ln(c*f*x+c*e)^2-2*(c*f*x+c*e)*ln(c*f*x+c*e)+2*c*f*x+2*c*e)+4
/f/d*b^2*h^3*i*((c*f*x+c*e)*ln(c*f*x+c*e)^2-2*(c*f*x+c*e)*ln(c*f*x+c*e)+2*c
*f*x+2*c*e)+1/4/c^3/f^4/d*a^2*i^4*(c*f*x+c*e)^4+12/c/f^4/d*a*b*e^2*i^4*(1/2
*(c*f*x+c*e)^2*ln(c*f*x+c*e)-1/4*(c*f*x+c*e)^2)+8/c^2/f^3/d*a*b*h*i^3*(1/3*
(c*f*x+c*e)^3*ln(c*f*x+c*e)-1/9*(c*f*x+c*e)^3)-4*c/f/d*a^2*e*h^3*i*ln(c*f*x
+c*e)-24/f^2/d*a*b*e*h^2*i^2*((c*f*x+c*e)*ln(c*f*x+c*e)-c*f*x-c*e)-4*c/f^3/
d*a^2*e^3*h*i^3*ln(c*f*x+c*e)+c/f^4/d*a*b*e^4*i^4*ln(c*f*x+c*e)^2-8/c^2/f^4
/d*a*b*e*i^4*(1/3*(c*f*x+c*e)^3*ln(c*f*x+c*e)-1/9*(c*f*x+c*e)^3)-4/3*c/f^3/
d*b^2*e^3*h*i^3*ln(c*f*x+c*e)^3+2*c/f^2/d*b^2*e^2*h^2*i^2*ln(c*f*x+c*e)^3-1
2/c/f^3/d*b^2*e*h*i^3*(1/2*(c*f*x+c*e)^2*ln(c*f*x+c*e)^2-1/2*(c*f*x+c*e)^2*
ln(c*f*x+c*e)+1/4*(c*f*x+c*e)^2)-6/c/f^3/d*a^2*e*h*i^3*(c*f*x+c*e)^2+6*c/f^
2/d*a^2*e^2*h^2*i^2*ln(c*f*x+c*e)-4/3*c/f/d*b^2*e*h^3*i*ln(c*f*x+c*e)^3+12/
c/f^2/d*a*b*h^2*i^2*(1/2*(c*f*x+c*e)^2*ln(c*f*x+c*e)-1/4*(c*f*x+c*e)^2)+6*c
/f^2/d*a*b*e^2*h^2*i^2*ln(c*f*x+c*e)^2-4*c/f/d*a*b*e*h^3*i*ln(c*f*x+c*e)^2-
4*c/f^3/d*a*b*e^3*h*i^3*ln(c*f*x+c*e)^2-24/c/f^3/d*a*b*e*h*i^3*(1/2*(c*f*x+
c*e)^2*ln(c*f*x+c*e)-1/4*(c*f*x+c*e)^2)-4/f^4/d*a^2*e^3*i^4*(c*f*x+c*e)+4/f
/d*a^2*h^3*i*(c*f*x+c*e)+1/c^3/f^4/d*b^2*i^4*(1/4*(c*f*x+c*e)^4*ln(c*f*x+c*
e)^2-1/8*(c*f*x+c*e)^4*ln(c*f*x+c*e)+1/32*(c*f*x+c*e)^4)+1/3*c/f^4/d*b^2*e^
4*i^4*ln(c*f*x+c*e)^3+6/c/f^2/d*b^2*h^2*i^2*(1/2*(c*f*x+c*e)^2*ln(c*f*x+c*e
)^2-1/2*(c*f*x+c*e)^2*ln(c*f*x+c*e)+1/4*(c*f*x+c*e)^2))
```

Maxima [B] Both result and optimal contain complex but leaf count of result is larger than twice the leaf count of optimal. 1437 vs. $2(554) = 1108$.
time = 0.32, size = 1437, normalized size = 2.48

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^4*(a+b*log(c*(f*x+e)))^2/(d*f*x+d*e),x, algorithm="maxima
")
```

```
[Out] -a*b*h^4*(2*log(c*f*x + c*e)*log(d*f*x + d*e)/(d*f) - (log(f*x + e)^2 + 2*l
og(f*x + e)*log(c))/(d*f)) + 8*I*a*b*h^3*(x/(d*f) - e*log(f*x + e)/(d*f^2))
*log(c*f*x + c*e) + 1/3*b^2*h^4*log(c*f*x + c*e)^3/(d*f) + 4*I*a^2*h^3*(x/(
d*f) - e*log(f*x + e)/(d*f^2)) - 6*a*b*h^2*((f*x^2 - 2*x*e)/(d*f^2) + 2*e^2
*log(f*x + e)/(d*f^3))*log(c*f*x + c*e) + 2*a*b*h^4*log(c*f*x + c*e)*log(d*
f*x + d*e)/(d*f) - 3*a^2*h^2*((f*x^2 - 2*x*e)/(d*f^2) + 2*e^2*log(f*x + e)/
(d*f^3)) - 4/3*I*a*b*h*((2*f^2*x^3 - 3*f*x^2*e + 6*x*e^2)/(d*f^3) - 6*e^3*l
og(f*x + e)/(d*f^4))*log(c*f*x + c*e) + a^2*h^4*log(d*f*x + d*e)/(d*f) - 2/
3*I*a^2*h*((2*f^2*x^3 - 3*f*x^2*e + 6*x*e^2)/(d*f^3) - 6*e^3*log(f*x + e)/(
```

```
d*f^4)) + 1/6*a*b*((3*f^3*x^4 - 4*f^2*x^3*e + 6*f*x^2*e^2 - 12*x*e^3)/(d*f^
4) + 12*e^4*log(f*x + e)/(d*f^5))*log(c*f*x + c*e) + 4*I*(e*log(f*x + e)^2
- 2*f*x + 2*e*log(f*x + e))*a*b*h^3/(d*f^2) + 1/12*a^2*((3*f^3*x^4 - 4*f^2*
x^3*e + 6*f*x^2*e^2 - 12*x*e^3)/(d*f^4) + 12*e^4*log(f*x + e)/(d*f^5)) + 3*
(f^2*x^2 - 6*f*x*e + 2*e^2*log(f*x + e)^2 + 6*e^2*log(f*x + e))*a*b*h^2/(d*
f^3) - 4/3*I*(c^2*e*log(c*f*x + c*e)^3 - 3*(c*f*x + c*e)*(c*log(c*f*x + c*e
)^2 - 2*c*log(c*f*x + c*e) + 2*c))*b^2*h^3/(c^2*d*f^2) + 2/9*I*(4*f^3*x^3 -
 15*f^2*x^2*e + 66*f*x*e^2 - 18*e^3*log(f*x + e)^2 - 66*e^3*log(f*x + e))*a
*b*h/(d*f^4) - 1/2*(4*c^3*e^2*log(c*f*x + c*e)^3 + 3*(c*f*x + c*e)^2*(2*c*l
og(c*f*x + c*e)^2 - 2*c*log(c*f*x + c*e) + c) - 24*(c^2*e*log(c*f*x + c*e)^
2 - 2*c^2*e*log(c*f*x + c*e) + 2*c^2*e)*(c*f*x + c*e))*b^2*h^2/(c^3*d*f^3)
- 1/72*(9*f^4*x^4 - 28*f^3*x^3*e + 78*f^2*x^2*e^2 - 300*f*x*e^3 + 72*e^4*lo
g(f*x + e)^2 + 300*e^4*log(f*x + e))*a*b/(d*f^5) + 1/27*I*(36*c^4*e^3*log(c
*f*x + c*e)^3 - 4*(c*f*x + c*e)^3*(9*c*log(c*f*x + c*e)^2 - 6*c*log(c*f*x +
 c*e) + 2*c) + 81*(2*c^2*e*log(c*f*x + c*e)^2 - 2*c^2*e*log(c*f*x + c*e) +
c^2*e)*(c*f*x + c*e)^2 - 324*(c^3*e^2*log(c*f*x + c*e)^2 - 2*c^3*e^2*log(c*
f*x + c*e) + 2*c^3*e^2)*(c*f*x + c*e))*b^2*h/(c^4*d*f^4) + 1/864*(288*c^5*e
^4*log(c*f*x + c*e)^3 + 27*(c*f*x + c*e)^4*(8*c*log(c*f*x + c*e)^2 - 4*c*lo
g(c*f*x + c*e) + c) - 128*(9*c^2*e*log(c*f*x + c*e)^2 - 6*c^2*e*log(c*f*x +
 c*e) + 2*c^2*e)*(c*f*x + c*e)^3 + 1296*(2*c^3*e^2*log(c*f*x + c*e)^2 - 2*c
^3*e^2*log(c*f*x + c*e) + c^3*e^2)*(c*f*x + c*e)^2 - 3456*(c^4*e^3*log(c*f*
x + c*e)^2 - 2*c^4*e^3*log(c*f*x + c*e) + 2*c^4*e^3)*(c*f*x + c*e))*b^2/(c^
5*d*f^5)
```

Fricas [A]
time = 0.38, size = 833, normalized size = 1.44

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^4*(a+b*log(c*(f*x+e)))^2/(d*f*x+d*e),x, algorithm="fricas
")
```

```
[Out] -1/864*(3456*(-I*a^2 + 2*I*a*b - 2*I*b^2)*f^4*h^3*x + 1296*(2*a^2 - 2*a*b +
 b^2)*f^4*h^2*x^2 + 128*(9*I*a^2 - 6*I*a*b + 2*I*b^2)*f^4*h*x^3 - 27*(8*a^2
 - 4*a*b + b^2)*f^4*x^4 + 12*(72*a^2 - 300*a*b + 415*b^2)*f*x*e^3 - 288*(b^
2*f^4*h^4 - 4*I*b^2*f^3*h^3*e - 6*b^2*f^2*h^2*e^2 + 4*I*b^2*f*h*e^3 + b^2*e
^4)*log(c*f*x + c*e)^3 - 72*(12*a*b*f^4*h^4 + 48*I*b^2*f^4*h^3*x - 36*b^2*f
^4*h^2*x^2 - 16*I*b^2*f^4*h*x^3 + 3*b^2*f^4*x^4 + (12*a*b - 25*b^2)*e^4 - 4
*(3*b^2*f*x + 2*(-6*I*a*b + 11*I*b^2)*f*h)*e^3 - 6*(8*I*b^2*f^2*h*x - b^2*f
^2*x^2 + 6*(2*a*b - 3*b^2)*f^2*h^2)*e^2 + 4*(18*b^2*f^3*h^2*x + 6*I*b^2*f^3
*h*x^2 - b^2*f^3*x^3 - 12*(I*a*b - I*b^2)*f^3*h^3)*e)*log(c*f*x + c*e)^2 +
6*(32*(18*I*a^2 - 66*I*a*b + 85*I*b^2)*f^2*h*x - (72*a^2 - 156*a*b + 115*b^
2)*f^2*x^2)*e^2 - 4*(648*(2*a^2 - 6*a*b + 7*b^2)*f^3*h^2*x - 24*(-18*I*a^2
+ 30*I*a*b - 19*I*b^2)*f^3*h*x^2 - (72*a^2 - 84*a*b + 37*b^2)*f^3*x^3)*e -
```

```
12*(72*a^2*f^4*h^4 - 576*(-I*a*b + I*b^2)*f^4*h^3*x - 216*(2*a*b - b^2)*f^4
*h^2*x^2 - 64*(3*I*a*b - I*b^2)*f^4*h*x^3 + 9*(4*a*b - b^2)*f^4*x^4 + (72*a
^2 - 300*a*b + 415*b^2)*e^4 - 4*(4*(-18*I*a^2 + 66*I*a*b - 85*I*b^2)*f*h +
3*(12*a*b - 25*b^2)*f*x)*e^3 - 6*(36*(2*a^2 - 6*a*b + 7*b^2)*f^2*h^2 + 16*(
6*I*a*b - 11*I*b^2)*f^2*h*x - (12*a*b - 13*b^2)*f^2*x^2)*e^2 - 4*(72*(I*a^2
 - 2*I*a*b + 2*I*b^2)*f^3*h^3 - 108*(2*a*b - 3*b^2)*f^3*h^2*x + 12*(-6*I*a*
b + 5*I*b^2)*f^3*h*x^2 + (12*a*b - 7*b^2)*f^3*x^3)*e)*log(c*f*x + c*e))/(d*
f^5)
```

Sympy [B] Leaf count of result is larger than twice the leaf count of optimal. 1479 vs. $2(534) = 1068$.

time = 2.27, size = 1479, normalized size = 2.55

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)**4*(a+b*ln(c*(f*x+e)))**2/(d*f*x+d*e),x)
```

```
[Out] x**4*(a**2*i**4/(4*d*f) - a*b*i**4/(8*d*f) + b**2*i**4/(32*d*f)) + x**3*(-a
**2*e*i**4/(3*d*f**2) + 4*a**2*h*i**3/(3*d*f) + 7*a*b*e*i**4/(18*d*f**2) -
8*a*b*h*i**3/(9*d*f) - 37*b**2*e*i**4/(216*d*f**2) + 8*b**2*h*i**3/(27*d*f)
) + x**2*(a**2*e**2*i**4/(2*d*f**3) - 2*a**2*e*h*i**3/(d*f**2) + 3*a**2*h**
2*i**2/(d*f) - 13*a*b*e**2*i**4/(12*d*f**3) + 10*a*b*e*h*i**3/(3*d*f**2) -
3*a*b*h**2*i**2/(d*f) + 115*b**2*e**2*i**4/(144*d*f**3) - 19*b**2*e*h*i**3/
(9*d*f**2) + 3*b**2*h**2*i**2/(2*d*f)) + x*(-a**2*e**3*i**4/(d*f**4) + 4*a*
*2*e**2*h*i**3/(d*f**3) - 6*a**2*e*h**2*i**2/(d*f**2) + 4*a**2*h**3*i/(d*f)
 + 25*a*b*e**3*i**4/(6*d*f**4) - 44*a*b*e**2*h*i**3/(3*d*f**3) + 18*a*b*e*h
**2*i**2/(d*f**2) - 8*a*b*h**3*i/(d*f) - 415*b**2*e**3*i**4/(72*d*f**4) + 1
70*b**2*e**2*h*i**3/(9*d*f**3) - 21*b**2*e*h**2*i**2/(d*f**2) + 8*b**2*h**3
*i/(d*f)) + (-144*a*b*e**3*i**4*x + 576*a*b*e**2*f*h*i**3*x + 72*a*b*e**2*f
*i**4*x**2 - 864*a*b*e*f**2*h**2*i**2*x - 288*a*b*e*f**2*h*i**3*x**2 - 48*a
*b*e*f**2*i**4*x**3 + 576*a*b*f**3*h**3*i*x + 432*a*b*f**3*h**2*i**2*x**2 +
 192*a*b*f**3*h*i**3*x**3 + 36*a*b*f**3*i**4*x**4 + 300*b**2*e**3*i**4*x -
1056*b**2*e**2*f*h*i**3*x - 78*b**2*e**2*f*i**4*x**2 + 1296*b**2*e*f**2*h**
2*i**2*x + 240*b**2*e*f**2*h*i**3*x**2 + 28*b**2*e*f**2*i**4*x**3 - 576*b**
2*f**3*h**3*i*x - 216*b**2*f**3*h**2*i**2*x**2 - 64*b**2*f**3*h*i**3*x**3 -
 9*b**2*f**3*i**4*x**4)*log(c*(e + f*x))/(72*d*f**4) + (b**2*e**4*i**4 - 4*
b**2*e**3*f*h*i**3 + 6*b**2*e**2*f**2*h**2*i**2 - 4*b**2*e*f**3*h**3*i + b*
*2*f**4*h**4)*log(c*(e + f*x))**3/(3*d*f**5) + (72*a**2*e**4*i**4 - 288*a**
2*e**3*f*h*i**3 + 432*a**2*e**2*f**2*h**2*i**2 - 288*a**2*e*f**3*h**3*i + 7
2*a**2*f**4*h**4 - 300*a*b*e**4*i**4 + 1056*a*b*e**3*f*h*i**3 - 1296*a*b*e*
*2*f**2*h**2*i**2 + 576*a*b*e*f**3*h**3*i + 415*b**2*e**4*i**4 - 1360*b**2*
e**3*f*h*i**3 + 1512*b**2*e**2*f**2*h**2*i**2 - 576*b**2*e*f**3*h**3*i)*log
(e + f*x)/(72*d*f**5) + (12*a*b*e**4*i**4 - 48*a*b*e**3*f*h*i**3 + 72*a*b*e
**2*f**2*h**2*i**2 - 48*a*b*e*f**3*h**3*i + 12*a*b*f**4*h**4 - 25*b**2*e**4
```

```
*i**4 + 88*b**2*e**3*f*h*i**3 - 12*b**2*e**3*f*i**4*x - 108*b**2*e**2*f**2*
h**2*i**2 + 48*b**2*e**2*f**2*h*i**3*x + 6*b**2*e**2*f**2*i**4*x**2 + 48*b*
*2*e*f**3*h**3*i - 72*b**2*e*f**3*h**2*i**2*x - 24*b**2*e*f**3*h*i**3*x**2
- 4*b**2*e*f**3*i**4*x**3 + 48*b**2*f**4*h**3*i*x + 36*b**2*f**4*h**2*i**2*
x**2 + 16*b**2*f**4*h*i**3*x**3 + 3*b**2*f**4*i**4*x**4)*log(c*(e + f*x))**
2/(12*d*f**5)
```

Giac [B] Both result and optimal contain complex but leaf count of result is larger than twice the leaf count of optimal. 1588 vs. $2(554) = 1108$.
time = 4.17, size = 1588, normalized size = 2.74

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^4*(a+b*log(c*(f*x+e)))^2/(d*f*x+d*e),x, algorithm="giac")
```

```
[Out] 1/864*(288*b^2*f^4*h^4*log(c*f*x + c*e)^3 + 864*a*b*f^4*h^4*log(c*f*x + c*e
)^2 + 3456*I*b^2*f^4*h^3*x*log(c*f*x + c*e)^2 - 2592*b^2*f^4*h^2*x^2*log(c*
f*x + c*e)^2 - 1152*I*b^2*f^4*h*x^3*log(c*f*x + c*e)^2 + 216*b^2*f^4*x^4*lo
g(c*f*x + c*e)^2 - 1152*I*b^2*f^3*h^3*e*log(c*f*x + c*e)^3 + 6912*I*a*b*f^4
*h^3*x*log(c*f*x + c*e) - 6912*I*b^2*f^4*h^3*x*log(c*f*x + c*e) - 5184*a*b*
f^4*h^2*x^2*log(c*f*x + c*e) + 2592*b^2*f^4*h^2*x^2*log(c*f*x + c*e) - 2304
*I*a*b*f^4*h*x^3*log(c*f*x + c*e) + 768*I*b^2*f^4*h*x^3*log(c*f*x + c*e) +
432*a*b*f^4*x^4*log(c*f*x + c*e) - 108*b^2*f^4*x^4*log(c*f*x + c*e) - 3456*
I*a*b*f^3*h^3*e*log(c*f*x + c*e)^2 + 3456*I*b^2*f^3*h^3*e*log(c*f*x + c*e)^
2 + 5184*b^2*f^3*h^2*x*e*log(c*f*x + c*e)^2 + 1728*I*b^2*f^3*h*x^2*e*log(c*
f*x + c*e)^2 - 288*b^2*f^3*x^3*e*log(c*f*x + c*e)^2 + 864*a^2*f^4*h^4*log(f
*x + e) + 3456*I*a^2*f^4*h^3*x - 6912*I*a*b*f^4*h^3*x + 6912*I*b^2*f^4*h^3*
x - 2592*a^2*f^4*h^2*x^2 + 2592*a*b*f^4*h^2*x^2 - 1296*b^2*f^4*h^2*x^2 - 11
52*I*a^2*f^4*h*x^3 + 768*I*a*b*f^4*h*x^3 - 256*I*b^2*f^4*h*x^3 + 216*a^2*f^
4*x^4 - 108*a*b*f^4*x^4 + 27*b^2*f^4*x^4 + 10368*a*b*f^3*h^2*x*e*log(c*f*x
+ c*e) - 15552*b^2*f^3*h^2*x*e*log(c*f*x + c*e) + 3456*I*a*b*f^3*h*x^2*e*lo
g(c*f*x + c*e) - 2880*I*b^2*f^3*h*x^2*e*log(c*f*x + c*e) - 576*a*b*f^3*x^3*
e*log(c*f*x + c*e) + 336*b^2*f^3*x^3*e*log(c*f*x + c*e) - 1728*b^2*f^2*h^2*
e^2*log(c*f*x + c*e)^3 - 3456*I*a^2*f^3*h^3*e*log(f*x + e) + 6912*I*a*b*f^3
*h^3*e*log(f*x + e) - 6912*I*b^2*f^3*h^3*e*log(f*x + e) + 5184*a^2*f^3*h^2*
x*e - 15552*a*b*f^3*h^2*x*e + 18144*b^2*f^3*h^2*x*e + 1728*I*a^2*f^3*h*x^2*
e - 2880*I*a*b*f^3*h*x^2*e + 1824*I*b^2*f^3*h*x^2*e - 288*a^2*f^3*x^3*e + 3
36*a*b*f^3*x^3*e - 148*b^2*f^3*x^3*e - 5184*a*b*f^2*h^2*e^2*log(c*f*x + c*e
)^2 + 7776*b^2*f^2*h^2*e^2*log(c*f*x + c*e)^2 - 3456*I*b^2*f^2*h*x*e^2*log(
c*f*x + c*e)^2 + 432*b^2*f^2*x^2*e^2*log(c*f*x + c*e)^2 - 6912*I*a*b*f^2*h*
x*e^2*log(c*f*x + c*e) + 12672*I*b^2*f^2*h*x*e^2*log(c*f*x + c*e) + 864*a*b
*f^2*x^2*e^2*log(c*f*x + c*e) - 936*b^2*f^2*x^2*e^2*log(c*f*x + c*e) + 1152
*I*b^2*f*h*e^3*log(c*f*x + c*e)^3 - 5184*a^2*f^2*h^2*e^2*log(f*x + e) + 155
52*a*b*f^2*h^2*e^2*log(f*x + e) - 18144*b^2*f^2*h^2*e^2*log(f*x + e) - 3456
```

```
*I*a^2*f^2*h*x*e^2 + 12672*I*a*b*f^2*h*x*e^2 - 16320*I*b^2*f^2*h*x*e^2 + 43
2*a^2*f^2*x^2*e^2 - 936*a*b*f^2*x^2*e^2 + 690*b^2*f^2*x^2*e^2 + 3456*I*a*b*
f*h*e^3*log(c*f*x + c*e)^2 - 6336*I*b^2*f*h*e^3*log(c*f*x + c*e)^2 - 864*b^
2*f*x*e^3*log(c*f*x + c*e)^2 - 1728*a*b*f*x*e^3*log(c*f*x + c*e) + 3600*b^2
*f*x*e^3*log(c*f*x + c*e) + 288*b^2*e^4*log(c*f*x + c*e)^3 + 3456*I*a^2*f*h
*e^3*log(f*x + e) - 12672*I*a*b*f*h*e^3*log(f*x + e) + 16320*I*b^2*f*h*e^3*
log(f*x + e) - 864*a^2*f*x*e^3 + 3600*a*b*f*x*e^3 - 4980*b^2*f*x*e^3 + 864*
a*b*e^4*log(c*f*x + c*e)^2 - 1800*b^2*e^4*log(c*f*x + c*e)^2 + 864*a^2*e^4*
log(f*x + e) - 3600*a*b*e^4*log(f*x + e) + 4980*b^2*e^4*log(f*x + e))/(d*f^
5)
```

Mupad [B]
time = 0.96, size = 1346, normalized size = 2.32

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((h + i*x)^4*(a + b*log(c*(e + f*x)))^2)/(d*e + d*f*x),x)
```

```
[Out] log(c*(e + f*x))^2*(f*((b^2*i^4*x^4)/(4*d*f^2) - (b^2*i^3*x^3*(e*i - 4*f*h)
)/(3*d*f^3) - (b^2*i*x*(e^3*i^3 - 4*f^3*h^3 + 6*e*f^2*h^2*i - 4*e^2*f*h*i^2
))/(d*f^5) + (b^2*i^2*x^2*(e^2*i^2 + 6*f^2*h^2 - 4*e*f*h*i))/(2*d*f^4)) + (
12*a*b*e^4*i^4 - 25*b^2*e^4*i^4 + 12*a*b*f^4*h^4 - 108*b^2*e^2*f^2*h^2*i^2
+ 48*b^2*e*f^3*h^3*i + 88*b^2*e^3*f*h*i^3 + 72*a*b*e^2*f^2*h^2*i^2 - 48*a*b
*e*f^3*h^3*i - 48*a*b*e^3*f*h*i^3)/(12*d*f^5)) - x^2*((e*((i^3*(72*a^2*f*h
- 7*b^2*e*i + 16*b^2*f*h + 12*a*b*e*i - 48*a*b*f*h))/(18*d*f^2) - (e*i^4*(8
*a^2 - 4*a*b + b^2))/(8*d*f^2)))/(2*f) - (i^2*(72*a^2*f^2*h^2 + 13*b^2*e^2*
i^2 + 36*b^2*f^2*h^2 - 12*a*b*e^2*i^2 - 72*a*b*f^2*h^2 - 40*b^2*e*f*h*i + 4
8*a*b*e*f*h*i))/(24*d*f^3)) + x^3*((i^3*(72*a^2*f*h - 7*b^2*e*i + 16*b^2*f*
h + 12*a*b*e*i - 48*a*b*f*h))/(54*d*f^2) - (e*i^4*(8*a^2 - 4*a*b + b^2))/(2
4*d*f^2)) + x*((288*a^2*f^3*h^3*i - 300*b^2*e^3*i^4 + 576*b^2*f^3*h^3*i + 1
44*a*b*e^3*i^4 - 576*a*b*f^3*h^3*i + 1056*b^2*e^2*f*h*i^3 - 1296*b^2*e*f^2*
h^2*i^2 - 576*a*b*e^2*f*h*i^3 + 864*a*b*e*f^2*h^2*i^2)/(72*d*f^4) + (e*((e*
((i^3*(72*a^2*f*h - 7*b^2*e*i + 16*b^2*f*h + 12*a*b*e*i - 48*a*b*f*h))/(18*
d*f^2) - (e*i^4*(8*a^2 - 4*a*b + b^2))/(8*d*f^2)))/f - (i^2*(72*a^2*f^2*h^2
 + 13*b^2*e^2*i^2 + 36*b^2*f^2*h^2 - 12*a*b*e^2*i^2 - 72*a*b*f^2*h^2 - 40*b
^2*e*f*h*i + 48*a*b*e*f*h*i))/(12*d*f^3)))/f) + f*log(c*(e + f*x))*((x^3*(7
*b^2*e*i^4 - 12*a*b*e*i^4 - 16*b^2*f*h*i^3 + 48*a*b*f*h*i^3))/(18*d*f^3) -
(x^2*(13*b^2*e^2*i^4 + 36*b^2*f^2*h^2*i^2 - 12*a*b*e^2*i^4 - 40*b^2*e*f*h*i
^3 - 72*a*b*f^2*h^2*i^2 + 48*a*b*e*f*h*i^3))/(12*d*f^4) + (x*(25*b^2*e^3*i^
4 - 48*b^2*f^3*h^3*i - 12*a*b*e^3*i^4 + 48*a*b*f^3*h^3*i - 88*b^2*e^2*f*h*i
^3 + 108*b^2*e*f^2*h^2*i^2 + 48*a*b*e^2*f*h*i^3 - 72*a*b*e*f^2*h^2*i^2))/(6
*d*f^5) + (b*i^4*x^4*(4*a - b))/(8*d*f^2)) + (log(e + f*x)*(72*a^2*e^4*i^4
+ 72*a^2*f^4*h^4 + 415*b^2*e^4*i^4 - 300*a*b*e^4*i^4 + 432*a^2*e^2*f^2*h^2*
i^2 + 1512*b^2*e^2*f^2*h^2*i^2 - 288*a^2*e*f^3*h^3*i - 288*a^2*e^3*f*h*i^3
```

```
- 576*b^2*e*f^3*h^3*i - 1360*b^2*e^3*f*h*i^3 - 1296*a*b*e^2*f^2*h^2*i^2 + 5
76*a*b*e*f^3*h^3*i + 1056*a*b*e^3*f*h*i^3))/(72*d*f^5) + (b^2*log(c*(e + f*
x))^3*(e^4*i^4 + f^4*h^4 + 6*e^2*f^2*h^2*i^2 - 4*e*f^3*h^3*i - 4*e^3*f*h*i^
3))/(3*d*f^5) + (i^4*x^4*(8*a^2 - 4*a*b + b^2))/(32*d*f)
```

3.184 $\int \frac{(h+ix)^3(a+b\log(c(e+fx)))^2}{de+dfx}\,dx$

Optimal. Leaf size=464

$$-\frac{4abi(fh-ei)^2x}{df^3}+\frac{6b^2i(fh-ei)^2x}{df^3}+\frac{3b^2i^2(fh-ei)(e+fx)^2}{4df^4}+\frac{2b^2i^3(e+fx)^3}{27df^4}+\frac{b^2(fh-ei)^3\log^2(e+fx)}{3df^4}\cdot$$

```
[Out] -4*a*b*i*(-e*i+f*h)^2*x/d/f^3+6*b^2*i*(-e*i+f*h)^2*x/d/f^3+3/4*b^2*i^2*(-e*
i+f*h)*(f*x+e)^2/d/f^4+2/27*b^2*i^3*(f*x+e)^3/d/f^4+1/3*b^2*(-e*i+f*h)^3*ln
(f*x+e)^2/d/f^4-4*b^2*i*(-e*i+f*h)^2*(f*x+e)*ln(c*(f*x+e))/d/f^4-2*b*i*(-e*
i+f*h)^2*(f*x+e)*(a+b*ln(c*(f*x+e)))/d/f^4-3/2*b*i^2*(-e*i+f*h)*(f*x+e)^2*(
a+b*ln(c*(f*x+e)))/d/f^4-2/9*b*i^3*(f*x+e)^3*(a+b*ln(c*(f*x+e)))/d/f^4-2/3*
b*(-e*i+f*h)^3*ln(f*x+e)*(a+b*ln(c*(f*x+e)))/d/f^4+2*i*(-e*i+f*h)^2*(f*x+e)
*(a+b*ln(c*(f*x+e)))^2/d/f^4+1/2*i^2*(-e*i+f*h)*(f*x+e)^2*(a+b*ln(c*(f*x+e)
))^2/d/f^4+1/3*(i*x+h)^3*(a+b*ln(c*(f*x+e)))^2/d/f+1/3*(-e*i+f*h)^3*(a+b*ln
(c*(f*x+e)))^3/b/d/f^4
```

Rubi [A]
time = 0.69, antiderivative size = 464, normalized size of antiderivative = 1.00, number of steps used = 24, number of rules used = 15, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}} = 0.469$, Rules used = {2458, 12, 2388, 2339, 30, 2333, 2332, 2367, 2342, 2341, 2356, 45, 2372, 14, 2338}

$$\frac{i^2(e+fx)^2(fh-ei)(a+b\log(c(e+fx)))^2}{2df^4}-\frac{3bi^2(e+fx)^2(fh-ei)(a+b\log(c(e+fx)))}{2df^4}+\frac{(fh-ei)^3(a+b\log(c(e+fx)))^3}{3bdf^4}-\frac{2b(fh-ei)^3\log(e+fx)(a+b\log(c(e+fx)))}{3df^4}+\frac{2i(e+fx)(fh-ei)^2(a+b\log(c(e+fx)))^2}{df^4}-\frac{2bi(e+fx)(fh-ei)^2(a+b\log(c(e+fx)))}{df^4}-\frac{2bi^3(e+fx)^3(a+b\log(c(e+fx)))}{9df^4}+\frac{(h+ix)^3(a+b\log(c(e+fx)))^2}{3df}-\frac{4abix(fh-ei)^2}{df^3}-\frac{4b^2i(e+fx)(fh-ei)^2\log(c(e+fx))}{df^4}+\frac{3b^2i^2(e+fx)^2(fh-ei)}{4df^4}+\frac{b^2(fh-ei)^3\log^2(e+fx)}{3df^4}+\frac{2b^2i^3(e+fx)^3}{27df^4}+\frac{6b^2ix(fh-ei)^2}{df^3}$$

Antiderivative was successfully verified.

```
[In] Int[((h + i*x)^3*(a + b*Log[c*(e + f*x)])^2)/(d*e + d*f*x),x]
```

```
[Out] (-4*a*b*i*(f*h - e*i)^2*x)/(d*f^3) + (6*b^2*i*(f*h - e*i)^2*x)/(d*f^3) + (3
*b^2*i^2*(f*h - e*i)*(e + f*x)^2)/(4*d*f^4) + (2*b^2*i^3*(e + f*x)^3)/(27*d
*f^4) + (b^2*(f*h - e*i)^3*Log[e + f*x]^2)/(3*d*f^4) - (4*b^2*i*(f*h - e*i)
^2*(e + f*x)*Log[c*(e + f*x)])/(d*f^4) - (2*b*i*(f*h - e*i)^2*(e + f*x)*(a
+ b*Log[c*(e + f*x)]))/(d*f^4) - (3*b*i^2*(f*h - e*i)*(e + f*x)^2*(a + b*Lo
g[c*(e + f*x)]))/(2*d*f^4) - (2*b*i^3*(e + f*x)^3*(a + b*Log[c*(e + f*x)]))
/(9*d*f^4) - (2*b*(f*h - e*i)^3*Log[e + f*x]*(a + b*Log[c*(e + f*x)]))/(3*d
*f^4) + (2*i*(f*h - e*i)^2*(e + f*x)*(a + b*Log[c*(e + f*x)])^2)/(d*f^4) +
(i^2*(f*h - e*i)*(e + f*x)^2*(a + b*Log[c*(e + f*x)])^2)/(2*d*f^4) + ((h +
i*x)^3*(a + b*Log[c*(e + f*x)])^2)/(3*d*f) + ((f*h - e*i)^3*(a + b*Log[c*(e
 + f*x)])^3)/(3*b*d*f^4)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] &&  !LinearQ[u, x] &&  !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2332

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2333

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2338

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2339

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] :> Dist[1/(
b*n), Subst[Int[x^p, x], x, a + b*Log[c*x^n]], x] /; FreeQ[{a, b, c, n, p},
 x]
```

Rule 2341

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_.)*(x_))^(m_.), x_Symbol] :>
Simp[(d*x)^(m + 1)*((a + b*Log[c*x^n])/(d*(m + 1))), x] - Simp[b*n*((d*x)^(
m + 1)/(d*(m + 1)^2)), x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[m, -1]
```

Rule 2342

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_.)*(x_))^(m_.), x_Symbo
l] :> Simp[(d*x)^(m + 1)*((a + b*Log[c*x^n])^p/(d*(m + 1))), x] - Dist[b*n*
(p/(m + 1)), Int[(d*x)^m*(a + b*Log[c*x^n])^(p - 1), x], x] /; FreeQ[{a, b,
 c, d, m, n}, x] && NeQ[m, -1] && GtQ[p, 0]
```

Rule 2356

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.),
x_Symbol] :> Simp[(d + e*x)^(q + 1)*((a + b*Log[c*x^n])^p/(e*(q + 1))), x]
- Dist[b*n*(p/(e*(q + 1))), Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^(p -
1))/x, x], x] /; FreeQ[{a, b, c, d, e, n, p, q}, x] && GtQ[p, 0] && NeQ[q,
-1] && (EqQ[p, 1] || (IntegersQ[2*p, 2*q] &&  !IGtQ[q, 0]) || (EqQ[p, 2] &&
 NeQ[q, 1]))
```

Rule 2367

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_)^(r_.))^(
q_.), x_Symbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*x^n])^p, (d + e*x
^r)^q, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n, p, q, r}, x]
&& IntegerQ[q] && (GtQ[q, 0] || (IGtQ[p, 0] && IntegerQ[r]))
```

Rule 2372

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*(x_)^(m_.)*((d_) + (e_.)*(x_)^(r_
.))^(q_.), x_Symbol] :> With[{u = IntHide[x^m*(d + e*x^r)^q, x]}, Dist[a +
b*Log[c*x^n], u, x] - Dist[b*n, Int[SimplifyIntegrand[u/x, x], x], x]] /; F
reeQ[{a, b, c, d, e, n, r}, x] && IGtQ[q, 0] && IntegerQ[m] &&  !(EqQ[q, 1]
 && EqQ[m, -1])
```

Rule 2388

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.))
/(x_), x_Symbol] :> Dist[d, Int[(d + e*x)^(q - 1)*((a + b*Log[c*x^n])^p/x),
 x], x] + Dist[e, Int[(d + e*x)^(q - 1)*(a + b*Log[c*x^n])^p, x], x] /; Fre
eQ[{a, b, c, d, e, n}, x] && IGtQ[p, 0] && GtQ[q, 0] && IntegerQ[2*q]
```

Rule 2458

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[(g*(x/e))^q*((e*h - d*i)/e + i*(x/e))^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rubi steps

$$\int \frac{(h+184x)^3(a+b\log(c(e+fx)))^2}{de+dfx}\,dx = \frac{\text{Subst}\left(\int \frac{\left(\frac{-184e+fh}{f}+\frac{184x}{f}\right)^3(a+b\log(cx))^2}{dx}\,dx, x, e+fx\right)}{f}$$

$$= \frac{\text{Subst}\left(\int \frac{\left(\frac{-184e+fh}{f}+\frac{184x}{f}\right)^3(a+b\log(cx))^2}{x}\,dx, x, e+fx\right)}{df}$$

$$= \frac{184\text{Subst}\left(\int \left(\frac{-184e+fh}{f}+\frac{184x}{f}\right)^2(a+b\log(cx))^2\,dx, x, e+fx\right)}{df^2}$$

$$= \frac{(h+184x)^3(a+b\log(c(e+fx)))^2}{3df} - \frac{(2b)\text{Subst}\left(\int \frac{\left(\frac{-184e+fh}{f}+\frac{184}{f}\right.}{3}\right.}{3}$$

$$= -\frac{2b\left(\frac{1656(184e-fh)^2(e+fx)}{f^3} - \frac{152352(184e-fh)(e+fx)^2}{f^3} + \frac{6229504(e+fx)^3}{f^3} - \right.}{9df}$$

$$= -\frac{2b\left(\frac{1656(184e-fh)^2(e+fx)}{f^3} - \frac{152352(184e-fh)(e+fx)^2}{f^3} + \frac{6229504(e+fx)^3}{f^3} - \right.}{9df}$$

$$= -\frac{368ab(184e-fh)^2x}{df^3} - \frac{2b\left(\frac{1656(184e-fh)^2(e+fx)}{f^3} - \frac{152352(184e-fh)(}{f^3}\right.}{}$$

$$= -\frac{736ab(184e-fh)^2x}{df^3} + \frac{368b^2(184e-fh)^2x}{df^3} - \frac{8464b^2(184e-}{df^4}$$

$$= -\frac{736ab(184e-fh)^2x}{df^3} + \frac{1104b^2(184e-fh)^2x}{df^3} - \frac{25392b^2(184e}{d}$$

Mathematica [A]
time = 0.39, size = 460, normalized size = 0.99

Antiderivative was successfully verified.

```
[In] Integrate[((h + i*x)^3*(a + b*Log[c*(e + f*x)])^2)/(d*e + d*f*x),x]
```

```
[Out] (f*i*x*(18*a^2*(6*e^2*i^2 - 3*e*f*i*(6*h + i*x) + f^2*(18*h^2 + 9*h*i*x + 2
*i^2*x^2)) - 6*a*b*(66*e^2*i^2 - 3*e*f*i*(54*h + 5*i*x) + f^2*(108*h^2 + 27
*h*i*x + 4*i^2*x^2)) + b^2*(510*e^2*i^2 - 3*e*f*i*(378*h + 19*i*x) + f^2*(6
48*h^2 + 81*h*i*x + 8*i^2*x^2))) + 6*(18*a^2*(f*h - e*i)^3 + b^2*e*i*(-108*
```

```
f^2*h^2 + 189*e*f*h*i - 85*e^2*i^2) + 6*a*b*e*i*(18*f^2*h^2 - 27*e*f*h*i +
11*e^2*i^2))*Log[e + f*x] + 6*b*f*i*x*(6*a*(6*e^2*i^2 - 3*e*f*i*(6*h + i*x)
 + f^2*(18*h^2 + 9*h*i*x + 2*i^2*x^2)) - b*(66*e^2*i^2 - 3*e*f*i*(54*h + 5*
i*x) + f^2*(108*h^2 + 27*h*i*x + 4*i^2*x^2)))*Log[c*(e + f*x)] + 18*b*(6*a*
(f*h - e*i)^3 + b*i*(e + f*x)*(11*e^2*i^2 - e*f*i*(27*h + 5*i*x) + f^2*(18*
h^2 + 9*h*i*x + 2*i^2*x^2)))*Log[c*(e + f*x)]^2 + 36*b^2*(f*h - e*i)^3*Log[
c*(e + f*x)]^3)/(108*d*f^4)
```

Maple [B] Leaf count of result is larger than twice the leaf count of optimal. 1177 vs. $2(446) = 892$.
time = 0.54, size = 1178, normalized size = 2.54 Too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((i*x+h)^3*(a+b*ln(c*(f*x+e)))^2/(d*f*x+d*e),x,method=_RETURNVERBOSE)
```

```
[Out] 1/c/f*(6/c/f^2/d*a*b*h*i^2*(1/2*(c*f*x+c*e)^2*ln(c*f*x+c*e)-1/4*(c*f*x+c*e)
^2)-c/f/d*b^2*e*h^2*i*ln(c*f*x+c*e)^3-12/f^2/d*a*b*e*h*i^2*((c*f*x+c*e)*ln(
c*f*x+c*e)-c*f*x-c*e)+c/f^2/d*b^2*e^2*h*i^2*ln(c*f*x+c*e)^3+1/c^2/f^3/d*b^2
*i^3*(1/3*(c*f*x+c*e)^3*ln(c*f*x+c*e)^2-2/9*(c*f*x+c*e)^3*ln(c*f*x+c*e)+2/2
7*(c*f*x+c*e)^3)+3/f^3/d*b^2*e^2*i^3*((c*f*x+c*e)*ln(c*f*x+c*e)^2-2*(c*f*x+
c*e)*ln(c*f*x+c*e)+2*c*f*x+2*c*e)+6/f/d*a*b*h^2*i*((c*f*x+c*e)*ln(c*f*x+c*e
)-c*f*x-c*e)+c/d*a*b*h^3*ln(c*f*x+c*e)^2+3/f/d*a^2*h^2*i*(c*f*x+c*e)+1/3/c^
2/f^3/d*a^2*i^3*(c*f*x+c*e)^3+3/f^3/d*a^2*e^2*i^3*(c*f*x+c*e)+3/f/d*b^2*h^2
*i*((c*f*x+c*e)*ln(c*f*x+c*e)^2-2*(c*f*x+c*e)*ln(c*f*x+c*e)+2*c*f*x+2*c*e)+
6/f^3/d*a*b*e^2*i^3*((c*f*x+c*e)*ln(c*f*x+c*e)-c*f*x-c*e)-3/c/f^3/d*b^2*e*i
^3*(1/2*(c*f*x+c*e)^2*ln(c*f*x+c*e)^2-1/2*(c*f*x+c*e)^2*ln(c*f*x+c*e)+1/4*(
c*f*x+c*e)^2)-6/f^2/d*b^2*e*h*i^2*((c*f*x+c*e)*ln(c*f*x+c*e)^2-2*(c*f*x+c*e
)*ln(c*f*x+c*e)+2*c*f*x+2*c*e)-3/2/c/f^3/d*a^2*e*i^3*(c*f*x+c*e)^2-c/f^3/d*
a^2*e^3*i^3*ln(c*f*x+c*e)+3*c/f^2/d*a*b*e^2*h*i^2*ln(c*f*x+c*e)^2-3*c/f/d*a
*b*e*h^2*i*ln(c*f*x+c*e)^2-6/c/f^3/d*a*b*e*i^3*(1/2*(c*f*x+c*e)^2*ln(c*f*x+
c*e)-1/4*(c*f*x+c*e)^2)+3*c/f^2/d*a^2*e^2*h*i^2*ln(c*f*x+c*e)-3*c/f/d*a^2*e
*h^2*i*ln(c*f*x+c*e)+1/3*c/d*b^2*h^3*ln(c*f*x+c*e)^3+c/d*a^2*h^3*ln(c*f*x+c
*e)-c/f^3/d*a*b*e^3*i^3*ln(c*f*x+c*e)^2-6/f^2/d*a^2*e*h*i^2*(c*f*x+c*e)+3/2
/c/f^2/d*a^2*h*i^2*(c*f*x+c*e)^2+3/c/f^2/d*b^2*h*i^2*(1/2*(c*f*x+c*e)^2*ln(
c*f*x+c*e)^2-1/2*(c*f*x+c*e)^2*ln(c*f*x+c*e)+1/4*(c*f*x+c*e)^2)-1/3*c/f^3/d
*b^2*e^3*i^3*ln(c*f*x+c*e)^3+2/c^2/f^3/d*a*b*i^3*(1/3*(c*f*x+c*e)^3*ln(c*f*
x+c*e)-1/9*(c*f*x+c*e)^3))
```

Maxima [B] Both result and optimal contain complex but leaf count of result is larger than twice the leaf count of optimal. 979 vs. $2(445) = 890$.
time = 0.32, size = 979, normalized size = 2.11

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^3*(a+b*log(c*(f*x+e)))^2/(d*f*x+d*e),x, algorithm="maxima
")
```

```
[Out] -a*b*h^3*(2*log(c*f*x + c*e)*log(d*f*x + d*e)/(d*f) - (log(f*x + e)^2 + 2*l
og(f*x + e)*log(c))/(d*f)) + 6*I*a*b*h^2*(x/(d*f) - e*log(f*x + e)/(d*f^2))
*log(c*f*x + c*e) + 1/3*b^2*h^3*log(c*f*x + c*e)^3/(d*f) + 3*I*a^2*h^2*(x/(
d*f) - e*log(f*x + e)/(d*f^2)) - 3*a*b*h*((f*x^2 - 2*x*e)/(d*f^2) + 2*e^2*l
og(f*x + e)/(d*f^3))*log(c*f*x + c*e) + 2*a*b*h^3*log(c*f*x + c*e)*log(d*f*
x + d*e)/(d*f) - 3/2*a^2*h*((f*x^2 - 2*x*e)/(d*f^2) + 2*e^2*log(f*x + e)/(d
*f^3)) - 1/3*I*a*b*((2*f^2*x^3 - 3*f*x^2*e + 6*x*e^2)/(d*f^3) - 6*e^3*log(f
*x + e)/(d*f^4))*log(c*f*x + c*e) + a^2*h^3*log(d*f*x + d*e)/(d*f) - 1/6*I*
a^2*((2*f^2*x^3 - 3*f*x^2*e + 6*x*e^2)/(d*f^3) - 6*e^3*log(f*x + e)/(d*f^4)
) + 3*I*(e*log(f*x + e)^2 - 2*f*x + 2*e*log(f*x + e))*a*b*h^2/(d*f^2) + 3/2
*(f^2*x^2 - 6*f*x*e + 2*e^2*log(f*x + e)^2 + 6*e^2*log(f*x + e))*a*b*h/(d*f
^3) - I*(c^2*e*log(c*f*x + c*e)^3 - 3*(c*f*x + c*e)*(c*log(c*f*x + c*e)^2 -
 2*c*log(c*f*x + c*e) + 2*c))*b^2*h^2/(c^2*d*f^2) + 1/18*I*(4*f^3*x^3 - 15*
f^2*x^2*e + 66*f*x*e^2 - 18*e^3*log(f*x + e)^2 - 66*e^3*log(f*x + e))*a*b/(
d*f^4) - 1/4*(4*c^3*e^2*log(c*f*x + c*e)^3 + 3*(c*f*x + c*e)^2*(2*c*log(c*f
*x + c*e)^2 - 2*c*log(c*f*x + c*e) + c) - 24*(c^2*e*log(c*f*x + c*e)^2 - 2*
c^2*e*log(c*f*x + c*e) + 2*c^2*e)*(c*f*x + c*e))*b^2*h/(c^3*d*f^3) + 1/108*
I*(36*c^4*e^3*log(c*f*x + c*e)^3 - 4*(c*f*x + c*e)^3*(9*c*log(c*f*x + c*e)^
2 - 6*c*log(c*f*x + c*e) + 2*c) + 81*(2*c^2*e*log(c*f*x + c*e)^2 - 2*c^2*e*
log(c*f*x + c*e) + c^2*e)*(c*f*x + c*e)^2 - 324*(c^3*e^2*log(c*f*x + c*e)^2
 - 2*c^3*e^2*log(c*f*x + c*e) + 2*c^3*e^2)*(c*f*x + c*e))*b^2/(c^4*d*f^4)
```

Fricas [A]
time = 0.38, size = 546, normalized size = 1.18

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^3*(a+b*log(c*(f*x+e)))^2/(d*f*x+d*e),x, algorithm="fricas
")
```

```
[Out] -1/108*(324*(-I*a^2 + 2*I*a*b - 2*I*b^2)*f^3*h^2*x + 81*(2*a^2 - 2*a*b + b^
2)*f^3*h*x^2 + 4*(9*I*a^2 - 6*I*a*b + 2*I*b^2)*f^3*x^3 + 6*(18*I*a^2 - 66*I
*a*b + 85*I*b^2)*f*x*e^2 - 36*(b^2*f^3*h^3 - 3*I*b^2*f^2*h^2*e - 3*b^2*f*h*
e^2 + I*b^2*e^3)*log(c*f*x + c*e)^3 - 18*(6*a*b*f^3*h^3 + 18*I*b^2*f^3*h^2*
x - 9*b^2*f^3*h*x^2 - 2*I*b^2*f^3*x^3 - (-6*I*a*b + 11*I*b^2)*e^3 - 3*(2*I*
b^2*f*x + 3*(2*a*b - 3*b^2)*f*h)*e^2 + 3*(6*b^2*f^2*h*x + I*b^2*f^2*x^2 - 6
*(I*a*b - I*b^2)*f^2*h^2)*e)*log(c*f*x + c*e)^2 - 3*(54*(2*a^2 - 6*a*b + 7*
b^2)*f^2*h*x - (-18*I*a^2 + 30*I*a*b - 19*I*b^2)*f^2*x^2)*e - 6*(18*a^2*f^3
*h^3 - 108*(-I*a*b + I*b^2)*f^3*h^2*x - 27*(2*a*b - b^2)*f^3*h*x^2 - 4*(3*I
*a*b - I*b^2)*f^3*x^3 - (-18*I*a^2 + 66*I*a*b - 85*I*b^2)*e^3 - 3*(9*(2*a^2
 - 6*a*b + 7*b^2)*f*h + 2*(6*I*a*b - 11*I*b^2)*f*x)*e^2 - 3*(18*(I*a^2 - 2*
I*a*b + 2*I*b^2)*f^2*h^2 - 18*(2*a*b - 3*b^2)*f^2*h*x + (-6*I*a*b + 5*I*b^2
)*f^2*x^2)*e)*log(c*f*x + c*e))/(d*f^4)
```

Sympy [B] Leaf count of result is larger than twice the leaf count of optimal. 918 vs. $2(428) = 856$.

time = 1.35, size = 918, normalized size = 1.98

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)**3*(a+b*ln(c*(f*x+e)))**2/(d*f*x+d*e),x)
```

```
[Out] x**3*(a**2*i**3/(3*d*f) - 2*a*b*i**3/(9*d*f) + 2*b**2*i**3/(27*d*f)) + x**2
*(-a**2*e*i**3/(2*d*f**2) + 3*a**2*h*i**2/(2*d*f) + 5*a*b*e*i**3/(6*d*f**2)
 - 3*a*b*h*i**2/(2*d*f) - 19*b**2*e*i**3/(36*d*f**2) + 3*b**2*h*i**2/(4*d*f
)) + x*(a**2*e**2*i**3/(d*f**3) - 3*a**2*e*h*i**2/(d*f**2) + 3*a**2*h**2*i/
(d*f) - 11*a*b*e**2*i**3/(3*d*f**3) + 9*a*b*e*h*i**2/(d*f**2) - 6*a*b*h**2*
i/(d*f) + 85*b**2*e**2*i**3/(18*d*f**3) - 21*b**2*e*h*i**2/(2*d*f**2) + 6*b
**2*h**2*i/(d*f)) + (36*a*b*e**2*i**3*x - 108*a*b*e*f*h*i**2*x - 18*a*b*e*f
*i**3*x**2 + 108*a*b*f**2*h**2*i*x + 54*a*b*f**2*h*i**2*x**2 + 12*a*b*f**2*
i**3*x**3 - 66*b**2*e**2*i**3*x + 162*b**2*e*f*h*i**2*x + 15*b**2*e*f*i**3*
x**2 - 108*b**2*f**2*h**2*i*x - 27*b**2*f**2*h*i**2*x**2 - 4*b**2*f**2*i**3
*x**3)*log(c*(e + f*x))/(18*d*f**3) + (-b**2*e**3*i**3 + 3*b**2*e**2*f*h*i*
*2 - 3*b**2*e*f**2*h**2*i + b**2*f**3*h**3)*log(c*(e + f*x))**3/(3*d*f**4)
- (18*a**2*e**3*i**3 - 54*a**2*e**2*f*h*i**2 + 54*a**2*e*f**2*h**2*i - 18*a
**2*f**3*h**3 - 66*a*b*e**3*i**3 + 162*a*b*e**2*f*h*i**2 - 108*a*b*e*f**2*h
**2*i + 85*b**2*e**3*i**3 - 189*b**2*e**2*f*h*i**2 + 108*b**2*e*f**2*h**2*i
)*log(e + f*x)/(18*d*f**4) + (-6*a*b*e**3*i**3 + 18*a*b*e**2*f*h*i**2 - 18*
a*b*e*f**2*h**2*i + 6*a*b*f**3*h**3 + 11*b**2*e**3*i**3 - 27*b**2*e**2*f*h*
i**2 + 6*b**2*e**2*f*i**3*x + 18*b**2*e*f**2*h**2*i - 18*b**2*e*f**2*h*i**2
*x - 3*b**2*e*f**2*i**3*x**2 + 18*b**2*f**3*h**2*i*x + 9*b**2*f**3*h*i**2*x
**2 + 2*b**2*f**3*i**3*x**3)*log(c*(e + f*x))**2/(6*d*f**4)
```

Giac [B] Both result and optimal contain complex but leaf count of result is larger than twice the leaf count of optimal. 1005 vs. 2(445) = 890.
time = 7.02, size = 1005, normalized size = 2.17

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^3*(a+b*log(c*(f*x+e)))^2/(d*f*x+d*e),x, algorithm="giac")
```

```
[Out] 1/108*(36*b^2*f^3*h^3*log(c*f*x + c*e)^3 + 108*a*b*f^3*h^3*log(c*f*x + c*e)
^2 + 324*I*b^2*f^3*h^2*x*log(c*f*x + c*e)^2 - 162*b^2*f^3*h*x^2*log(c*f*x +
 c*e)^2 - 36*I*b^2*f^3*x^3*log(c*f*x + c*e)^2 - 108*I*b^2*f^2*h^2*e*log(c*f
*x + c*e)^3 + 648*I*a*b*f^3*h^2*x*log(c*f*x + c*e) - 648*I*b^2*f^3*h^2*x*lo
g(c*f*x + c*e) - 324*a*b*f^3*h*x^2*log(c*f*x + c*e) + 162*b^2*f^3*h*x^2*log
(c*f*x + c*e) - 72*I*a*b*f^3*x^3*log(c*f*x + c*e) + 24*I*b^2*f^3*x^3*log(c*
f*x + c*e) - 324*I*a*b*f^2*h^2*e*log(c*f*x + c*e)^2 + 324*I*b^2*f^2*h^2*e*l
og(c*f*x + c*e)^2 + 324*b^2*f^2*h*x*e*log(c*f*x + c*e)^2 + 54*I*b^2*f^2*x^2
```

```
*e*log(c*f*x + c*e)^2 + 108*a^2*f^3*h^3*log(f*x + e) + 324*I*a^2*f^3*h^2*x
- 648*I*a*b*f^3*h^2*x + 648*I*b^2*f^3*h^2*x - 162*a^2*f^3*h*x^2 + 162*a*b*f
^3*h*x^2 - 81*b^2*f^3*h*x^2 - 36*I*a^2*f^3*x^3 + 24*I*a*b*f^3*x^3 - 8*I*b^2
*f^3*x^3 + 648*a*b*f^2*h*x*e*log(c*f*x + c*e) - 972*b^2*f^2*h*x*e*log(c*f*x
 + c*e) + 108*I*a*b*f^2*x^2*e*log(c*f*x + c*e) - 90*I*b^2*f^2*x^2*e*log(c*f
*x + c*e) - 108*b^2*f*h*e^2*log(c*f*x + c*e)^3 - 324*I*a^2*f^2*h^2*e*log(f*
x + e) + 648*I*a*b*f^2*h^2*e*log(f*x + e) - 648*I*b^2*f^2*h^2*e*log(f*x + e
) + 324*a^2*f^2*h*x*e - 972*a*b*f^2*h*x*e + 1134*b^2*f^2*h*x*e + 54*I*a^2*f
^2*x^2*e - 90*I*a*b*f^2*x^2*e + 57*I*b^2*f^2*x^2*e - 324*a*b*f*h*e^2*log(c*
f*x + c*e)^2 + 486*b^2*f*h*e^2*log(c*f*x + c*e)^2 - 108*I*b^2*f*x*e^2*log(c
*f*x + c*e)^2 - 216*I*a*b*f*x*e^2*log(c*f*x + c*e) + 396*I*b^2*f*x*e^2*log(
c*f*x + c*e) + 36*I*b^2*e^3*log(c*f*x + c*e)^3 - 324*a^2*f*h*e^2*log(f*x +
e) + 972*a*b*f*h*e^2*log(f*x + e) - 1134*b^2*f*h*e^2*log(f*x + e) - 108*I*a
^2*f*x*e^2 + 396*I*a*b*f*x*e^2 - 510*I*b^2*f*x*e^2 + 108*I*a*b*e^3*log(c*f*
x + c*e)^2 - 198*I*b^2*e^3*log(c*f*x + c*e)^2 + 108*I*a^2*e^3*log(f*x + e)
- 396*I*a*b*e^3*log(f*x + e) + 510*I*b^2*e^3*log(f*x + e))/(d*f^4)
```

<u>Mupad</u> [B]
time = 0.69, size = 803, normalized size = 1.73

$$x^2\left(\frac{i^2\left(18a^2fh-5b^2ei+9b^2fh+6abei-18abfh\right)}{12df^2}-\frac{ei^3\left(9a^2-6ab+2b^2\right)}{18df^2}\right)+\ln\left(c\left(e+fx\right)\right)^2\left(f\left(\frac{b^2i^3x^3}{3df^2}-\frac{b^2i^2x^2\left(ei-3fh\right)}{2df^3}+\frac{b^2ix\left(e^2i^2-3efhi+3f^2h^2\right)}{df^4}\right)+\frac{11b^2e^3i^3-27b^2e^2fhi^2+18b^2ef^2h^2i-6abe^3i^3+18abe^2fhi^2-18abef^2h^2i+6abf^3h^3}{6df^4}\right)+x\left(\frac{54a^2f^2h^2i-36abe^2i^3+108abefhi^2-108abf^2h^2i+66b^2e^2i^3-162b^2efhi^2+108b^2f^2h^2i}{18df^3}-\frac{e\left(\frac{i^2\left(18a^2fh-5b^2ei+9b^2fh+6abei-18abfh\right)}{6df^2}-\frac{ei^3\left(9a^2-6ab+2b^2\right)}{9df^2}\right)}{f}\right)+f\ln\left(c\left(e+fx\right)\right)\left(\frac{x^2\left(5eb^2i^3-9fhb^2i^2-6aebi^3+18afhbi^2\right)}{6df^3}-\frac{x\left(11b^2e^2i^3-27b^2efhi^2+18b^2f^2h^2i-6abe^2i^3+18abefhi^2-18abf^2h^2i\right)}{3df^4}+\frac{2bi^3x^3\left(3a-b\right)}{9df^2}\right)-\frac{\ln\left(e+fx\right)\left(18a^2e^3i^3-54a^2e^2fhi^2+54a^2ef^2h^2i-18a^2f^3h^3-66abe^3i^3+162abe^2fhi^2-108abef^2h^2i+85b^2e^3i^3-189b^2e^2fhi^2+108b^2ef^2h^2i\right)}{18df^4}+\frac{i^3x^3\left(9a^2-6ab+2b^2\right)}{27df}-\frac{b^2\ln\left(c\left(e+fx\right)\right)^3\left(e^3i^3-3e^2fhi^2+3ef^2h^2i-f^3h^3\right)}{3df^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((h + i*x)^3*(a + b*log(c*(e + f*x)))^2)/(d*e + d*f*x),x)
```

```
[Out] x^2*((i^2*(18*a^2*f*h - 5*b^2*e*i + 9*b^2*f*h + 6*a*b*e*i - 18*a*b*f*h))/(1
2*d*f^2) - (e*i^3*(9*a^2 - 6*a*b + 2*b^2))/(18*d*f^2)) + log(c*(e + f*x))^2
*(f*((b^2*i^3*x^3)/(3*d*f^2) - (b^2*i^2*x^2*(e*i - 3*f*h))/(2*d*f^3) + (b^2
*i*x*(e^2*i^2 + 3*f^2*h^2 - 3*e*f*h*i))/(d*f^4)) + (11*b^2*e^3*i^3 - 6*a*b*
e^3*i^3 + 6*a*b*f^3*h^3 + 18*b^2*e*f^2*h^2*i - 27*b^2*e^2*f*h*i^2 - 18*a*b*
e*f^2*h^2*i + 18*a*b*e^2*f*h*i^2)/(6*d*f^4)) + x*((66*b^2*e^2*i^3 + 54*a^2*
f^2*h^2*i + 108*b^2*f^2*h^2*i - 36*a*b*e^2*i^3 - 108*a*b*f^2*h^2*i - 162*b^
2*e*f*h*i^2 + 108*a*b*e*f*h*i^2)/(18*d*f^3) - (e*((i^2*(18*a^2*f*h - 5*b^2*
e*i + 9*b^2*f*h + 6*a*b*e*i - 18*a*b*f*h))/(6*d*f^2) - (e*i^3*(9*a^2 - 6*a*
b + 2*b^2))/(9*d*f^2)))/f) + f*log(c*(e + f*x))*((x^2*(5*b^2*e*i^3 - 6*a*b*
e*i^3 - 9*b^2*f*h*i^2 + 18*a*b*f*h*i^2))/(6*d*f^3) - (x*(11*b^2*e^2*i^3 + 1
8*b^2*f^2*h^2*i - 6*a*b*e^2*i^3 - 18*a*b*f^2*h^2*i - 27*b^2*e*f*h*i^2 + 18*
a*b*e*f*h*i^2))/(3*d*f^4) + (2*b*i^3*x^3*(3*a - b))/(9*d*f^2)) - (log(e + f
*x)*(18*a^2*e^3*i^3 - 18*a^2*f^3*h^3 + 85*b^2*e^3*i^3 - 66*a*b*e^3*i^3 + 54
*a^2*e*f^2*h^2*i - 54*a^2*e^2*f*h*i^2 + 108*b^2*e*f^2*h^2*i - 189*b^2*e^2*f
*h*i^2 - 108*a*b*e*f^2*h^2*i + 162*a*b*e^2*f*h*i^2))/(18*d*f^4) + (i^3*x^3*
(9*a^2 - 6*a*b + 2*b^2))/(27*d*f) - (b^2*log(c*(e + f*x))^3*(e^3*i^3 - f^3*
h^3 + 3*e*f^2*h^2*i - 3*e^2*f*h*i^2))/(3*d*f^4)
```

3.185 $\int \frac{(h+ix)^2(a+b\log(c(e+fx)))^2}{de+dfx}\,dx$

Optimal. Leaf size=238

$$-\frac{4abi(fh-ei)x}{df^2}+\frac{4b^2i(fh-ei)x}{df^2}+\frac{b^2i^2(e+fx)^2}{4df^3}-\frac{4b^2i(fh-ei)(e+fx)\log(c(e+fx))}{df^3}-\frac{bi^2(e+fx)^2(a+}{2}$$

```
[Out] -4*a*b*i*(-e*i+f*h)*x/d/f^2+4*b^2*i*(-e*i+f*h)*x/d/f^2+1/4*b^2*i^2*(f*x+e)^
2/d/f^3-4*b^2*i*(-e*i+f*h)*(f*x+e)*ln(c*(f*x+e))/d/f^3-1/2*b*i^2*(f*x+e)^2*
(a+b*ln(c*(f*x+e)))/d/f^3+2*i*(-e*i+f*h)*(f*x+e)*(a+b*ln(c*(f*x+e)))^2/d/f^
3+1/2*i^2*(f*x+e)^2*(a+b*ln(c*(f*x+e)))^2/d/f^3+1/3*(-e*i+f*h)^2*(a+b*ln(c*
(f*x+e)))^3/b/d/f^3
```

Rubi [A]
time = 0.36, antiderivative size = 238, normalized size of antiderivative = 1.00, number of steps used = 16, number of rules used = 10, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}} = 0.312$, Rules used = {2458, 12, 2388, 2339, 30, 2333, 2332, 2367, 2342, 2341}

$$\frac{(fh-ei)^2(a+b\log(c(e+fx)))^3}{3bdf^3}+\frac{2i(e+fx)(fh-ei)(a+b\log(c(e+fx)))^2}{df^3}+\frac{i^2(e+fx)^2(a+b\log(c(e+fx)))^2}{2df^3}-\frac{bi^2(e+fx)^2(a+b\log(c(e+fx)))}{2df^3}-\frac{4abix(fh-ei)}{df^2}-\frac{4b^2i(e+fx)(fh-ei)\log(c(e+fx))}{df^3}+\frac{b^2i^2(e+fx)^2}{4df^3}+\frac{4b^2ix(fh-ei)}{df^2}$$

Antiderivative was successfully verified.

```
[In] Int[((h + i*x)^2*(a + b*Log[c*(e + f*x)])^2)/(d*e + d*f*x),x]
```

```
[Out] (-4*a*b*i*(f*h - e*i)*x)/(d*f^2) + (4*b^2*i*(f*h - e*i)*x)/(d*f^2) + (b^2*i
^2*(e + f*x)^2)/(4*d*f^3) - (4*b^2*i*(f*h - e*i)*(e + f*x)*Log[c*(e + f*x)]
)/(d*f^3) - (b*i^2*(e + f*x)^2*(a + b*Log[c*(e + f*x)]))/(2*d*f^3) + (2*i*(
f*h - e*i)*(e + f*x)*(a + b*Log[c*(e + f*x)])^2)/(d*f^3) + (i^2*(e + f*x)^2
*(a + b*Log[c*(e + f*x)])^2)/(2*d*f^3) + ((f*h - e*i)^2*(a + b*Log[c*(e + f
*x)])^3)/(3*b*d*f^3)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 2332

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2333

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2339

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] :> Dist[1/(
b*n), Subst[Int[x^p, x], x, a + b*Log[c*x^n]], x] /; FreeQ[{a, b, c, n, p},
 x]
```

Rule 2341

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_.)*(x_))^(m_.), x_Symbol] :>
Simp[(d*x)^(m + 1)*((a + b*Log[c*x^n])/(d*(m + 1))), x] - Simp[b*n*((d*x)^(
m + 1)/(d*(m + 1)^2)), x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[m, -1]
```

Rule 2342

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_.)*(x_))^(m_.), x_Symbo
l] :> Simp[(d*x)^(m + 1)*((a + b*Log[c*x^n])^p/(d*(m + 1))), x] - Dist[b*n*
(p/(m + 1)), Int[(d*x)^m*(a + b*Log[c*x^n])^(p - 1), x], x] /; FreeQ[{a, b,
 c, d, m, n}, x] && NeQ[m, -1] && GtQ[p, 0]
```

Rule 2367

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_)^(r_.))^(
q_.), x_Symbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*x^n])^p, (d + e*x
^r)^q, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n, p, q, r}, x]
&& IntegerQ[q] && (GtQ[q, 0] || (IGtQ[p, 0] && IntegerQ[r]))
```

Rule 2388

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.))
/(x_), x_Symbol] :> Dist[d, Int[(d + e*x)^(q - 1)*((a + b*Log[c*x^n])^p/x),
 x], x] + Dist[e, Int[(d + e*x)^(q - 1)*(a + b*Log[c*x^n])^p, x], x] /; Fre
eQ[{a, b, c, d, e, n}, x] && IGtQ[p, 0] && GtQ[q, 0] && IntegerQ[2*q]
```

Rule 2458

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[(g*(x/e))^q*((e*h - d*i)/e + i*(x/e))^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rubi steps

$$\int \frac{(h+185x)^2(a+b\log(c(e+fx)))^2}{de+dfx}\,dx = \frac{\text{Subst}\left(\int \frac{\left(\frac{-185e+fh}{f}+\frac{185x}{f}\right)^2(a+b\log(cx))^2}{dx}\,dx, x, e+fx\right)}{f}$$

$$= \frac{\text{Subst}\left(\int \frac{\left(\frac{-185e+fh}{f}+\frac{185x}{f}\right)^2(a+b\log(cx))^2}{x}\,dx, x, e+fx\right)}{df}$$

$$= \frac{185\text{Subst}\left(\int \left(\frac{-185e+fh}{f}+\frac{185x}{f}\right)(a+b\log(cx))^2\,dx, x, e+fx\right)}{df^2}$$

$$= \frac{185\text{Subst}\left(\int \left(\frac{(-185e+fh)(a+b\log(cx))^2}{f}+\frac{185x(a+b\log(cx))^2}{f}\right)\,dx, x, e\right.}{df^2}$$

$$= -\frac{185(185e-fh)(e+fx)(a+b\log(c(e+fx)))^2}{df^3}+\frac{34225\text{Subs}}{}$$

$$= \frac{370ab(185e-fh)x}{df^2}-\frac{370(185e-fh)(e+fx)(a+b\log(c(e+}{df^3}$$

$$= \frac{740ab(185e-fh)x}{df^2}-\frac{370b^2(185e-fh)x}{df^2}+\frac{34225b^2(e+fx)^2}{4df^3}$$

$$= \frac{740ab(185e-fh)x}{df^2}-\frac{740b^2(185e-fh)x}{df^2}+\frac{34225b^2(e+fx)^2}{4df^3}$$

Mathematica [A]
time = 0.12, size = 171, normalized size = 0.72

$$\frac{24i(fh-ei)(e+fx)(a+b\log(c(e+fx)))^2+6i^2(e+fx)^2(a+b\log(c(e+fx)))^2+\frac{4(fh-ei)^2(a+b\log(c(e+fx)))^3}{b}-48bi(fh-ei)((a-b)fx+b(e+fx)\log(c(e+fx)))+3bi^2(bfx(2e+fx)-2(e+fx)^2(a+b\log(c(e+fx))))}{12df^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[((h + i*x)^2*(a + b*Log[c*(e + f*x)])^2)/(d*e + d*f*x),x]
```

```
[Out] (24*i*(f*h - e*i)*(e + f*x)*(a + b*Log[c*(e + f*x)])^2 + 6*i^2*(e + f*x)^2*
(a + b*Log[c*(e + f*x)])^2 + (4*(f*h - e*i)^2*(a + b*Log[c*(e + f*x)])^3)/b
 - 48*b*i*(f*h - e*i)*((a - b)*f*x + b*(e + f*x)*Log[c*(e + f*x)]) + 3*b*i^
2*(b*f*x*(2*e + f*x) - 2*(e + f*x)^2*(a + b*Log[c*(e + f*x)])))/(12*d*f^3)
```

Maple [B] Leaf count of result is larger than twice the leaf count of optimal. 631 vs. $2(230) = 460$.
time = 0.52, size = 632, normalized size = 2.66 Too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((i*x+h)^2*(a+b*ln(c*(f*x+e)))^2/(d*f*x+d*e),x,method=_RETURNVERBOSE)
```

```
[Out] 1/c/f*(c/f^2/d*a^2*e^2*i^2*ln(c*f*x+c*e)-2*c/f/d*a^2*e*h*i*ln(c*f*x+c*e)+c/
d*a^2*h^2*ln(c*f*x+c*e)-2/f^2/d*a^2*e*i^2*(c*f*x+c*e)+2/f/d*a^2*h*i*(c*f*x+
c*e)+1/2/c/f^2/d*a^2*i^2*(c*f*x+c*e)^2+c/f^2/d*a*b*e^2*i^2*ln(c*f*x+c*e)^2-
2*c/f/d*a*b*e*h*i*ln(c*f*x+c*e)^2+c/d*a*b*h^2*ln(c*f*x+c*e)^2-4/f^2/d*a*b*e
*i^2*((c*f*x+c*e)*ln(c*f*x+c*e)-c*f*x-c*e)+4/f/d*a*b*h*i*((c*f*x+c*e)*ln(c*
f*x+c*e)-c*f*x-c*e)+2/c/f^2/d*a*b*i^2*(1/2*(c*f*x+c*e)^2*ln(c*f*x+c*e)-1/4*
(c*f*x+c*e)^2)+1/3*c/f^2/d*b^2*e^2*i^2*ln(c*f*x+c*e)^3-2/3*c/f/d*b^2*e*h*i*
ln(c*f*x+c*e)^3+1/3*c/d*b^2*h^2*ln(c*f*x+c*e)^3-2/f^2/d*b^2*e*i^2*((c*f*x+c
*e)*ln(c*f*x+c*e)^2-2*(c*f*x+c*e)*ln(c*f*x+c*e)+2*c*f*x+2*c*e)+2/f/d*b^2*h*
i*((c*f*x+c*e)*ln(c*f*x+c*e)^2-2*(c*f*x+c*e)*ln(c*f*x+c*e)+2*c*f*x+2*c*e)+1
/c/f^2/d*b^2*i^2*(1/2*(c*f*x+c*e)^2*ln(c*f*x+c*e)^2-1/2*(c*f*x+c*e)^2*ln(c*
f*x+c*e)+1/4*(c*f*x+c*e)^2))
```

<u>Maxima</u> **[B]** Both result and optimal contain complex but leaf count of result is larger than twice the leaf count of optimal. 606 vs. $2(228) = 456$.
time = 0.31, size = 606, normalized size = 2.55

$$-abh^2\left(\frac{2\log(cfx+ce)\log(dfx+de)}{df}-\frac{\log(fx+e)^2+2\log(fx+e)\log(c)}{df}\right)+4i\,abh\left(\frac{x}{df}-\frac{e\log(fx+e)}{df^2}\right)\log(cfx+ce)+\frac{b^2h^2\log(cfx+ce)^3}{3\,df}+2i\,a^2h\left(\frac{x}{df}-\frac{e\log(fx+e)}{df^2}\right)-ab\left(\frac{fx^2-2\,xe}{df^2}+\frac{2\,e^2\log(fx+e)}{df^3}\right)\log(cfx+ce)+\frac{2\,abh^2\log(cfx+ce)\log(dfx+de)}{df}-\frac{1}{2}a^2\left(\frac{fx^2-2\,xe}{df^2}+\frac{2\,e^2\log(fx+e)}{df^3}\right)+\frac{a^2h^2\log(dfx+de)}{df}+\frac{2i\left(e\log(fx+e)^2-2\,fx+2\,e\log(fx+e)\right)abh}{df^2}+\frac{\left(f^2x^2-6\,fxe+2\,e^2\log(fx+e)^2+6\,e^2\log(fx+e)\right)ab}{2\,df^3}-\frac{2i\left(c^2e\log(cfx+ce)^3-3\,(cfx+ce)\left(c\log(cfx+ce)^2-2\,c\log(cfx+ce)+2\,c\right)\right)b^2h}{3\,c^2df^2}-\frac{\left(4\,c^3e^2\log(cfx+ce)^3+3\,(cfx+ce)^2\left(2\,c\log(cfx+ce)^2-2\,c\log(cfx+ce)+c\right)-24\left(c^2e\log(cfx+ce)^2-2\,c^2e\log(cfx+ce)+2\,c^2e\right)(cfx+ce)\right)b^2}{12\,c^3df^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^2*(a+b*log(c*(f*x+e)))^2/(d*f*x+d*e),x, algorithm="maxima
")
```

```
[Out] -a*b*h^2*(2*log(c*f*x + c*e)*log(d*f*x + d*e)/(d*f) - (log(f*x + e)^2 + 2*l
og(f*x + e)*log(c))/(d*f)) + 4*I*a*b*h*(x/(d*f) - e*log(f*x + e)/(d*f^2))*l
og(c*f*x + c*e) + 1/3*b^2*h^2*log(c*f*x + c*e)^3/(d*f) + 2*I*a^2*h*(x/(d*f)
 - e*log(f*x + e)/(d*f^2)) - a*b*((f*x^2 - 2*x*e)/(d*f^2) + 2*e^2*log(f*x +
 e)/(d*f^3))*log(c*f*x + c*e) + 2*a*b*h^2*log(c*f*x + c*e)*log(d*f*x + d*e)
/(d*f) - 1/2*a^2*((f*x^2 - 2*x*e)/(d*f^2) + 2*e^2*log(f*x + e)/(d*f^3)) + a
^2*h^2*log(d*f*x + d*e)/(d*f) + 2*I*(e*log(f*x + e)^2 - 2*f*x + 2*e*log(f*x
 + e))*a*b*h/(d*f^2) + 1/2*(f^2*x^2 - 6*f*x*e + 2*e^2*log(f*x + e)^2 + 6*e^
2*log(f*x + e))*a*b/(d*f^3) - 2/3*I*(c^2*e*log(c*f*x + c*e)^3 - 3*(c*f*x +
c*e)*(c*log(c*f*x + c*e)^2 - 2*c*log(c*f*x + c*e) + 2*c))*b^2*h/(c^2*d*f^2)
 - 1/12*(4*c^3*e^2*log(c*f*x + c*e)^3 + 3*(c*f*x + c*e)^2*(2*c*log(c*f*x +
c*e)^2 - 2*c*log(c*f*x + c*e) + c) - 24*(c^2*e*log(c*f*x + c*e)^2 - 2*c^2*e
*log(c*f*x + c*e) + 2*c^2*e)*(c*f*x + c*e))*b^2/(c^3*d*f^3)
```

<u>Fricas</u> **[A]**
time = 0.39, size = 315, normalized size = 1.32

$$-\frac{24\,(-i\,a^2+2i\,ab-2i\,b^2)f^2hx+3\,(2\,a^2-2\,ab+b^2)f^2x^2-6\,(2\,a^2-6\,ab+7\,b^2)fxe-4\,(b^2f^2h^2-2i\,b^2fhe-b^2e^2)\log(cfx+ce)^3-6\,(2\,abf^2h^2+4i\,b^2f^2hx-b^2f^2x^2-(2\,ab-3\,b^2)e^2+2\,(b^2fx-2\,(i\,ab-i\,b^2)fh)e)\log(cfx+ce)^2-6\,(2\,a^2f^2h^2-8\,(-i\,ab+i\,b^2)f^2hx-(2\,ab-b^2)f^2x^2-(2\,a^2-6\,ab+7\,b^2)e^2-2\,(2\,(i\,a^2-2i\,ab+2i\,b^2)fh-(2\,ab-3\,b^2)fx)e)\log(cfx+ce)}{12\,df^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^2*(a+b*log(c*(f*x+e)))^2/(d*f*x+d*e),x, algorithm="fricas
")
```

```
[Out] -1/12*(24*(-I*a^2 + 2*I*a*b - 2*I*b^2)*f^2*h*x + 3*(2*a^2 - 2*a*b + b^2)*f^
2*x^2 - 6*(2*a^2 - 6*a*b + 7*b^2)*f*x*e - 4*(b^2*f^2*h^2 - 2*I*b^2*f*h*e -
b^2*e^2)*log(c*f*x + c*e)^3 - 6*(2*a*b*f^2*h^2 + 4*I*b^2*f^2*h*x - b^2*f^2*
x^2 - (2*a*b - 3*b^2)*e^2 + 2*(b^2*f*x - 2*(I*a*b - I*b^2)*f*h)*e)*log(c*f*
x + c*e)^2 - 6*(2*a^2*f^2*h^2 - 8*(-I*a*b + I*b^2)*f^2*h*x - (2*a*b - b^2)*
f^2*x^2 - (2*a^2 - 6*a*b + 7*b^2)*e^2 - 2*(2*(I*a^2 - 2*I*a*b + 2*I*b^2)*f*
h - (2*a*b - 3*b^2)*f*x)*e)*log(c*f*x + c*e))/(d*f^3)
```

Sympy [B] Leaf count of result is larger than twice the leaf count of optimal. 473 vs. $2(218) = 436$.
time = 0.68, size = 473, normalized size = 1.99

$$x^2\left(\frac{a^2i^2}{2df}-\frac{abi^2}{2df}+\frac{b^2i^2}{4df}\right)+x\left(-\frac{a^2ei^2}{df^2}+\frac{2a^2hi}{df}+\frac{3abei^2}{df^2}-\frac{4abhi}{df}-\frac{7b^2ei^2}{2df^2}+\frac{4b^2hi}{df}\right)+\frac{(-4abei^2x+8abfhix+2abfi^2x^2+6b^2ei^2x-8b^2fhix-b^2fi^2x^2)\log(c(e+fx))}{2df^2}+\frac{(b^2e^2i^2-2b^2efhi+b^2f^2h^2)\log(c(e+fx))^3}{3df^3}+\frac{(2a^2e^2i^2-4a^2efhi+2a^2f^2h^2-6abe^2i^2+8abefhi+7b^2e^2i^2-8b^2efhi)\log(e+fx)}{2df^3}+\frac{(2abe^2i^2-4abefhi+2abf^2h^2-3b^2e^2i^2+4b^2efhi-2b^2efi^2x+4b^2f^2hix+b^2f^2i^2x^2)\log(c(e+fx))^2}{2df^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)**2*(a+b*ln(c*(f*x+e)))**2/(d*f*x+d*e),x)
```

```
[Out] x**2*(a**2*i**2/(2*d*f) - a*b*i**2/(2*d*f) + b**2*i**2/(4*d*f)) + x*(-a**2*
e*i**2/(d*f**2) + 2*a**2*h*i/(d*f) + 3*a*b*e*i**2/(d*f**2) - 4*a*b*h*i/(d*f
) - 7*b**2*e*i**2/(2*d*f**2) + 4*b**2*h*i/(d*f)) + (-4*a*b*e*i**2*x + 8*a*b
*f*h*i*x + 2*a*b*f*i**2*x**2 + 6*b**2*e*i**2*x - 8*b**2*f*h*i*x - b**2*f*i*
*2*x**2)*log(c*(e + f*x))/(2*d*f**2) + (b**2*e**2*i**2 - 2*b**2*e*f*h*i + b
**2*f**2*h**2)*log(c*(e + f*x))**3/(3*d*f**3) + (2*a**2*e**2*i**2 - 4*a**2*
e*f*h*i + 2*a**2*f**2*h**2 - 6*a*b*e**2*i**2 + 8*a*b*e*f*h*i + 7*b**2*e**2*
i**2 - 8*b**2*e*f*h*i)*log(e + f*x)/(2*d*f**3) + (2*a*b*e**2*i**2 - 4*a*b*e
*f*h*i + 2*a*b*f**2*h**2 - 3*b**2*e**2*i**2 + 4*b**2*e*f*h*i - 2*b**2*e*f*i
**2*x + 4*b**2*f**2*h*i*x + b**2*f**2*i**2*x**2)*log(c*(e + f*x))**2/(2*d*f
**3)
```

Giac [B] Both result and optimal contain complex but leaf count of result is larger than twice the leaf count of optimal. 548 vs. $2(228) = 456$.
time = 5.27, size = 548, normalized size = 2.30

$$\frac{4b^2f^2h^2\log(cfx+ce)^3+12abf^2h^2\log(cfx+ce)^2+24ib^2f^2hx\log(cfx+ce)^2-6b^2f^2x^2\log(cfx+ce)^2-8ib^2fhe\log(cfx+ce)^3+48iabf^2hx\log(cfx+ce)-48ib^2f^2hx\log(cfx+ce)-12abf^2x^2\log(cfx+ce)+6b^2f^2x^2\log(cfx+ce)-24iabfhe\log(cfx+ce)^2+24ib^2fhe\log(cfx+ce)^2+12b^2fxe\log(cfx+ce)^2+12a^2f^2h^2\log(fx+e)+24ia^2f^2hx-48iabf^2hx+48ib^2f^2hx-6a^2f^2x^2+6abf^2x^2-3b^2f^2x^2+24abfxe\log(cfx+ce)-36b^2fxe\log(cfx+ce)-4b^2e^2\log(cfx+ce)^3-24ia^2fhe\log(fx+e)+48iabfhe\log(fx+e)-48ib^2fhe\log(fx+e)+12a^2fxe-36abfxe+42b^2fxe-12abe^2\log(cfx+ce)^2+18b^2e^2\log(cfx+ce)^2-12a^2e^2\log(fx+e)+36abe^2\log(fx+e)-42b^2e^2\log(fx+e)}{12df^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^2*(a+b*log(c*(f*x+e)))^2/(d*f*x+d*e),x, algorithm="giac")
```

```
[Out] 1/12*(4*b^2*f^2*h^2*log(c*f*x + c*e)^3 + 12*a*b*f^2*h^2*log(c*f*x + c*e)^2
+ 24*I*b^2*f^2*h*x*log(c*f*x + c*e)^2 - 6*b^2*f^2*x^2*log(c*f*x + c*e)^2 -
8*I*b^2*f*h*e*log(c*f*x + c*e)^3 + 48*I*a*b*f^2*h*x*log(c*f*x + c*e) - 48*I
*b^2*f^2*h*x*log(c*f*x + c*e) - 12*a*b*f^2*x^2*log(c*f*x + c*e) + 6*b^2*f^2
*x^2*log(c*f*x + c*e) - 24*I*a*b*f*h*e*log(c*f*x + c*e)^2 + 24*I*b^2*f*h*e*
log(c*f*x + c*e)^2 + 12*b^2*f*x*e*log(c*f*x + c*e)^2 + 12*a^2*f^2*h^2*log(f
*x + e) + 24*I*a^2*f^2*h*x - 48*I*a*b*f^2*h*x + 48*I*b^2*f^2*h*x - 6*a^2*f^
2*x^2 + 6*a*b*f^2*x^2 - 3*b^2*f^2*x^2 + 24*a*b*f*x*e*log(c*f*x + c*e) - 36*
```

```
b^2*f*x*e*log(c*f*x + c*e) - 4*b^2*e^2*log(c*f*x + c*e)^3 - 24*I*a^2*f*h*e*
log(f*x + e) + 48*I*a*b*f*h*e*log(f*x + e) - 48*I*b^2*f*h*e*log(f*x + e) +
12*a^2*f*x*e - 36*a*b*f*x*e + 42*b^2*f*x*e - 12*a*b*e^2*log(c*f*x + c*e)^2
+ 18*b^2*e^2*log(c*f*x + c*e)^2 - 12*a^2*e^2*log(f*x + e) + 36*a*b*e^2*log(
f*x + e) - 42*b^2*e^2*log(f*x + e))/(d*f^3)
```

Mupad [B]
time = 0.50, size = 408, normalized size = 1.71

$$x\left(\frac{i\left(2a^2fh-3b^2ei+4b^2fh+2abei-4abfh\right)}{df^2}-\frac{ei^2\left(2a^2-2ab+b^2\right)}{2df^2}\right)+\ln\left(c\left(e+fx\right)\right)^2\left(f\left(\frac{b^2i^2x^2}{2df^2}-\frac{b^2ix\left(ei-2fh\right)}{df^3}\right)+\frac{-3b^2e^2i^2+4b^2efhi+2abe^2i^2-4abefhi+2abf^2h^2}{2df^3}\right)+f\ln\left(c\left(e+fx\right)\right)\left(\frac{x\left(3eb^2i^2-4fhb^2i-2aebi^2+4afhbi\right)}{df^3}+\frac{bi^2x^2\left(2a-b\right)}{2df^2}\right)+\frac{\ln\left(e+fx\right)\left(2a^2e^2i^2-4a^2efhi+2a^2f^2h^2-6abe^2i^2+8abefhi+7b^2e^2i^2-8b^2efhi\right)}{2df^3}+\frac{b^2\ln\left(c\left(e+fx\right)\right)^3\left(e^2i^2-2efhi+f^2h^2\right)}{3df^3}+\frac{i^2x^2\left(2a^2-2ab+b^2\right)}{4df}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((h + i*x)^2*(a + b*log(c*(e + f*x)))^2)/(d*e + d*f*x),x)
```

```
[Out] x*((i*(2*a^2*f*h - 3*b^2*e*i + 4*b^2*f*h + 2*a*b*e*i - 4*a*b*f*h))/(d*f^2)
- (e*i^2*(2*a^2 - 2*a*b + b^2))/(2*d*f^2)) + log(c*(e + f*x))^2*(f*((b^2*i^
2*x^2)/(2*d*f^2) - (b^2*i*x*(e*i - 2*f*h))/(d*f^3)) + (2*a*b*e^2*i^2 - 3*b^
2*e^2*i^2 + 2*a*b*f^2*h^2 + 4*b^2*e*f*h*i - 4*a*b*e*f*h*i)/(2*d*f^3)) + f*l
og(c*(e + f*x))*((x*(3*b^2*e*i^2 - 2*a*b*e*i^2 - 4*b^2*f*h*i + 4*a*b*f*h*i)
)/(d*f^3) + (b*i^2*x^2*(2*a - b))/(2*d*f^2)) + (log(e + f*x)*(2*a^2*e^2*i^2
 + 2*a^2*f^2*h^2 + 7*b^2*e^2*i^2 - 6*a*b*e^2*i^2 - 4*a^2*e*f*h*i - 8*b^2*e*
f*h*i + 8*a*b*e*f*h*i))/(2*d*f^3) + (b^2*log(c*(e + f*x))^3*(e^2*i^2 + f^2*
h^2 - 2*e*f*h*i))/(3*d*f^3) + (i^2*x^2*(2*a^2 - 2*a*b + b^2))/(4*d*f)
```

3.186 $\int \frac{(h+ix)(a+b\log(c(e+fx)))^2}{de+dfx}\,dx$

Optimal. Leaf size=113

$$-\frac{2abix}{df}+\frac{2b^2ix}{df}-\frac{2b^2i(e+fx)\log(c(e+fx))}{df^2}+\frac{i(e+fx)(a+b\log(c(e+fx)))^2}{df^2}+\frac{(fh-ei)(a+b\log(c(e+$$

```
[Out] -2*a*b*i*x/d/f+2*b^2*i*x/d/f-2*b^2*i*(f*x+e)*ln(c*(f*x+e))/d/f^2+i*(f*x+e)*
(a+b*ln(c*(f*x+e)))^2/d/f^2+1/3*(-e*i+f*h)*(a+b*ln(c*(f*x+e)))^3/b/d/f^2
```

Rubi [A]
time = 0.14, antiderivative size = 113, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 7, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}} = 0.233$, Rules used = {2458, 12, 2388, 2339, 30, 2333, 2332}

$$\frac{(fh-ei)(a+b\log(c(e+fx)))^3}{3bdf^2}+\frac{i(e+fx)(a+b\log(c(e+fx)))^2}{df^2}-\frac{2abix}{df}-\frac{2b^2i(e+fx)\log(c(e+fx))}{df^2}+\frac{2b^2ix}{df}$$

Antiderivative was successfully verified.

```
[In] Int[((h + i*x)*(a + b*Log[c*(e + f*x)])^2)/(d*e + d*f*x),x]
```

```
[Out] (-2*a*b*i*x)/(d*f) + (2*b^2*i*x)/(d*f) - (2*b^2*i*(e + f*x)*Log[c*(e + f*x)
])/(d*f^2) + (i*(e + f*x)*(a + b*Log[c*(e + f*x)])^2)/(d*f^2) + ((f*h - e*i
)*(a + b*Log[c*(e + f*x)])^3)/(3*b*d*f^2)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 2332

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2333

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2339

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] :> Dist[1/(
b*n), Subst[Int[x^p, x], x, a + b*Log[c*x^n]], x] /; FreeQ[{a, b, c, n, p},
 x]
```

Rule 2388

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.))
/(x_), x_Symbol] :> Dist[d, Int[(d + e*x)^(q - 1)*((a + b*Log[c*x^n])^p/x),
 x], x] + Dist[e, Int[(d + e*x)^(q - 1)*(a + b*Log[c*x^n])^p, x], x] /; Fre
eQ[{a, b, c, d, e, n}, x] && IGtQ[p, 0] && GtQ[q, 0] && IntegerQ[2*q]
```

Rule 2458

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[(g*(x/e))^q*((e*h - d*i)/e + i*(x/e))^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rubi steps

$$\int \frac{(h+186x)(a+b\log(c(e+fx)))^2}{de+dfx}\,dx = \frac{\text{Subst}\left(\int \frac{\left(\frac{-186e+fh}{f}+\frac{186x}{f}\right)(a+b\log(cx))^2}{dx}\,dx, x, e+fx\right)}{f}$$
$$= \frac{\text{Subst}\left(\int \frac{\left(\frac{-186e+fh}{f}+\frac{186x}{f}\right)(a+b\log(cx))^2}{x}\,dx, x, e+fx\right)}{df}$$
$$= \frac{186\text{Subst}\left(\int (a+b\log(cx))^2\,dx, x, e+fx\right)}{df^2} - \frac{(186e-fh)\text{Subst}\left(\int\right.}{}$$
$$= \frac{186(e+fx)(a+b\log(c(e+fx)))^2}{df^2} - \frac{(372b)\text{Subst}\left(\int (a+b\log(cx\right.}{df^2}$$
$$= -\frac{372abx}{df} + \frac{186(e+fx)(a+b\log(c(e+fx)))^2}{df^2} - \frac{(186e-fh)(a}{}$$
$$= -\frac{372abx}{df} + \frac{372b^2x}{df} - \frac{372b^2(e+fx)\log(c(e+fx))}{df^2} + \frac{186(e+f}{}$$

Mathematica [A]
time = 0.04, size = 89, normalized size = 0.79

$$\frac{-6(a-b)bfix-6b^2i(e+fx)\log(c(e+fx))+3i(e+fx)(a+b\log(c(e+fx)))^2+\frac{(fh-ei)(a+b\log(c(e+fx)))^3}{b}}{3df^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((h + i*x)*(a + b*Log[c*(e + f*x)])^2)/(d*e + d*f*x),x]
```

```
[Out] (-6*(a - b)*b*f*i*x - 6*b^2*i*(e + f*x)*Log[c*(e + f*x)] + 3*i*(e + f*x)*(a
 + b*Log[c*(e + f*x)])^2 + ((f*h - e*i)*(a + b*Log[c*(e + f*x)])^3)/b)/(3*d
*f^2)
```

Maple [B] Leaf count of result is larger than twice the leaf count of optimal. 256 vs. $2(111) = 222$.
time = 0.36, size = 257, normalized size = 2.27

method	result
norman	$\frac{i(a^2-2ba+2b^2)x}{df} + \frac{b^2 ix\ln(c(fx+e))^2}{df} - \frac{(a^2ei-a^2fh-2abei+2b^2ei)\ln(c(fx+e))}{d\,f^2} - \frac{b(aei-afh-bei)\ln(c(fx+e))}{d\,f^2}$
risch	$-\frac{b^2\ln(c(fx+e))^3 ei}{3d\,f^2} + \frac{b^2\ln(c(fx+e))^3 h}{3df} - \frac{b(-bfix+aei-afh-bei)\ln(c(fx+e))^2}{d\,f^2} + \frac{2bi(a-b)x\ln(c(fx+e))}{df} -$
derivativedivides	$\frac{-\frac{a^2cei\ln(cfx+ce)}{fd}+\frac{a^2hc\ln(cfx+ce)}{d}+\frac{a^2i(cfx+ce)}{fd}-\frac{abcei\ln(cfx+ce)^2}{fd}+\frac{abhc\ln(cfx+ce)^2}{d}+\frac{2abi((cfx+ce)\ln(cfx+ce)-cfx-c}{fd}}{cf}$
default	$\frac{-\frac{a^2cei\ln(cfx+ce)}{fd}+\frac{a^2hc\ln(cfx+ce)}{d}+\frac{a^2i(cfx+ce)}{fd}-\frac{abcei\ln(cfx+ce)^2}{fd}+\frac{abhc\ln(cfx+ce)^2}{d}+\frac{2abi((cfx+ce)\ln(cfx+ce)-cfx-c}{fd}}{cf}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((i*x+h)*(a+b*ln(c*(f*x+e)))^2/(d*f*x+d*e),x,method=_RETURNVERBOSE)
```

```
[Out] 1/c/f*(-1/f/d*a^2*c*e*i*ln(c*f*x+c*e)+1/d*a^2*h*c*ln(c*f*x+c*e)+1/f/d*a^2*i
*(c*f*x+c*e)-1/f/d*a*b*c*e*i*ln(c*f*x+c*e)^2+1/d*a*b*h*c*ln(c*f*x+c*e)^2+2/
f/d*a*b*i*((c*f*x+c*e)*ln(c*f*x+c*e)-c*f*x-c*e)-1/3/f/d*b^2*c*e*i*ln(c*f*x+
c*e)^3+1/3/d*b^2*h*c*ln(c*f*x+c*e)^3+1/f/d*b^2*i*((c*f*x+c*e)*ln(c*f*x+c*e)
^2-2*(c*f*x+c*e)*ln(c*f*x+c*e)+2*c*f*x+2*c*e))
```

Maxima [B] Both result and optimal contain complex but leaf count of result is larger than twice the leaf count of optimal. 324 vs. $2(115) = 230$.
time = 0.30, size = 324, normalized size = 2.87

$$-abh\left(\frac{2\log(cfx+ce)\log(dfx+de)}{df} - \frac{\log(fx+e)^2 + 2\log(fx+e)\log(c)}{df}\right) + 2i\,ab\left(\frac{x}{df} - \frac{e\log(fx+e)}{df^2}\right)\log(cfx+ce) + \frac{b^2h\log(cfx+ce)^3}{3\,df} + i\,a^2\left(\frac{x}{df} - \frac{e\log(fx+e)}{df^2}\right) + \frac{2\,abh\log(cfx+ce)\log(dfx+de)}{df} + \frac{a^2h\log(dfx+de)}{df} + \frac{i\left(e\log(fx+e)^2 - 2\,fx + 2\,e\log(fx+e)\right)ab}{df^2} - \frac{i\left(c^2e\log(cfx+ce)^3 - 3\,(cfx+ce)\left(c\log(cfx+ce)^2 - 2\,c\log(cfx+ce) + 2\,c\right)\right)b^2}{3\,c^2df^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)*(a+b*log(c*(f*x+e)))^2/(d*f*x+d*e),x, algorithm="maxima")
```

```
[Out] -a*b*h*(2*log(c*f*x + c*e)*log(d*f*x + d*e)/(d*f) - (log(f*x + e)^2 + 2*log
(f*x + e)*log(c))/(d*f)) + 2*I*a*b*(x/(d*f) - e*log(f*x + e)/(d*f^2))*log(c
*f*x + c*e) + 1/3*b^2*h*log(c*f*x + c*e)^3/(d*f) + I*a^2*(x/(d*f) - e*log(f
*x + e)/(d*f^2)) + 2*a*b*h*log(c*f*x + c*e)*log(d*f*x + d*e)/(d*f) + a^2*h*
log(d*f*x + d*e)/(d*f) + I*(e*log(f*x + e)^2 - 2*f*x + 2*e*log(f*x + e))*a*
b/(d*f^2) - 1/3*I*(c^2*e*log(c*f*x + c*e)^3 - 3*(c*f*x + c*e)*(c*log(c*f*x
+ c*e)^2 - 2*c*log(c*f*x + c*e) + 2*c))*b^2/(c^2*d*f^2)
```

Fricas [A]
time = 0.39, size = 148, normalized size = 1.31

$$\frac{(b^2fh - i\,b^2e)\log\left(cfx+ce\right)^3 - 3\left(-i\,a^2 + 2i\,ab - 2i\,b^2\right)fx + 3\left(abfh + i\,b^2fx - (i\,ab - i\,b^2)e\right)\log\left(cfx+ce\right)^2 + 3\left(a^2fh - 2\left(-i\,ab + i\,b^2\right)fx - (i\,a^2 - 2i\,ab + 2i\,b^2)e\right)\log\left(cfx+ce\right)}{3\,df^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)*(a+b*log(c*(f*x+e)))^2/(d*f*x+d*e),x, algorithm="fricas")
```

```
[Out] 1/3*((b^2*f*h - I*b^2*e)*log(c*f*x + c*e)^3 - 3*(-I*a^2 + 2*I*a*b - 2*I*b^2
)*f*x + 3*(a*b*f*h + I*b^2*f*x - (I*a*b - I*b^2)*e)*log(c*f*x + c*e)^2 + 3*
(a^2*f*h - 2*(-I*a*b + I*b^2)*f*x - (I*a^2 - 2*I*a*b + 2*I*b^2)*e)*log(c*f*
x + c*e))/(d*f^2)
```

Sympy [A]
time = 0.36, size = 175, normalized size = 1.55

$$x\left(\frac{a^2i}{df} - \frac{2abi}{df} + \frac{2b^2i}{df}\right) + \frac{(2abix - 2b^2ix)\log\left(c(e+fx)\right)}{df} + \frac{(-b^2ei + b^2fh)\log\left(c(e+fx)\right)^3}{3df^2} - \frac{(a^2ei - a^2fh - 2abei + 2b^2ei)\log\left(e+fx\right)}{df^2} + \frac{(-abei + abfh + b^2ei + b^2fix)\log\left(c(e+fx)\right)^2}{df^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)*(a+b*ln(c*(f*x+e)))**2/(d*f*x+d*e),x)
```

```
[Out] x*(a**2*i/(d*f) - 2*a*b*i/(d*f) + 2*b**2*i/(d*f)) + (2*a*b*i*x - 2*b**2*i*x
)*log(c*(e + f*x))/(d*f) + (-b**2*e*i + b**2*f*h)*log(c*(e + f*x))**3/(3*d*
f**2) - (a**2*e*i - a**2*f*h - 2*a*b*e*i + 2*b**2*e*i)*log(e + f*x)/(d*f**2
) + (-a*b*e*i + a*b*f*h + b**2*e*i + b**2*f*i*x)*log(c*(e + f*x))**2/(d*f**
2)
```

Giac [A]
time = 2.88, size = 228, normalized size = 2.02

$$\frac{b^2fh\log\left(cfx+ce\right)^3 + 3\,abfh\log\left(cfx+ce\right)^2 + 3i\,b^2fx\log\left(cfx+ce\right)^2 - i\,b^2e\log\left(cfx+ce\right)^3 + 6i\,abfx\log\left(cfx+ce\right) - 6i\,b^2fx\log\left(cfx+ce\right) - 3i\,abe\log\left(cfx+ce\right)^2 + 3i\,b^2e\log\left(cfx+ce\right)^2 + 3\,a^2fh\log\left(fx+e\right) + 3i\,a^2fx - 6i\,abfx + 6i\,b^2fx - 3i\,a^2e\log\left(fx+e\right) + 6i\,abe\log\left(fx+e\right) - 6i\,b^2e\log\left(fx+e\right)}{3\,df^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)*(a+b*log(c*(f*x+e)))^2/(d*f*x+d*e),x, algorithm="giac")
```

```
[Out] 1/3*(b^2*f*h*log(c*f*x + c*e)^3 + 3*a*b*f*h*log(c*f*x + c*e)^2 + 3*I*b^2*f*
x*log(c*f*x + c*e)^2 - I*b^2*e*log(c*f*x + c*e)^3 + 6*I*a*b*f*x*log(c*f*x +
 c*e) - 6*I*b^2*f*x*log(c*f*x + c*e) - 3*I*a*b*e*log(c*f*x + c*e)^2 + 3*I*b
^2*e*log(c*f*x + c*e)^2 + 3*a^2*f*h*log(f*x + e) + 3*I*a^2*f*x - 6*I*a*b*f*
x + 6*I*b^2*f*x - 3*I*a^2*e*log(f*x + e) + 6*I*a*b*e*log(f*x + e) - 6*I*b^2
*e*log(f*x + e))/(d*f^2)
```

Mupad [B]
time = 0.34, size = 163, normalized size = 1.44

$$\ln\left(c\,\left(e+f\,x\right)\right)^2\,\left(\frac{b\,\left(a\,f\,h-a\,e\,i+b\,e\,i\right)}{d\,f^2}+\frac{b^2\,i\,x}{d\,f}\right)-\frac{\ln\left(e+f\,x\right)\,\left(a^2\,e\,i-a^2\,f\,h+2\,b^2\,e\,i-2\,a\,b\,e\,i\right)}{d\,f^2}+\frac{i\,x\,\left(a^2-2\,a\,b+2\,b^2\right)}{d\,f}-\frac{b^2\,\ln\left(c\,\left(e+f\,x\right)\right)^3\,\left(e\,i-f\,h\right)}{3\,d\,f^2}+\frac{2\,b\,i\,x\,\ln\left(c\,\left(e+f\,x\right)\right)\,\left(a-b\right)}{d\,f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((h + i*x)*(a + b*log(c*(e + f*x)))^2)/(d*e + d*f*x),x)
```

```
[Out] log(c*(e + f*x))^2*((b*(a*f*h - a*e*i + b*e*i))/(d*f^2) + (b^2*i*x)/(d*f))
- (log(e + f*x)*(a^2*e*i - a^2*f*h + 2*b^2*e*i - 2*a*b*e*i))/(d*f^2) + (i*x
*(a^2 - 2*a*b + 2*b^2))/(d*f) - (b^2*log(c*(e + f*x))^3*(e*i - f*h))/(3*d*f
^2) + (2*b*i*x*log(c*(e + f*x))*(a - b))/(d*f)
```

3.187 $\int \frac{(a+b\log(c(e+fx)))^2}{de+dfx}\,dx$

Optimal. Leaf size=27

$$\frac{(a+b\log(c(e+fx)))^3}{3bdf}$$

```
[Out] 1/3*(a+b*ln(c*(f*x+e)))^3/b/d/f
```

Rubi [A]
time = 0.04, antiderivative size = 27, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.160$, Rules used = {2437, 12, 2339, 30}

$$\frac{(a+b\log(c(e+fx)))^3}{3bdf}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(e + f*x)])^2/(d*e + d*f*x),x]
```

```
[Out] (a + b*Log[c*(e + f*x)])^3/(3*b*d*f)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 2339

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] :> Dist[1/(
b*n), Subst[Int[x^p, x], x, a + b*Log[c*x^n]], x] /; FreeQ[{a, b, c, n, p},
 x]
```

Rule 2437

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[(f*(x/d))^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rubi steps

$$\int \frac{(a+b\log(c(e+fx)))^2}{de+dfx}\,dx = \frac{\text{Subst}\left(\int \frac{(a+b\log(cx))^2}{dx}\,dx, x, e+fx\right)}{f}$$
$$= \frac{\text{Subst}\left(\int \frac{(a+b\log(cx))^2}{x}\,dx, x, e+fx\right)}{df}$$
$$= \frac{\text{Subst}\left(\int x^2\,dx, x, a+b\log(c(e+fx))\right)}{bdf}$$
$$= \frac{(a+b\log(c(e+fx)))^3}{3bdf}$$

Mathematica [A]
time = 0.00, size = 27, normalized size = 1.00

$$\frac{(a+b\log(c(e+fx)))^3}{3bdf}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(e + f*x)])^2/(d*e + d*f*x),x]
```

```
[Out] (a + b*Log[c*(e + f*x)])^3/(3*b*d*f)
```

Maple [B] Leaf count of result is larger than twice the leaf count of optimal. 63 vs. $2(25) = 50$.
time = 0.28, size = 64, normalized size = 2.37

method	result	size
risch	$\frac{b^2\ln(c(fx+e))^3}{3df}+\frac{ba\ln(c(fx+e))^2}{df}+\frac{a^2\ln(fx+e)}{df}$	58
norman	$\frac{a^2\ln(c(fx+e))}{df}+\frac{ba\ln(c(fx+e))^2}{df}+\frac{b^2\ln(c(fx+e))^3}{3df}$	60
derivativedivides	$\frac{\frac{c\,a^2\ln(cfx+ce)}{d}+\frac{cab\ln(cfx+ce)^2}{d}+\frac{c\,b^2\ln(cfx+ce)^3}{3d}}{cf}$	64
default	$\frac{\frac{c\,a^2\ln(cfx+ce)}{d}+\frac{cab\ln(cfx+ce)^2}{d}+\frac{c\,b^2\ln(cfx+ce)^3}{3d}}{cf}$	64

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(f*x+e)))^2/(d*f*x+d*e),x,method=_RETURNVERBOSE)
```

```
[Out] 1/c/f*(c/d*a^2*ln(c*f*x+c*e)+c/d*a*b*ln(c*f*x+c*e)^2+1/3*c/d*b^2*ln(c*f*x+c
*e)^3)
```

Maxima [B] Leaf count of result is larger than twice the leaf count of optimal. 136 vs. $2(26) = 52$.
time = 0.29, size = 136, normalized size = 5.04

$$-ab\left(\frac{2\,\log\left(cfx+ce\right)\log\left(dfx+de\right)}{df}-\frac{\log\left(fx+e\right)^2+2\,\log\left(fx+e\right)\log\left(c\right)}{df}\right)+\frac{b^2\log\left(cfx+ce\right)^3}{3\,df}+\frac{2\,ab\log\left(cfx+ce\right)\log\left(dfx+de\right)}{df}+\frac{a^2\log\left(dfx+de\right)}{df}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(f*x+e)))^2/(d*f*x+d*e),x, algorithm="maxima")
```

```
[Out] -a*b*(2*log(c*f*x + c*e)*log(d*f*x + d*e)/(d*f) - (log(f*x + e)^2 + 2*log(f
*x + e)*log(c))/(d*f)) + 1/3*b^2*log(c*f*x + c*e)^3/(d*f) + 2*a*b*log(c*f*x
 + c*e)*log(d*f*x + d*e)/(d*f) + a^2*log(d*f*x + d*e)/(d*f)
```

Fricas [B] Leaf count of result is larger than twice the leaf count of optimal. 56 vs. $2(26) = 52$.
time = 0.37, size = 56, normalized size = 2.07

$$\frac{b^2\log\left(cfx+ce\right)^3+3\,ab\log\left(cfx+ce\right)^2+3\,a^2\log\left(cfx+ce\right)}{3\,df}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(f*x+e)))^2/(d*f*x+d*e),x, algorithm="fricas")
```

```
[Out] 1/3*(b^2*log(c*f*x + c*e)^3 + 3*a*b*log(c*f*x + c*e)^2 + 3*a^2*log(c*f*x +
c*e))/(d*f)
```

Sympy [B] Leaf count of result is larger than twice the leaf count of optimal. 51 vs. $2(19) = 38$.
time = 0.09, size = 51, normalized size = 1.89

$$\frac{a^2\log\left(de+dfx\right)}{df}+\frac{ab\log\left(c(e+fx)\right)^2}{df}+\frac{b^2\log\left(c(e+fx)\right)^3}{3df}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(f*x+e)))**2/(d*f*x+d*e),x)
```

```
[Out] a**2*log(d*e + d*f*x)/(d*f) + a*b*log(c*(e + f*x))**2/(d*f) + b**2*log(c*(e
 + f*x))**3/(3*d*f)
```

Giac [B] Leaf count of result is larger than twice the leaf count of optimal. 53 vs. $2(26) = 52$.
time = 4.75, size = 53, normalized size = 1.96

$$\frac{b^2\log\left(cfx+ce\right)^3+3\,ab\log\left(cfx+ce\right)^2+3\,a^2\log\left(fx+e\right)}{3\,df}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(f*x+e)))^2/(d*f*x+d*e),x, algorithm="giac")
```

```
[Out] 1/3*(b^2*log(c*f*x + c*e)^3 + 3*a*b*log(c*f*x + c*e)^2 + 3*a^2*log(f*x + e)
)/(d*f)
```

Mupad [B]
time = 0.48, size = 50, normalized size = 1.85

$$\frac{3\ln\left(e+f\,x\right)\,a^2+3\,a\,b\ln\left(c\,e+c\,f\,x\right)^2+b^2\ln\left(c\,e+c\,f\,x\right)^3}{3\,d\,f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(e + f*x)))^2/(d*e + d*f*x),x)
```

```
[Out] (b^2*log(c*e + c*f*x)^3 + 3*a^2*log(e + f*x) + 3*a*b*log(c*e + c*f*x)^2)/(3
*d*f)
```

3.188 $\int \frac{(a+b\log(c(e+fx)))^2}{(de+dfx)(h+ix)}\,dx$

Optimal. Leaf size=142

$$-\frac{(a+b\log(c(e+fx)))^2\log\left(1+\frac{fh-ei}{i(e+fx)}\right)}{d(fh-ei)}+\frac{2b(a+b\log(c(e+fx)))\text{Li}_2\left(-\frac{fh-ei}{i(e+fx)}\right)}{d(fh-ei)}+\frac{2b^2\text{Li}_3\left(-\frac{fh-ei}{i(e+fx)}\right)}{d(fh-ei)}$$

```
[Out] -(a+b*ln(c*(f*x+e)))^2*ln(1+(-e*i+f*h)/i/(f*x+e))/d/(-e*i+f*h)+2*b*(a+b*ln(
c*(f*x+e)))*polylog(2,(e*i-f*h)/i/(f*x+e))/d/(-e*i+f*h)+2*b^2*polylog(3,(e*
i-f*h)/i/(f*x+e))/d/(-e*i+f*h)
```

Rubi [A]
time = 0.21, antiderivative size = 142, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}} = 0.156$, Rules used = {2458, 12, 2379, 2421, 6724}

$$\frac{2b\text{PolyLog}\left(2,-\frac{fh-ei}{i(e+fx)}\right)(a+b\log(c(e+fx)))}{d(fh-ei)}+\frac{2b^2\text{PolyLog}\left(3,-\frac{fh-ei}{i(e+fx)}\right)}{d(fh-ei)}-\frac{\log\left(\frac{fh-ei}{i(e+fx)}+1\right)(a+b\log(c(e+fx)))^2}{d(fh-ei)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(e + f*x)])^2/((d*e + d*f*x)*(h + i*x)),x]
```

```
[Out] -(((a + b*Log[c*(e + f*x)])^2*Log[1 + (f*h - e*i)/(i*(e + f*x))])/(d*(f*h -
 e*i))) + (2*b*(a + b*Log[c*(e + f*x)])*PolyLog[2, -((f*h - e*i)/(i*(e + f*
x)))])/(d*(f*h - e*i)) + (2*b^2*PolyLog[3, -((f*h - e*i)/(i*(e + f*x)))])/(
d*(f*h - e*i))
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 2379

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((x_)*((d_) + (e_.)*(x_)^(r
_.))), x_Symbol] :> Simp[(-Log[1 + d/(e*x^r)])*((a + b*Log[c*x^n])^p/(d*r))
, x] + Dist[b*n*(p/(d*r)), Int[Log[1 + d/(e*x^r)]*((a + b*Log[c*x^n])^(p -
1)/x), x], x] /; FreeQ[{a, b, c, d, e, n, r}, x] && IGtQ[p, 0]
```

Rule 2421

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> Simp[(-PolyLog[2, (-d)*f*x^m])*((a + b*Log[c
*x^n])^p/m), x] + Dist[b*n*(p/m), Int[PolyLog[2, (-d)*f*x^m]*((a + b*Log[c*
x^n])^(p - 1)/x), x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0
```

```
] && EqQ[d*e, 1]
```

Rule 2458

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[(g*(x/e))^q*((e*h - d*i)/e + i*(x/e))^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 6724

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(a+b\log(c(e+fx)))^2}{(h+188x)(de+dfx)}\,dx = \frac{\text{Subst}\left(\int \frac{(a+b\log(cx))^2}{dx\left(\frac{-188e+fh}{f}+\frac{188x}{f}\right)}\,dx, x, e+fx\right)}{f}$$

$$= \frac{\text{Subst}\left(\int \frac{(a+b\log(cx))^2}{x\left(\frac{-188e+fh}{f}+\frac{188x}{f}\right)}\,dx, x, e+fx\right)}{df}$$

$$= -\frac{\text{Subst}\left(\int \frac{(a+b\log(cx))^2}{x}\,dx, x, e+fx\right)}{d(188e-fh)} + \frac{188\text{Subst}\left(\int \frac{(a+b\log(cx))^2}{\frac{-188e+fh}{f}+\frac{188x}{f}}\,dx, x, e-\right.}{df(188e-fh)}$$

$$= \frac{\log\left(-\frac{f(h+188x)}{188e-fh}\right)(a+b\log(c(e+fx)))^2}{d(188e-fh)} - \frac{\text{Subst}\left(\int x^2\,dx, x, a+b\log(c(e-\right.}{bd(188e-fh)}$$

$$= \frac{\log\left(-\frac{f(h+188x)}{188e-fh}\right)(a+b\log(c(e+fx)))^2}{d(188e-fh)} - \frac{(a+b\log(c(e+fx)))^3}{3bd(188e-fh)} + \frac{2b(a}{}$$

$$= \frac{\log\left(-\frac{f(h+188x)}{188e-fh}\right)(a+b\log(c(e+fx)))^2}{d(188e-fh)} - \frac{(a+b\log(c(e+fx)))^3}{3bd(188e-fh)} + \frac{2b(a}{}$$

Mathematica [A]

time = 0.12, size = 189, normalized size = 1.33

$$\frac{3a^2\log(e+fx)+3ab\log^2(c(e+fx))+b^2\log^3(c(e+fx))-3a^2\log(h+ix)-6ab\log(c(e+fx))\log\left(\frac{f(h+ix)}{fh-ei}\right)-3b^2\log^2(c(e+fx))\log\left(\frac{f(h+ix)}{fh-ei}\right)-6b(a+b\log(c(e+fx)))\text{Li}_2\left(\frac{i(e+fx)}{-fh+ei}\right)+6b^2\text{Li}_3\left(\frac{i(e+fx)}{-fh+ei}\right)}{3d(fh-ei)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(e + f*x)])^2/((d*e + d*f*x)*(h + i*x)),x]
```

```
[Out] (3*a^2*Log[e + f*x] + 3*a*b*Log[c*(e + f*x)]^2 + b^2*Log[c*(e + f*x)]^3 - 3
*a^2*Log[h + i*x] - 6*a*b*Log[c*(e + f*x)]*Log[(f*(h + i*x))/(f*h - e*i)] -
 3*b^2*Log[c*(e + f*x)]^2*Log[(f*(h + i*x))/(f*h - e*i)] - 6*b*(a + b*Log[c
*(e + f*x)])*PolyLog[2, (i*(e + f*x))/(-(f*h) + e*i)] + 6*b^2*PolyLog[3, (i
*(e + f*x))/(-(f*h) + e*i)])/(3*d*(f*h - e*i))
```

Maple [B] Leaf count of result is larger than twice the leaf count of optimal. 408 vs. $2(140) = 280$.
time = 1.18, size = 409, normalized size = 2.88

method	result
risch	$-\frac{a^2 \ln(fx+e)}{d(ei-fh)} + \frac{a^2 \ln(ix+h)}{d(ei-fh)} - \frac{b^2 \ln(cfx+ce)^3}{3d(ei-fh)} + \frac{b^2 \ln(cfx+ce)^2 \ln\left(1+\frac{i(cfx+ce)}{-cei+hcf}\right)}{d(ei-fh)} + \frac{2b^2 \ln(cfx+ce) \operatorname{polylog}\left(2,-\right.}{d(ei-fh)}$
derivativedivides	$\frac{-\frac{cf\,a^2 \ln(cfx+ce)}{d(ei-fh)} + \frac{cf\,a^2 \ln(cei-hcf-i(cfx+ce))}{d(ei-fh)} - \frac{cf\,b^2 \ln(cfx+ce)^3}{3d(ei-fh)} + \frac{cf\,b^2 \ln(cfx+ce)^2 \ln\left(1+\frac{i(cfx+ce)}{-cei+hcf}\right)}{d(ei-fh)} + \frac{2cf\,b^2 \ln(cfx+ce)\,\mathrm{p}}{d(e}}{}$
default	$\frac{-\frac{cf\,a^2 \ln(cfx+ce)}{d(ei-fh)} + \frac{cf\,a^2 \ln(cei-hcf-i(cfx+ce))}{d(ei-fh)} - \frac{cf\,b^2 \ln(cfx+ce)^3}{3d(ei-fh)} + \frac{cf\,b^2 \ln(cfx+ce)^2 \ln\left(1+\frac{i(cfx+ce)}{-cei+hcf}\right)}{d(ei-fh)} + \frac{2cf\,b^2 \ln(cfx+ce)\,\mathrm{p}}{d(e}}{}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(f*x+e)))^2/(d*f*x+d*e)/(i*x+h),x,method=_RETURNVERBOSE)
```

```
[Out] 1/c/f*(-c*f/d*a^2/(e*i-f*h)*ln(c*f*x+c*e)+c*f/d*a^2/(e*i-f*h)*ln(c*e*i-h*c*
f-i*(c*f*x+c*e))-1/3*c*f/d*b^2/(e*i-f*h)*ln(c*f*x+c*e)^3+c*f/d*b^2/(e*i-f*h
)*ln(c*f*x+c*e)^2*ln(1+i/(-c*e*i+c*f*h)*(c*f*x+c*e))+2*c*f/d*b^2/(e*i-f*h)*
ln(c*f*x+c*e)*polylog(2,-i/(-c*e*i+c*f*h)*(c*f*x+c*e))-2*c*f/d*b^2/(e*i-f*h
)*polylog(3,-i/(-c*e*i+c*f*h)*(c*f*x+c*e))-c*f/d*a*b*ln(c*f*x+c*e)^2/(e*i-f
*h)+2*c*f/d*a*b/(e*i-f*h)*dilog((-c*e*i+h*c*f+i*(c*f*x+c*e))/(-c*e*i+c*f*h)
)+2*c*f/d*a*b/(e*i-f*h)*ln(c*f*x+c*e)*ln((-c*e*i+h*c*f+i*(c*f*x+c*e))/(-c*e
*i+c*f*h)))
```

Maxima [B] Both result and optimal contain complex but leaf count of result is larger than twice the leaf count of optimal. 324 vs. $2(134) = 268$.
time = 0.35, size = 324, normalized size = 2.28

$$a^2\left(\frac{\log(fx+e)}{dfh-ide} - \frac{\log(h+ix)}{dfh-ide}\right) - \frac{i\left(\log(fx+e)^2\log\left(-\frac{fx+e}{ifh+e}+1\right) + 2\,\mathrm{Li}_2\left(\frac{fx+e}{ifh+e}\right)\log(fx+e) - 2\,\mathrm{Li}_3\left(\frac{fx+e}{ifh+e}\right)\right)b^2}{idfh+de} - \frac{2\left(ib^2\log(c)+iab\right)\left(\log(fx+e)\log\left(-\frac{fx+e}{ifh+e}+1\right) + \mathrm{Li}_2\left(\frac{fx+e}{ifh+e}\right)\right)}{idfh+de} + \frac{\left(-ib^2\log(c)^2 - 2iab\log(c)\right)\log(-ih+x)}{idfh+de} + \frac{ib^2\log(fx+e)^3 - 3\left(-ib^2\log(c) - iab\right)\log(fx+e)^2 - 3\left(-ib^2\log(c)^2 - 2iab\log(c)\right)\log(fx+e)}{3i\,dfh+3\,de}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(f*x+e)))^2/(d*f*x+d*e)/(i*x+h),x, algorithm="maxima")
```

```
[Out] a^2*(log(f*x + e)/(d*f*h - I*d*e) - log(h + I*x)/(d*f*h - I*d*e)) - I*(log(
f*x + e)^2*log(-(f*x + e)/(I*f*h + e) + 1) + 2*dilog((f*x + e)/(I*f*h + e))
```

```
*log(f*x + e) - 2*polylog(3, (f*x + e)/(I*f*h + e)))*b^2/(I*d*f*h + d*e) -
2*(I*b^2*log(c) + I*a*b)*(log(f*x + e)*log(-(f*x + e)/(I*f*h + e) + 1) + di
log((f*x + e)/(I*f*h + e)))/(I*d*f*h + d*e) + (-I*b^2*log(c)^2 - 2*I*a*b*lo
g(c))*log(-I*h + x)/(I*d*f*h + d*e) + (I*b^2*log(f*x + e)^3 - 3*(-I*b^2*log
(c) - I*a*b)*log(f*x + e)^2 - 3*(-I*b^2*log(c)^2 - 2*I*a*b*log(c))*log(f*x
+ e))/(3*I*d*f*h + 3*d*e)
```

Fricas [F]

time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(f*x+e)))^2/(d*f*x+d*e)/(i*x+h),x, algorithm="fricas")
[Out] integral((-I*b^2*log(c*f*x + c*e)^2 - 2*I*a*b*log(c*f*x + c*e) - I*a^2)/(-I
*d*f*h*x + d*f*x^2 + (-I*d*h + d*x)*e), x)
```

Sympy [F]

time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{a^2}{eh+eix+fhx+fix^2}\,dx + \int \frac{b^2\log{(ce+cfx)}^2}{eh+eix+fhx+fix^2}\,dx + \int \frac{2ab\log{(ce+cfx)}}{eh+eix+fhx+fix^2}\,dx}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(f*x+e)))**2/(d*f*x+d*e)/(i*x+h),x)
[Out] (Integral(a**2/(e*h + e*i*x + f*h*x + f*i*x**2), x) + Integral(b**2*log(c*e
 + c*f*x)**2/(e*h + e*i*x + f*h*x + f*i*x**2), x) + Integral(2*a*b*log(c*e
+ c*f*x)/(e*h + e*i*x + f*h*x + f*i*x**2), x))/d
```

Giac [F]

time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(f*x+e)))^2/(d*f*x+d*e)/(i*x+h),x, algorithm="giac")
[Out] integrate((b*log((f*x + e)*c) + a)^2/((d*f*x + d*e)*(h + I*x)), x)
```

Mupad [F]

time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{{\left(a+b\,\ln\left(c\,\left(e+f\,x\right)\right)\right)}^2}{\left(h+i\,x\right)\,\left(d\,e+d\,f\,x\right)} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(e + f*x)))^2/((h + i*x)*(d*e + d*f*x)),x)
[Out] int((a + b*log(c*(e + f*x)))^2/((h + i*x)*(d*e + d*f*x)), x)
```

3.189 $\int \frac{(a+b\log(c(e+fx)))^2}{(de+dfx)(h+ix)^2}\,dx$

Optimal. Leaf size=273

$$-\frac{i(e+fx)(a+b\log(c(e+fx)))^2}{d(fh-ei)^2(h+ix)}+\frac{2bf(a+b\log(c(e+fx)))\log\left(\frac{f(h+ix)}{fh-ei}\right)}{d(fh-ei)^2}-\frac{f(a+b\log(c(e+fx)))^2\log\left(1\right.}{d(fh-ei)^2}$$

```
[Out] -i*(f*x+e)*(a+b*ln(c*(f*x+e)))^2/d/(-e*i+f*h)^2/(i*x+h)+2*b*f*(a+b*ln(c*(f*
x+e)))*ln(f*(i*x+h)/(-e*i+f*h))/d/(-e*i+f*h)^2-f*(a+b*ln(c*(f*x+e)))^2*ln(1
+(-e*i+f*h)/i/(f*x+e))/d/(-e*i+f*h)^2+2*b*f*(a+b*ln(c*(f*x+e)))*polylog(2,(
e*i-f*h)/i/(f*x+e))/d/(-e*i+f*h)^2+2*b^2*f*polylog(2,-i*(f*x+e)/(-e*i+f*h))
/d/(-e*i+f*h)^2+2*b^2*f*polylog(3,(e*i-f*h)/i/(f*x+e))/d/(-e*i+f*h)^2
```

Rubi [A]
time = 0.40, antiderivative size = 273, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 9, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}} = 0.281$, Rules used = {2458, 12, 2389, 2379, 2421, 6724, 2355, 2354, 2438}

$$\frac{2bf\,\text{PolyLog}\left(2,-\frac{fh-ei}{i(e+fx)}\right)(a+b\log(c(e+fx)))}{d(fh-ei)^2}+\frac{2b^2f\,\text{PolyLog}\left(2,-\frac{i(e+fx)}{fh-ei}\right)}{d(fh-ei)^2}+\frac{2b^2f\,\text{PolyLog}\left(3,-\frac{fh-ei}{i(e+fx)}\right)}{d(fh-ei)^2}+\frac{2bf\log\left(\frac{f(h+ix)}{fh-ei}\right)(a+b\log(c(e+fx)))}{d(fh-ei)^2}-\frac{i(e+fx)(a+b\log(c(e+fx)))^2}{d(h+ix)(fh-ei)^2}-\frac{f\log\left(\frac{fh-ei}{i(e+fx)}+1\right)(a+b\log(c(e+fx)))^2}{d(fh-ei)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(e + f*x)])^2/((d*e + d*f*x)*(h + i*x)^2),x]
```

```
[Out] -((i*(e + f*x)*(a + b*Log[c*(e + f*x)])^2)/(d*(f*h - e*i)^2*(h + i*x))) + (
2*b*f*(a + b*Log[c*(e + f*x)])*Log[(f*(h + i*x))/(f*h - e*i)])/(d*(f*h - e*
i)^2) - (f*(a + b*Log[c*(e + f*x)])^2*Log[1 + (f*h - e*i)/(i*(e + f*x))])/(
d*(f*h - e*i)^2) + (2*b*f*(a + b*Log[c*(e + f*x)])*PolyLog[2, -((f*h - e*i)
/(i*(e + f*x)))])/(d*(f*h - e*i)^2) + (2*b^2*f*PolyLog[2, -((i*(e + f*x))/(
f*h - e*i))])/(d*(f*h - e*i)^2) + (2*b^2*f*PolyLog[3, -((f*h - e*i)/(i*(e +
 f*x)))])/(d*(f*h - e*i)^2)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 2354

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[Log[1 + e*(x/d)]*((a + b*Log[c*x^n])^p/e), x] - Dist[b*n*(p/e),
 Int[Log[1 + e*(x/d)]*((a + b*Log[c*x^n])^(p - 1)/x), x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2355

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_))^2, x_Sy
mbol] :> Simp[x*((a + b*Log[c*x^n])^p/(d*(d + e*x))), x] - Dist[b*n*(p/d),
Int[(a + b*Log[c*x^n])^(p - 1)/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, n
, p}, x] && GtQ[p, 0]
```

Rule 2379

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((x_)*((d_) + (e_.)*(x_)^(r
_.))), x_Symbol] :> Simp[(-Log[1 + d/(e*x^r)])*((a + b*Log[c*x^n])^p/(d*r))
, x] + Dist[b*n*(p/(d*r)), Int[Log[1 + d/(e*x^r)]*((a + b*Log[c*x^n])^(p -
1)/x), x], x] /; FreeQ[{a, b, c, d, e, n, r}, x] && IGtQ[p, 0]
```

Rule 2389

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_))/
(x_), x_Symbol] :> Dist[1/d, Int[(d + e*x)^(q + 1)*((a + b*Log[c*x^n])^p/x)
, x], x] - Dist[e/d, Int[(d + e*x)^q*(a + b*Log[c*x^n])^p, x], x] /; FreeQ[
{a, b, c, d, e, n}, x] && IGtQ[p, 0] && LtQ[q, -1] && IntegerQ[2*q]
```

Rule 2421

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> Simp[(-PolyLog[2, (-d)*f*x^m])*((a + b*Log[c
*x^n])^p/m), x] + Dist[b*n*(p/m), Int[PolyLog[2, (-d)*f*x^m]*((a + b*Log[c*
x^n])^(p - 1)/x), x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0
] && EqQ[d*e, 1]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2458

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[(g*(x/e))^q*((e*h - d*i)/e + i*(x/e))^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 6724

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(a+b\log(c(e+fx)))^2}{(h+189x)^2(de+dfx)}\,dx = \frac{\text{Subst}\left(\int \frac{(a+b\log(cx))^2}{dx\left(\frac{-189e+fh}{f}+\frac{189x}{f}\right)^2}\,dx, x, e+fx\right)}{f}$$

$$= \frac{\text{Subst}\left(\int \frac{(a+b\log(cx))^2}{x\left(\frac{-189e+fh}{f}+\frac{189x}{f}\right)^2}\,dx, x, e+fx\right)}{df}$$

$$= -\frac{\text{Subst}\left(\int \frac{(a+b\log(cx))^2}{x\left(\frac{-189e+fh}{f}+\frac{189x}{f}\right)}\,dx, x, e+fx\right)}{d(189e-fh)} + \frac{189\text{Subst}\left(\int \frac{(a+b\log(cx))^2}{\left(\frac{-189e+fh}{f}+\frac{189x}{f}\right)^2}\,d\right.}{df(189e-fh)}$$

$$= -\frac{189(e+fx)(a+b\log(c(e+fx)))^2}{d(189e-fh)^2(h+189x)} - \frac{189\text{Subst}\left(\int \frac{(a+b\log(cx))^2}{\frac{-189e+fh}{f}+\frac{189x}{f}}\,dx, x, e+\right.}{d(189e-fh)^2}$$

$$= \frac{2bf\log\left(-\frac{f(h+189x)}{189e-fh}\right)(a+b\log(c(e+fx)))}{d(189e-fh)^2} - \frac{189(e+fx)(a+b\log(c(e+f}{d(189e-fh)^2(h+189x)}$$

$$= \frac{2bf\log\left(-\frac{f(h+189x)}{189e-fh}\right)(a+b\log(c(e+fx)))}{d(189e-fh)^2} - \frac{189(e+fx)(a+b\log(c(e+f}{d(189e-fh)^2(h+189x)}$$

$$= \frac{2bf\log\left(-\frac{f(h+189x)}{189e-fh}\right)(a+b\log(c(e+fx)))}{d(189e-fh)^2} - \frac{189(e+fx)(a+b\log(c(e+f}{d(189e-fh)^2(h+189x)}$$

Mathematica [A]
time = 0.37, size = 360, normalized size = 1.32

$$\frac{3a^2(fh-ei)+3a^2f(h+ix)\log(e+fx)-3a^2f(h+ix)\log(h+ix)+3ab\left(-2f(h+ix)\log(e+fx)+2(fh-ei)\log(c(e+fx))+f(h+ix)\log^2(c(e+fx))+2f(h+ix)\log(h+ix)-2f(h+ix)\left(\log(c(e+fx))\log\left(\frac{f(h+ix)}{fh-ei}\right)+\text{Li}_2\left(\frac{i(e+fx)}{-fh+ei}\right)\right)\right)+b^2\left(\log(c(e+fx))\left(f(h+ix)\log^2(c(e+fx))+6f(h+ix)\log\left(\frac{f(h+ix)}{fh-ei}\right)-3\log(c(e+fx))\left(i(e+fx)+f(h+ix)\log\left(\frac{f(h+ix)}{fh-ei}\right)\right)\right)-6f(h+ix)(-1+\log(c(e+fx)))\text{Li}_2\left(\frac{i(e+fx)}{-fh+ei}\right)+6f(h+ix)\text{Li}_3\left(\frac{i(e+fx)}{-fh+ei}\right)\right)}{3d(fh-ei)^2(h+ix)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(e + f*x)])^2/((d*e + d*f*x)*(h + i*x)^2),x]
```

```
[Out] (3*a^2*(f*h - e*i) + 3*a^2*f*(h + i*x)*Log[e + f*x] - 3*a^2*f*(h + i*x)*Log
[h + i*x] + 3*a*b*(-2*f*(h + i*x)*Log[e + f*x] + 2*(f*h - e*i)*Log[c*(e + f
*x)] + f*(h + i*x)*Log[c*(e + f*x)]^2 + 2*f*(h + i*x)*Log[h + i*x] - 2*f*(h
 + i*x)*(Log[c*(e + f*x)]*Log[(f*(h + i*x))/(f*h - e*i)] + PolyLog[2, (i*(e
 + f*x))/(-(f*h) + e*i)])) + b^2*(Log[c*(e + f*x)]*(f*(h + i*x)*Log[c*(e +
f*x)]^2 + 6*f*(h + i*x)*Log[(f*(h + i*x))/(f*h - e*i)] - 3*Log[c*(e + f*x)]
*(i*(e + f*x) + f*(h + i*x)*Log[(f*(h + i*x))/(f*h - e*i)])) - 6*f*(h + i*x
```

```
)*(-1 + Log[c*(e + f*x)])*PolyLog[2, (i*(e + f*x))/(-(f*h) + e*i)] + 6*f*(h
 + i*x)*PolyLog[3, (i*(e + f*x))/(-(f*h) + e*i)]))/(3*d*(f*h - e*i)^2*(h +
i*x))
```

Maple [F]
time = 0.35, size = 0, normalized size = 0.00

$$\int \frac{\left(a+b\ln\left(c(fx+e)\right)\right)^{2}}{\left(dfx+ed\right)\left(ix+h\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(f*x+e)))^2/(d*f*x+d*e)/(i*x+h)^2,x)
```

```
[Out] int((a+b*ln(c*(f*x+e)))^2/(d*f*x+d*e)/(i*x+h)^2,x)
```

Maxima [B] Leaf count of result is larger than twice the leaf count of optimal. 622 vs. $2(271) = 542$.
time = 0.36, size = 622, normalized size = 2.28

$$a^{2}\left(\frac{f\log\left(fx+e\right)}{df^{2}h^{2}-2\,defhi+de^{2}i^{2}}-\frac{f\log\left(ix+h\right)}{df^{2}h^{2}-2\,defhi+de^{2}i^{2}}+\frac{1}{dfh^{2}-dehi+\left(dfhi-dei^{2}\right)x}\right)-\frac{\left(\log\left(fx+e\right)^{2}\log\left(\frac{fix+ei}{fh-ei}+1\right)+2\,\mathrm{Li}_{2}\left(-\frac{fix+ei}{fh-ei}\right)\log\left(fx+e\right)-2\,\mathrm{Li}_{3}\left(-\frac{fix+ei}{fh-ei}\right)\right)b^{2}f}{\left(f^{2}h^{2}-2\,efhi+e^{2}i^{2}\right)d}+\frac{3\,(fh-ei)b^{2}\log\left(c\right)^{2}+\left(b^{2}fix+b^{2}fh\right)\log\left(fx+e\right)^{3}+6\,(fh-ei)ab\log\left(c\right)+3\,\left(abfh+\left(fh\log\left(c\right)-ei\right)b^{2}+\left(abfi+\left(fi\log\left(c\right)-fi\right)b^{2}\right)x\right)\log\left(fx+e\right)^{2}+3\,\left(2\,\left(fh\log\left(c\right)-ei\right)ab+\left(fh\log\left(c\right)^{2}-2\,ei\log\left(c\right)\right)b^{2}+\left(2\,\left(fi\log\left(c\right)-fi\right)ab+\left(fi\log\left(c\right)^{2}-2\,fi\log\left(c\right)\right)b^{2}\right)x\right)\log\left(fx+e\right)}{3\,\left(\left(f^{2}h^{2}i-2\,efhi^{2}+e^{2}i^{3}\right)dx+\left(f^{2}h^{3}-2\,efh^{2}i+e^{2}hi^{2}\right)d\right)}-\frac{2\,\left(\left(f\log\left(c\right)-f\right)b^{2}+abf\right)\left(\log\left(fx+e\right)\log\left(\frac{fix+ei}{fh-ei}+1\right)+\mathrm{Li}_{2}\left(-\frac{fix+ei}{fh-ei}\right)\right)}{\left(f^{2}h^{2}-2\,efhi+e^{2}i^{2}\right)d}-\frac{\left(2\,\left(f\log\left(c\right)-f\right)ab+\left(f\log\left(c\right)^{2}-2\,f\log\left(c\right)\right)b^{2}\right)\log\left(ix+h\right)}{\left(f^{2}h^{2}-2\,efhi+e^{2}i^{2}\right)d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(f*x+e)))^2/(d*f*x+d*e)/(i*x+h)^2,x, algorithm="maxima
")
```

```
[Out] a^2*(f*log(f*x + e)/(d*f^2*h^2 - 2*d*e*f*h*i + d*e^2*i^2) - f*log(i*x + h)/
(d*f^2*h^2 - 2*d*e*f*h*i + d*e^2*i^2) + 1/(d*f*h^2 - d*e*h*i + (d*f*h*i - d
*e*i^2)*x)) - (log(f*x + e)^2*log((f*i*x + e*i)/(f*h - e*i) + 1) + 2*dilog(
-(f*i*x + e*i)/(f*h - e*i))*log(f*x + e) - 2*polylog(3, -(f*i*x + e*i)/(f*h
 - e*i)))*b^2*f/((f^2*h^2 - 2*e*f*h*i + e^2*i^2)*d) + 1/3*(3*(f*h - e*i)*b^
2*log(c)^2 + (b^2*f*i*x + b^2*f*h)*log(f*x + e)^3 + 6*(f*h - e*i)*a*b*log(c
) + 3*(a*b*f*h + (f*h*log(c) - e*i)*b^2 + (a*b*f*i + (f*i*log(c) - f*i)*b^2
)*x)*log(f*x + e)^2 + 3*(2*(f*h*log(c) - e*i)*a*b + (f*h*log(c)^2 - 2*e*i*l
og(c))*b^2 + (2*(f*i*log(c) - f*i)*a*b + (f*i*log(c)^2 - 2*f*i*log(c))*b^2)
*x)*log(f*x + e))/((f^2*h^2*i - 2*e*f*h*i^2 + e^2*i^3)*d*x + (f^2*h^3 - 2*e
*f*h^2*i + e^2*h*i^2)*d) - 2*((f*log(c) - f)*b^2 + a*b*f)*(log(f*x + e)*log
((f*i*x + e*i)/(f*h - e*i) + 1) + dilog(-(f*i*x + e*i)/(f*h - e*i)))/((f^2*
h^2 - 2*e*f*h*i + e^2*i^2)*d) - (2*(f*log(c) - f)*a*b + (f*log(c)^2 - 2*f*l
og(c))*b^2)*log(i*x + h)/((f^2*h^2 - 2*e*f*h*i + e^2*i^2)*d)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(f*x+e)))^2/(d*f*x+d*e)/(i*x+h)^2,x, algorithm="fricas
")
```

```
[Out] integral((b^2*log(c*f*x + c*e)^2 + 2*a*b*log(c*f*x + c*e) + a^2)/(d*f*h^2*x
 + 2*I*d*f*h*x^2 - d*f*x^3 + (d*h^2 + 2*I*d*h*x - d*x^2)*e), x)
```

Sympy [**F(-1)**] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(f*x+e)))**2/(d*f*x+d*e)/(i*x+h)**2,x)
```

```
[Out] Timed out
```

Giac [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(f*x+e)))^2/(d*f*x+d*e)/(i*x+h)^2,x, algorithm="giac")
```

```
[Out] integrate((b*log((f*x + e)*c) + a)^2/((d*f*x + d*e)*(h + I*x)^2), x)
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(a+b\,\ln\left(c\,(e+f\,x)\right))^2}{(h+i\,x)^2\,(d\,e+d\,f\,x)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(e + f*x)))^2/((h + i*x)^2*(d*e + d*f*x)),x)
```

```
[Out] int((a + b*log(c*(e + f*x)))^2/((h + i*x)^2*(d*e + d*f*x)), x)
```

3.190 $\int \frac{(a+b\log(c(e+fx)))^2}{(de+dfx)(h+ix)^3}\,dx$

Optimal. Leaf size=485

$$\frac{bfi(e+fx)(a+b\log(c(e+fx)))}{d(fh-ei)^3(h+ix)}+\frac{(a+b\log(c(e+fx)))^2}{2d(fh-ei)(h+ix)^2}-\frac{fi(e+fx)(a+b\log(c(e+fx)))^2}{d(fh-ei)^3(h+ix)}-\frac{b^2f^2\log(h}{d(fh-}$$

```
[Out] b*f*i*(f*x+e)*(a+b*ln(c*(f*x+e)))/d/(-e*i+f*h)^3/(i*x+h)+1/2*(a+b*ln(c*(f*x
+e)))^2/d/(-e*i+f*h)/(i*x+h)^2-f*i*(f*x+e)*(a+b*ln(c*(f*x+e)))^2/d/(-e*i+f*
h)^3/(i*x+h)-b^2*f^2*ln(i*x+h)/d/(-e*i+f*h)^3+2*b*f^2*(a+b*ln(c*(f*x+e)))*l
n(f*(i*x+h)/(-e*i+f*h))/d/(-e*i+f*h)^3+b*f^2*(a+b*ln(c*(f*x+e)))*ln(1+(-e*i
+f*h)/i/(f*x+e))/d/(-e*i+f*h)^3-f^2*(a+b*ln(c*(f*x+e)))^2*ln(1+(-e*i+f*h)/i
/(f*x+e))/d/(-e*i+f*h)^3-b^2*f^2*polylog(2,(e*i-f*h)/i/(f*x+e))/d/(-e*i+f*h
)^3+2*b*f^2*(a+b*ln(c*(f*x+e)))*polylog(2,(e*i-f*h)/i/(f*x+e))/d/(-e*i+f*h)
^3+2*b^2*f^2*polylog(2,-i*(f*x+e)/(-e*i+f*h))/d/(-e*i+f*h)^3+2*b^2*f^2*poly
log(3,(e*i-f*h)/i/(f*x+e))/d/(-e*i+f*h)^3
```

Rubi [A]
time = 0.74, antiderivative size = 485, normalized size of antiderivative = 1.00, number of steps used = 16, number of rules used = 12, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}} = 0.375$, Rules used = {2458, 12, 2389, 2379, 2421, 6724, 2355, 2354, 2438, 2356, 2351, 31}

$$\frac{2bf^2\text{PolyLog}\left(2,-\frac{fh-ei}{i(e+fx)}\right)(a+b\log(c(e+fx)))}{d(fh-ei)^3}-\frac{b^2f^2\text{PolyLog}\left(2,-\frac{fh-ei}{i(e+fx)}\right)}{d(fh-ei)^3}+\frac{2b^2f^2\text{PolyLog}\left(2,-\frac{i(e+fx)}{fh-ei}\right)}{d(fh-ei)^3}+\frac{2b^2f^2\text{PolyLog}\left(3,-\frac{fh-ei}{i(e+fx)}\right)}{d(fh-ei)^3}+\frac{2bf^2\log\left(\frac{f(h+ix)}{fh-ei}\right)(a+b\log(c(e+fx)))}{d(fh-ei)^3}-\frac{f^2\log\left(\frac{fh-ei}{i(e+fx)}+1\right)(a+b\log(c(e+fx)))^2}{d(fh-ei)^3}+\frac{bf^2\log\left(\frac{fh-ei}{i(e+fx)}+1\right)(a+b\log(c(e+fx)))}{d(fh-ei)^3}-\frac{fi(e+fx)(a+b\log(c(e+fx)))^2}{d(h+ix)(fh-ei)^3}+\frac{bfi(e+fx)(a+b\log(c(e+fx)))}{d(h+ix)(fh-ei)^3}+\frac{(a+b\log(c(e+fx)))^2}{2d(h+ix)^2(fh-ei)}-\frac{b^2f^2\log(h+ix)}{d(fh-ei)^3}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(e + f*x)])^2/((d*e + d*f*x)*(h + i*x)^3),x]
```

```
[Out] (b*f*i*(e + f*x)*(a + b*Log[c*(e + f*x)]))/(d*(f*h - e*i)^3*(h + i*x)) + (a
 + b*Log[c*(e + f*x)])^2/(2*d*(f*h - e*i)*(h + i*x)^2) - (f*i*(e + f*x)*(a
+ b*Log[c*(e + f*x)])^2)/(d*(f*h - e*i)^3*(h + i*x)) - (b^2*f^2*Log[h + i*x
])/(d*(f*h - e*i)^3) + (2*b*f^2*(a + b*Log[c*(e + f*x)])*Log[(f*(h + i*x))/
(f*h - e*i)])/(d*(f*h - e*i)^3) + (b*f^2*(a + b*Log[c*(e + f*x)])*Log[1 + (
f*h - e*i)/(i*(e + f*x))])/(d*(f*h - e*i)^3) - (f^2*(a + b*Log[c*(e + f*x)]
)^2*Log[1 + (f*h - e*i)/(i*(e + f*x))])/(d*(f*h - e*i)^3) - (b^2*f^2*PolyLo
g[2, -((f*h - e*i)/(i*(e + f*x)))])/(d*(f*h - e*i)^3) + (2*b*f^2*(a + b*Log
[c*(e + f*x)])*PolyLog[2, -((f*h - e*i)/(i*(e + f*x)))])/(d*(f*h - e*i)^3)
+ (2*b^2*f^2*PolyLog[2, -((i*(e + f*x))/(f*h - e*i))])/(d*(f*h - e*i)^3) +
(2*b^2*f^2*PolyLog[3, -((f*h - e*i)/(i*(e + f*x)))])/(d*(f*h - e*i)^3)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 2351

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_) + (e_.)*(x_)^(r_.))^(q_), x
_Symbol] :> Simp[x*(d + e*x^r)^(q + 1)*((a + b*Log[c*x^n])/d), x] - Dist[b*
(n/d), Int[(d + e*x^r)^(q + 1), x], x] /; FreeQ[{a, b, c, d, e, n, q, r}, x
] && EqQ[r*(q + 1) + 1, 0]
```

Rule 2354

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[Log[1 + e*(x/d)]*((a + b*Log[c*x^n])^p/e), x] - Dist[b*n*(p/e),
 Int[Log[1 + e*(x/d)]*((a + b*Log[c*x^n])^(p - 1)/x), x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2355

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_))^2, x_Sy
mbol] :> Simp[x*((a + b*Log[c*x^n])^p/(d*(d + e*x))), x] - Dist[b*n*(p/d),
Int[(a + b*Log[c*x^n])^(p - 1)/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, n
, p}, x] && GtQ[p, 0]
```

Rule 2356

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.),
x_Symbol] :> Simp[(d + e*x)^(q + 1)*((a + b*Log[c*x^n])^p/(e*(q + 1))), x]
- Dist[b*n*(p/(e*(q + 1))), Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^(p -
1))/x, x], x] /; FreeQ[{a, b, c, d, e, n, p, q}, x] && GtQ[p, 0] && NeQ[q,
-1] && (EqQ[p, 1] || (IntegersQ[2*p, 2*q] &&  !IGtQ[q, 0]) || (EqQ[p, 2] &&
 NeQ[q, 1]))
```

Rule 2379

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((x_)*((d_) + (e_.)*(x_)^(r
_.))), x_Symbol] :> Simp[(-Log[1 + d/(e*x^r)])*((a + b*Log[c*x^n])^p/(d*r))
, x] + Dist[b*n*(p/(d*r)), Int[Log[1 + d/(e*x^r)]*((a + b*Log[c*x^n])^(p -
1)/x), x], x] /; FreeQ[{a, b, c, d, e, n, r}, x] && IGtQ[p, 0]
```

Rule 2389

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_))/
(x_), x_Symbol] :> Dist[1/d, Int[(d + e*x)^(q + 1)*((a + b*Log[c*x^n])^p/x)
, x], x] - Dist[e/d, Int[(d + e*x)^q*(a + b*Log[c*x^n])^p, x], x] /; FreeQ[
{a, b, c, d, e, n}, x] && IGtQ[p, 0] && LtQ[q, -1] && IntegerQ[2*q]
```

Rule 2421

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> Simp[(-PolyLog[2, (-d)*f*x^m])*((a + b*Log[c
*x^n])^p/m), x] + Dist[b*n*(p/m), Int[PolyLog[2, (-d)*f*x^m]*((a + b*Log[c*
x^n])^(p - 1)/x), x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0
] && EqQ[d*e, 1]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2458

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[(g*(x/e))^q*((e*h - d*i)/e + i*(x/e))^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 6724

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(a+b\log(c(e+fx)))^2}{(h+190x)^3(de+dfx)}\,dx = \frac{\text{Subst}\left(\int \frac{(a+b\log(cx))^2}{dx\left(\frac{-190e+fh}{f}+\frac{190x}{f}\right)^3}\,dx,x,e+fx\right)}{f}$$

$$= \frac{\text{Subst}\left(\int \frac{(a+b\log(cx))^2}{x\left(\frac{-190e+fh}{f}+\frac{190x}{f}\right)^3}\,dx,x,e+fx\right)}{df}$$

$$= -\frac{\text{Subst}\left(\int \frac{(a+b\log(cx))^2}{x\left(\frac{-190e+fh}{f}+\frac{190x}{f}\right)^2}\,dx,x,e+fx\right)}{d(190e-fh)} + \frac{190\text{Subst}\left(\int \frac{(a+b\log(cx))^2}{\left(\frac{-190e+fh}{f}+\frac{190x}{f}\right)^3}\right.}{df(190e-fh)}$$

$$= -\frac{(a+b\log(c(e+fx)))^2}{2d(190e-fh)(h+190x)^2} - \frac{190\text{Subst}\left(\int \frac{(a+b\log(cx))^2}{\left(\frac{-190e+fh}{f}+\frac{190x}{f}\right)^2}\,dx,x,e+fx\right)}{d(190e-fh)^2}$$

$$= -\frac{(a+b\log(c(e+fx)))^2}{2d(190e-fh)(h+190x)^2} + \frac{190f(e+fx)(a+b\log(c(e+fx)))^2}{d(190e-fh)^3(h+190x)} + \frac{(190}{}$$

$$= -\frac{190bf(e+fx)(a+b\log(c(e+fx)))}{d(190e-fh)^3(h+190x)} - \frac{2bf^2\log\left(-\frac{f(h+190x)}{190e-fh}\right)(a+b\log(c(}{d(190e-fh)^3}$$

$$= \frac{b^2f^2\log(h+190x)}{d(190e-fh)^3} - \frac{190bf(e+fx)(a+b\log(c(e+fx)))}{d(190e-fh)^3(h+190x)} - \frac{3bf^2\log\left(-\frac{f(h}{19}\right.}{}$$

$$= \frac{b^2f^2\log(h+190x)}{d(190e-fh)^3} - \frac{190bf(e+fx)(a+b\log(c(e+fx)))}{d(190e-fh)^3(h+190x)} - \frac{3bf^2\log\left(-\frac{f(h}{19}\right.}{}$$

Mathematica [A]
time = 0.61, size = 680, normalized size = 1.40

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(e + f*x)])^2/((d*e + d*f*x)*(h + i*x)^3),x]
```

```
[Out] (3*a^2*(f*h - e*i)^2 + 6*a^2*f*(f*h - e*i)*(h + i*x) + 6*a^2*f^2*(h + i*x)^
2*Log[e + f*x] - 6*a^2*f^2*(h + i*x)^2*Log[h + i*x] + 6*a*b*((f*h - e*i)^2*
Log[c*(e + f*x)] + f^2*(h + i*x)^2*Log[c*(e + f*x)]^2 - f*(h + i*x)*(f*h -
e*i + f*(h + i*x)*Log[e + f*x] - f*(h + i*x)*Log[h + i*x]) - 2*f*(h + i*x)*
```

```
(f*(h + i*x)*Log[e + f*x] + (-(f*h) + e*i)*Log[c*(e + f*x)] - f*(h + i*x)*L
og[h + i*x]) - 2*f^2*(h + i*x)^2*(Log[c*(e + f*x)]*Log[(f*(h + i*x))/(f*h -
 e*i)] + PolyLog[2, (i*(e + f*x))/(-(f*h) + e*i)])) + b^2*(6*f^2*(h + i*x)^
2*Log[e + f*x] - 6*f*(f*h - e*i)*(h + i*x)*Log[c*(e + f*x)] + 3*(f*h - e*i)
^2*Log[c*(e + f*x)]^2 - 3*f^2*(h + i*x)^2*Log[c*(e + f*x)]^2 + 2*f^2*(h + i
*x)^2*Log[c*(e + f*x)]^3 - 6*f^2*(h + i*x)^2*Log[h + i*x] + 6*f^2*(h + i*x)
^2*Log[c*(e + f*x)]*Log[(f*(h + i*x))/(f*h - e*i)] + 6*f^2*(h + i*x)^2*Poly
Log[2, (i*(e + f*x))/(-(f*h) + e*i)] - 6*f*(h + i*x)*(Log[c*(e + f*x)]*(i*(
e + f*x)*Log[c*(e + f*x)] - 2*f*(h + i*x)*Log[(f*(h + i*x))/(f*h - e*i)]) -
 2*f*(h + i*x)*PolyLog[2, (i*(e + f*x))/(-(f*h) + e*i)]) - 6*f^2*(h + i*x)^
2*(Log[c*(e + f*x)]^2*Log[(f*(h + i*x))/(f*h - e*i)] + 2*Log[c*(e + f*x)]*P
olyLog[2, (i*(e + f*x))/(-(f*h) + e*i)] - 2*PolyLog[3, (i*(e + f*x))/(-(f*h
) + e*i)])))/(6*d*(f*h - e*i)^3*(h + i*x)^2)
```

Maple [F]
time = 0.38, size = 0, normalized size = 0.00

$$\int \frac{\left(a+b\ln\left(c(fx+e)\right)\right)^{2}}{\left(dfx+ed\right)\left(ix+h\right)^{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(f*x+e)))^2/(d*f*x+d*e)/(i*x+h)^3,x)
```

```
[Out] int((a+b*ln(c*(f*x+e)))^2/(d*f*x+d*e)/(i*x+h)^3,x)
```

Maxima [B] Both result and optimal contain complex but leaf count of result is larger than twice the leaf count of optimal. 1068 vs. 2(476) = 952.
time = 2.61, size = 1068, normalized size = 2.20

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(f*x+e)))^2/(d*f*x+d*e)/(i*x+h)^3,x, algorithm="maxima
")
```

```
[Out] -(log(f*x + e)^2*log((I*f*x + I*e)/(f*h - I*e) + 1) + 2*dilog(-(I*f*x + I*e
)/(f*h - I*e))*log(f*x + e) - 2*polylog(3, -(I*f*x + I*e)/(f*h - I*e)))*b^2
*f^2/(d*f^3*h^3 - 3*I*d*f^2*h^2*e - 3*d*f*h*e^2 + I*d*e^3) - (2*a*b*f^2 + (
2*f^2*log(c) - 3*f^2)*b^2)*(log(f*x + e)*log((I*f*x + I*e)/(f*h - I*e) + 1)
 + dilog(-(I*f*x + I*e)/(f*h - I*e)))/(d*f^3*h^3 - 3*I*d*f^2*h^2*e - 3*d*f*
h*e^2 + I*d*e^3) - (a^2*f^2 + (2*f^2*log(c) - 3*f^2)*a*b + (f^2*log(c)^2 -
3*f^2*log(c) + f^2)*b^2)*log(h + I*x)/(d*f^3*h^3 - 3*I*d*f^2*h^2*e - 3*d*f*
h*e^2 + I*d*e^3) + 8*(9*I*a^2*f^2*h^2 + 2*(I*b^2*f^2*h^2 - 2*b^2*f^2*h*x -
I*b^2*f^2*x^2)*log(f*x + e)^3 + 6*(3*I*f^2*h^2*log(c) - I*f^2*h^2)*a*b + 3*
(3*I*f^2*h^2*log(c)^2 - 2*I*f^2*h^2*log(c))*b^2 + 3*(2*I*b^2*f^2*h^2*log(c)
 + 2*I*a*b*f^2*h^2 + 4*b^2*f*h*e + (-2*I*a*b*f^2 + (-2*I*f^2*log(c) + 3*I*f
```

```
^2)*b^2)*x^2 - I*b^2*e^2 - 2*(2*a*b*f^2*h - I*b^2*f*e + 2*(f^2*h*log(c) - f
^2*h)*b^2)*x)*log(f*x + e)^2 - 6*(a^2*f^2*h + (2*f^2*h*log(c) - f^2*h)*a*b
+ (f^2*h*log(c)^2 - f^2*h*log(c))*b^2 - ((2*I*f*log(c) - I*f)*a*b + (I*f*lo
g(c)^2 - I*f*log(c))*b^2 + I*a^2*f)*e)*x + 3*(-I*b^2*log(c)^2 - 2*I*a*b*log
(c) - I*a^2)*e^2 + 6*(2*a^2*f*h + (4*f*h*log(c) - f*h)*a*b + (2*f*h*log(c)^
2 - f*h*log(c))*b^2)*e + 6*(I*b^2*f^2*h^2*log(c)^2 + 2*I*a*b*f^2*h^2*log(c)
 + I*a^2*f^2*h^2 + (-I*a^2*f^2 + (-2*I*f^2*log(c) + 3*I*f^2)*a*b + (-I*f^2*
log(c)^2 + 3*I*f^2*log(c) - I*f^2)*b^2)*x^2 - (2*a^2*f^2*h + 4*(f^2*h*log(c
) - f^2*h)*a*b + (2*f^2*h*log(c)^2 - 4*f^2*h*log(c) + f^2*h)*b^2 - ((2*I*f*
log(c) - I*f)*b^2 + 2*I*a*b*f)*e)*x + (-I*b^2*log(c) - I*a*b)*e^2 + (4*a*b*
f*h + (4*f*h*log(c) - f*h)*b^2)*e)*log(f*x + e))/(48*I*d*f^3*h^5 + 144*d*f^
2*h^4*e - 144*I*d*f*h^3*e^2 - 48*d*h^2*e^3 - 48*(I*d*f^3*h^3 + 3*d*f^2*h^2*
e - 3*I*d*f*h*e^2 - d*e^3)*x^2 - 96*(d*f^3*h^4 - 3*I*d*f^2*h^3*e - 3*d*f*h^
2*e^2 + I*d*h*e^3)*x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(f*x+e)))^2/(d*f*x+d*e)/(i*x+h)^3,x, algorithm="fricas
")
```

```
[Out] integral((I*b^2*log(c*f*x + c*e)^2 + 2*I*a*b*log(c*f*x + c*e) + I*a^2)/(I*d
*f*h^3*x - 3*d*f*h^2*x^2 - 3*I*d*f*h*x^3 + d*f*x^4 + (I*d*h^3 - 3*d*h^2*x -
 3*I*d*h*x^2 + d*x^3)*e), x)
```

Sympy [F(-1)] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(f*x+e)))**2/(d*f*x+d*e)/(i*x+h)**3,x)
```

```
[Out] Timed out
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(f*x+e)))^2/(d*f*x+d*e)/(i*x+h)^3,x, algorithm="giac")
```

```
[Out] integrate((b*log((f*x + e)*c) + a)^2/((d*f*x + d*e)*(h + I*x)^3), x)
```

<u>**Mupad**</u> [**F**]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(a+b\,\ln\left(c\,\left(e+f\,x\right)\right)\right)^2}{{\left(h+i\,x\right)}^3\,\left(d\,e+d\,f\,x\right)} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(e + f*x)))^2/((h + i*x)^3*(d*e + d*f*x)),x)
[Out] int((a + b*log(c*(e + f*x)))^2/((h + i*x)^3*(d*e + d*f*x)), x)
```

3.191 $\int \frac{(h+ix)^4}{(de+dfx)(a+b\log(c(e+fx)))}\,dx$

Optimal. Leaf size=230

$$\frac{4e^{-\frac{a}{b}}i(fh-ei)^3\mathrm{Ei}\left(\frac{a+b\log(c(e+fx))}{b}\right)}{bcdf^5}+\frac{6e^{-\frac{2a}{b}}i^2(fh-ei)^2\mathrm{Ei}\left(\frac{2(a+b\log(c(e+fx)))}{b}\right)}{bc^2df^5}+\frac{4e^{-\frac{3a}{b}}i^3(fh-ei)\mathrm{Ei}\left(\frac{3(a+b\log(c(e
}{b}\right)}{bc^3df^5}$$

```
[Out] 4*i*(-e*i+f*h)^3*Ei((a+b*ln(c*(f*x+e)))/b)/b/c/d/exp(a/b)/f^5+6*i^2*(-e*i+f
*h)^2*Ei(2*(a+b*ln(c*(f*x+e)))/b)/b/c^2/d/exp(2*a/b)/f^5+4*i^3*(-e*i+f*h)*E
i(3*(a+b*ln(c*(f*x+e)))/b)/b/c^3/d/exp(3*a/b)/f^5+i^4*Ei(4*(a+b*ln(c*(f*x+e
)))/b)/b/c^4/d/exp(4*a/b)/f^5+(-e*i+f*h)^4*ln(a+b*ln(c*(f*x+e)))/b/d/f^5
```

Rubi [A]

time = 0.47, antiderivative size = 230, normalized size of antiderivative = 1.00, number of steps used = 14, number of rules used = 8, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}} = 0.250$, Rules used = {2458, 12, 2395, 2336, 2209, 2339, 29, 2346}

$$\frac{i^4e^{-\frac{4a}{b}}\mathrm{Ei}\left(\frac{4(a+b\log(c(e+fx)))}{b}\right)}{bc^4df^5}+\frac{4i^3e^{-\frac{3a}{b}}(fh-ei)\mathrm{Ei}\left(\frac{3(a+b\log(c(e+fx)))}{b}\right)}{bc^3df^5}+\frac{6i^2e^{-\frac{2a}{b}}(fh-ei)^2\mathrm{Ei}\left(\frac{2(a+b\log(c(e+fx)))}{b}\right)}{bc^2df^5}+\frac{4ie^{-\frac{a}{b}}(fh-ei)^3\mathrm{Ei}\left(\frac{a+b\log(c(e+fx))}{b}\right)}{bcdf^5}+\frac{(fh-ei)^4\log(a+b\log(c(e+fx)))}{bdf^5}$$

Antiderivative was successfully verified.

```
[In] Int[(h + i*x)^4/((d*e + d*f*x)*(a + b*Log[c*(e + f*x)])),x]
```

```
[Out] (4*i*(f*h - e*i)^3*ExpIntegralEi[(a + b*Log[c*(e + f*x)])/b])/(b*c*d*E^(a/b
)*f^5) + (6*i^2*(f*h - e*i)^2*ExpIntegralEi[(2*(a + b*Log[c*(e + f*x)]))/b]
)/(b*c^2*d*E^((2*a)/b)*f^5) + (4*i^3*(f*h - e*i)*ExpIntegralEi[(3*(a + b*Lo
g[c*(e + f*x)]))/b])/(b*c^3*d*E^((3*a)/b)*f^5) + (i^4*ExpIntegralEi[(4*(a +
 b*Log[c*(e + f*x)]))/b])/(b*c^4*d*E^((4*a)/b)*f^5) + ((f*h - e*i)^4*Log[a
+ b*Log[c*(e + f*x)]])/(b*d*f^5)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 29

```
Int[(x_)^(-1), x_Symbol] :> Simp[Log[x], x]
```

Rule 2209

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/((c_.) + (d_.)*(x_)), x_Symbol] :> Si
mp[(F^(g*(e - c*(f/d)))/d)*ExpIntegralEi[f*g*(c + d*x)*(Log[F]/d)], x] /; F
reeQ[{F, c, d, e, f, g}, x] &&  !TrueQ[$UseGamma]
```

Rule 2336

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[1/(n*c^(1
/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b,
 c, p}, x] && IntegerQ[1/n]
```

Rule 2339

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] :> Dist[1/(
b*n), Subst[Int[x^p, x], x, a + b*Log[c*x^n]], x] /; FreeQ[{a, b, c, n, p},
 x]
```

Rule 2346

```
Int[((a_.) + Log[(c_.)*(x_)]*(b_.))^(p_)*(x_)^(m_.), x_Symbol] :> Dist[1/c^
(m + 1), Subst[Int[E^((m + 1)*x)*(a + b*x)^p, x], x, Log[c*x]], x] /; FreeQ
[{a, b, c, p}, x] && IntegerQ[m]
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((f_.)*(x_))^(m_.)*((d_) +
(e_.)*(x_)^(r_.))^(q_.), x_Symbol] :> With[{u = ExpandIntegrand[(a + b*Log[
c*x^n])^p, (f*x)^m*(d + e*x^r)^q, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b
, c, d, e, f, m, n, p, q, r}, x] && IntegerQ[q] && (GtQ[q, 0] || (IGtQ[p, 0
] && IntegerQ[m] && IntegerQ[r]))
```

Rule 2458

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[(g*(x/e))^q*((e*h - d*i)/e + i*(x/e))^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rubi steps

$$\int \frac{(h+191x)^4}{(de+dfx)(a+b\log(c(e+fx)))}\,dx = \frac{\text{Subst}\left(\int \frac{\left(\frac{-191e+fh}{f}+\frac{191x}{f}\right)^4}{dx(a+b\log(cx))}\,dx, x, e+fx\right)}{f}$$

$$= \frac{\text{Subst}\left(\int \frac{\left(\frac{-191e+fh}{f}+\frac{191x}{f}\right)^4}{x(a+b\log(cx))}\,dx, x, e+fx\right)}{df}$$

$$= \frac{\text{Subst}\left(\int \left(-\frac{764(191e-fh)^3}{f^4(a+b\log(cx))}+\frac{(191e-fh)^4}{f^4x(a+b\log(cx))}+\frac{218886(191e-fh)^2x}{f^4(a+b\log(cx))}-\frac{27871\cdots}{f^4\cdots}\right.\right.}{df}$$

$$= \frac{1330863361\text{Subst}\left(\int \frac{x^3}{a+b\log(cx)}\,dx, x, e+fx\right)}{df^5} - \frac{(27871484(191e-\cdots}{\cdots}$$

$$= \frac{1330863361\text{Subst}\left(\int \frac{e^{4x}}{a+bx}\,dx, x, \log(c(e+fx))\right)}{c^4df^5} - \frac{(27871484(191e\cdots}{\cdots}$$

$$= -\frac{764e^{-\frac{a}{b}}(191e-fh)^3\text{Ei}\left(\frac{a+b\log(c(e+fx))}{b}\right)}{bcdf^5} + \frac{218886e^{-\frac{2a}{b}}(191e-f\cdots}{bc^2\cdots}$$

Mathematica [A]
time = 0.80, size = 397, normalized size = 1.73

Antiderivative was successfully verified.

```
[In] Integrate[(h + i*x)^4/((d*e + d*f*x)*(a + b*Log[c*(e + f*x)])),x]
```

```
[Out] (4*c^3*E^((3*a)/b)*i*(f*h - e*i)^3*ExpIntegralEi[a/b + Log[c*(e + f*x)]] +
6*c^2*e*E^((2*a)/b)*i^3*(-2*f*h + e*i)*ExpIntegralEi[2*(a/b + Log[c*(e + f*
x)])] + 4*c*E^(a/b)*f*h*i^3*ExpIntegralEi[3*(a/b + Log[c*(e + f*x)])] - 4*c
*e*E^(a/b)*i^4*ExpIntegralEi[3*(a/b + Log[c*(e + f*x)])] + i^4*ExpIntegralE
i[4*(a/b + Log[c*(e + f*x)])] + 6*c^2*E^((2*a)/b)*f^2*h^2*i^2*ExpIntegralEi
[(2*(a + b*Log[c*(e + f*x)]))/b] - 4*c^4*e*E^((4*a)/b)*f^3*h^3*i*Log[a + b*
Log[c*(e + f*x)]] + 6*c^4*e^2*E^((4*a)/b)*f^2*h^2*i^2*Log[a + b*Log[c*(e +
f*x)]] - 4*c^4*e^3*E^((4*a)/b)*f*h*i^3*Log[a + b*Log[c*(e + f*x)]] + c^4*e^
4*E^((4*a)/b)*i^4*Log[a + b*Log[c*(e + f*x)]] + c^4*E^((4*a)/b)*f^4*h^4*Log
[f*(a + b*Log[c*(e + f*x)])])/(b*c^4*d*E^((4*a)/b)*f^5)
```

Maple [B] Leaf count of result is larger than twice the leaf count of optimal. 566 vs. $2(233) = 466$.
time = 3.64, size = 567, normalized size = 2.47 Too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((i*x+h)^4/(d*f*x+d*e)/(a+b*ln(c*(f*x+e))),x,method=_RETURNVERBOSE)
```

```
[Out] 1/c^4/f^5/d*(-i^4/b*exp(-4*a/b)*Ei(1,-4*ln(c*f*x+c*e)-4*a/b)+c^4*e^4*i^4*ln
(a+b*ln(c*f*x+c*e))/b+c^4*f^4*h^4*ln(a+b*ln(c*f*x+c*e))/b+4*c*e*i^4/b*exp(-
3*a/b)*Ei(1,-3*ln(c*f*x+c*e)-3*a/b)-6*c^2*e^2*i^4/b*exp(-2*a/b)*Ei(1,-2*ln(
c*f*x+c*e)-2*a/b)+4*c^3*e^3*i^4/b*exp(-a/b)*Ei(1,-ln(c*f*x+c*e)-a/b)-4*c*f*
h*i^3/b*exp(-3*a/b)*Ei(1,-3*ln(c*f*x+c*e)-3*a/b)-6*c^2*f^2*h^2*i^2/b*exp(-2
*a/b)*Ei(1,-2*ln(c*f*x+c*e)-2*a/b)-4*c^3*f^3*h^3*i/b*exp(-a/b)*Ei(1,-ln(c*f
*x+c*e)-a/b)-4*c^4*e*f^3*h^3*i*ln(a+b*ln(c*f*x+c*e))/b+6*c^4*e^2*f^2*h^2*i^
2*ln(a+b*ln(c*f*x+c*e))/b-4*c^4*e^3*f*h*i^3*ln(a+b*ln(c*f*x+c*e))/b+12*c^2*
e*f*h*i^3/b*exp(-2*a/b)*Ei(1,-2*ln(c*f*x+c*e)-2*a/b)+12*c^3*e*f^2*h^2*i^2/b
*exp(-a/b)*Ei(1,-ln(c*f*x+c*e)-a/b)-12*c^3*e^2*f*h*i^3/b*exp(-a/b)*Ei(1,-ln
(c*f*x+c*e)-a/b))
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^4/(d*f*x+d*e)/(a+b*log(c*(f*x+e))),x, algorithm="maxima")
```

```
[Out] h^4*log((b*log(f*x + e) + b*log(c) + a)/b)/(b*d*f) + integrate((4*I*h^3*x -
 6*h^2*x^2 - 4*I*h*x^3 + x^4)/((b*d*f*log(c) + a*d*f)*x + (b*d*log(c) + a*d
)*e + (b*d*f*x + b*d*e)*log(f*x + e)), x)
```

Fricas [A]
time = 0.39, size = 364, normalized size = 1.58

$$\frac{\left(\left(c^4f^4h^4-4i\,c^4f^3h^3e-6\,c^4f^2h^2e^2+4i\,c^4fhe^3+c^4e^4\right)e^{\left(\frac{4a}{b}\right)}\log\left(\frac{b\log\left(cfx+ce\right)+a}{b}\right)-4\left(i\,cfh+ce\right)e^{\frac{a}{b}}\,\mathrm{log\_integral}\left(\left(c^3f^3x^3+3\,c^3f^2x^2e+3\,c^3fxe^2+c^3e^3\right)e^{\left(\frac{3a}{b}\right)}\right)-6\left(c^2f^2h^2-2i\,c^2fhe-c^2e^2\right)e^{\left(\frac{2a}{b}\right)}\,\mathrm{log\_integral}\left(\left(c^2f^2x^2+2\,c^2fxe+c^2e^2\right)e^{\left(\frac{2a}{b}\right)}\right)-4\left(-i\,c^3f^3h^3-3\,c^3f^2h^2e+3i\,c^3fhe^2+c^3e^3\right)e^{\left(\frac{3a}{b}\right)}\,\mathrm{log\_integral}\left(\left(cfx+ce\right)e^{\frac{a}{b}}\right)+\mathrm{log\_integral}\left(\left(c^4f^4x^4+4\,c^4f^3x^3e+6\,c^4f^2x^2e^2+4\,c^4fxe^3+c^4e^4\right)e^{\left(\frac{4a}{b}\right)}\right)\right)e^{\left(-\frac{4a}{b}\right)}}{bc^4df^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^4/(d*f*x+d*e)/(a+b*log(c*(f*x+e))),x, algorithm="fricas")
```

```
[Out] ((c^4*f^4*h^4 - 4*I*c^4*f^3*h^3*e - 6*c^4*f^2*h^2*e^2 + 4*I*c^4*f*h*e^3 + c
^4*e^4)*e^(4*a/b)*log((b*log(c*f*x + c*e) + a)/b) - 4*(I*c*f*h + c*e)*e^(a/
b)*log_integral((c^3*f^3*x^3 + 3*c^3*f^2*x^2*e + 3*c^3*f*x*e^2 + c^3*e^3)*e
^(3*a/b)) - 6*(c^2*f^2*h^2 - 2*I*c^2*f*h*e - c^2*e^2)*e^(2*a/b)*log_integra
l((c^2*f^2*x^2 + 2*c^2*f*x*e + c^2*e^2)*e^(2*a/b)) - 4*(-I*c^3*f^3*h^3 - 3*
c^3*f^2*h^2*e + 3*I*c^3*f*h*e^2 + c^3*e^3)*e^(3*a/b)*log_integral((c*f*x +
c*e)*e^(a/b)) + log_integral((c^4*f^4*x^4 + 4*c^4*f^3*x^3*e + 6*c^4*f^2*x^2
*e^2 + 4*c^4*f*x*e^3 + c^4*e^4)*e^(4*a/b)))*e^(-4*a/b)/(b*c^4*d*f^5)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{h^4}{ae+afx+be\log\left(ce+cfx\right)+bfx\log\left(ce+cfx\right)}\,dx+\int \frac{i^4x^4}{ae+afx+be\log\left(ce+cfx\right)+bfx\log\left(ce+cfx\right)}\,dx+\int \frac{4hi^3x^3}{ae+afx+be\log\left(ce+cfx\right)+bfx\log\left(ce+cfx\right)}\,dx+\int \frac{6h^2i^2x^2}{ae+afx+be\log\left(ce+cfx\right)+bfx\log\left(ce+cfx\right)}\,dx+\int \frac{4h^3ix}{ae+afx+be\log\left(ce+cfx\right)+bfx\log\left(ce+cfx\right)}\,dx}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)**4/(d*f*x+d*e)/(a+b*ln(c*(f*x+e))),x)
```

```
[Out] (Integral(h**4/(a*e + a*f*x + b*e*log(c*e + c*f*x) + b*f*x*log(c*e + c*f*x)
), x) + Integral(i**4*x**4/(a*e + a*f*x + b*e*log(c*e + c*f*x) + b*f*x*log(
c*e + c*f*x)), x) + Integral(4*h*i**3*x**3/(a*e + a*f*x + b*e*log(c*e + c*f
*x) + b*f*x*log(c*e + c*f*x)), x) + Integral(6*h**2*i**2*x**2/(a*e + a*f*x
+ b*e*log(c*e + c*f*x) + b*f*x*log(c*e + c*f*x)), x) + Integral(4*h**3*i*x/
(a*e + a*f*x + b*e*log(c*e + c*f*x) + b*f*x*log(c*e + c*f*x)), x))/d
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^4/(d*f*x+d*e)/(a+b*log(c*(f*x+e))),x, algorithm="giac")
```

```
[Out] integrate((h + I*x)^4/((d*f*x + d*e)*(b*log((f*x + e)*c) + a)), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(h+i\,x)^4}{(d\,e+d\,f\,x)\,\left(a+b\,\ln\left(c\,\left(e+f\,x\right)\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h + i*x)^4/((d*e + d*f*x)*(a + b*log(c*(e + f*x)))),x)
```

```
[Out] int((h + i*x)^4/((d*e + d*f*x)*(a + b*log(c*(e + f*x)))), x)
```

3.192 $\int \frac{(h+ix)^3}{(de+dfx)(a+b\log(c(e+fx)))} dx$

Optimal. Leaf size=177

$$\frac{3e^{-\frac{a}{b}}i(fh-ei)^2\text{Ei}\left(\frac{a+b\log(c(e+fx))}{b}\right)}{bcdf^4}+\frac{3e^{-\frac{2a}{b}}i^2(fh-ei)\text{Ei}\left(\frac{2(a+b\log(c(e+fx)))}{b}\right)}{bc^2df^4}+\frac{e^{-\frac{3a}{b}}i^3\text{Ei}\left(\frac{3(a+b\log(c(e+fx)))}{b}\right)}{bc^3df^4}+($$

```
[Out] 3*i*(-e*i+f*h)^2*Ei((a+b*ln(c*(f*x+e)))/b)/b/c/d/exp(a/b)/f^4+3*i^2*(-e*i+f
*h)*Ei(2*(a+b*ln(c*(f*x+e)))/b)/b/c^2/d/exp(2*a/b)/f^4+i^3*Ei(3*(a+b*ln(c*(
f*x+e)))/b)/b/c^3/d/exp(3*a/b)/f^4+(-e*i+f*h)^3*ln(a+b*ln(c*(f*x+e)))/b/d/f
^4
```

Rubi [A]
time = 0.36, antiderivative size = 177, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 8, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}} = 0.250$, Rules used = {2458, 12, 2395, 2336, 2209, 2339, 29, 2346}

$$\frac{i^3e^{-\frac{3a}{b}}\text{Ei}\left(\frac{3(a+b\log(c(e+fx)))}{b}\right)}{bc^3df^4}+\frac{3i^2e^{-\frac{2a}{b}}(fh-ei)\text{Ei}\left(\frac{2(a+b\log(c(e+fx)))}{b}\right)}{bc^2df^4}+\frac{3ie^{-\frac{a}{b}}(fh-ei)^2\text{Ei}\left(\frac{a+b\log(c(e+fx))}{b}\right)}{bcdf^4}+\frac{(fh-ei)^3\log(a+b\log(c(e+fx)))}{bdf^4}$$

Antiderivative was successfully verified.

```
[In] Int[(h + i*x)^3/((d*e + d*f*x)*(a + b*Log[c*(e + f*x)])),x]
```

```
[Out] (3*i*(f*h - e*i)^2*ExpIntegralEi[(a + b*Log[c*(e + f*x)])/b])/(b*c*d*E^(a/b
)*f^4) + (3*i^2*(f*h - e*i)*ExpIntegralEi[(2*(a + b*Log[c*(e + f*x)]))/b])/
(b*c^2*d*E^((2*a)/b)*f^4) + (i^3*ExpIntegralEi[(3*(a + b*Log[c*(e + f*x)]))
/b])/(b*c^3*d*E^((3*a)/b)*f^4) + ((f*h - e*i)^3*Log[a + b*Log[c*(e + f*x)]]
)/(b*d*f^4)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 29

```
Int[(x_)^(-1), x_Symbol] :> Simp[Log[x], x]
```

Rule 2209

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/((c_.) + (d_.)*(x_)), x_Symbol] :> Si
mp[(F^(g*(e - c*(f/d)))/d)*ExpIntegralEi[f*g*(c + d*x)*(Log[F]/d)], x] /; F
reeQ[{F, c, d, e, f, g}, x] &&  !TrueQ[$UseGamma]
```

Rule 2336

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[1/(n*c^(1
/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b,
 c, p}, x] && IntegerQ[1/n]
```

Rule 2339

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] :> Dist[1/(
b*n), Subst[Int[x^p, x], x, a + b*Log[c*x^n]], x] /; FreeQ[{a, b, c, n, p},
 x]
```

Rule 2346

```
Int[((a_.) + Log[(c_.)*(x_)]*(b_.))^(p_)*(x_)^(m_.), x_Symbol] :> Dist[1/c^
(m + 1), Subst[Int[E^((m + 1)*x)*(a + b*x)^p, x], x, Log[c*x]], x] /; FreeQ
[{a, b, c, p}, x] && IntegerQ[m]
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((f_.)*(x_))^(m_.)*((d_) +
(e_.)*(x_)^(r_.))^(q_.), x_Symbol] :> With[{u = ExpandIntegrand[(a + b*Log[
c*x^n])^p, (f*x)^m*(d + e*x^r)^q, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b
, c, d, e, f, m, n, p, q, r}, x] && IntegerQ[q] && (GtQ[q, 0] || (IGtQ[p, 0
] && IntegerQ[m] && IntegerQ[r]))
```

Rule 2458

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[(g*(x/e))^q*((e*h - d*i)/e + i*(x/e))^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rubi steps

$$\int \frac{(h+192x)^3}{(de+dfx)(a+b\log(c(e+fx)))}\,dx = \frac{\text{Subst}\left(\int \frac{\left(\frac{-192e+fh}{f}+\frac{192x}{f}\right)^3}{dx(a+b\log(cx))}\,dx, x, e+fx\right)}{f}$$

$$= \frac{\text{Subst}\left(\int \frac{\left(\frac{-192e+fh}{f}+\frac{192x}{f}\right)^3}{x(a+b\log(cx))}\,dx, x, e+fx\right)}{df}$$

$$= \frac{\text{Subst}\left(\int \left(\frac{576(192e-fh)^2}{f^3(a+b\log(cx))}-\frac{(192e-fh)^3}{f^3x(a+b\log(cx))}-\frac{110592(192e-fh)x}{f^3(a+b\log(cx))}+\frac{70778}{f^3(a+b}\right.\right.}{df}$$

$$= \frac{7077888\text{Subst}\left(\int \frac{x^2}{a+b\log(cx)}\,dx, x, e+fx\right)}{df^4} - \frac{(110592(192e-fh))}{}$$

$$= \frac{7077888\text{Subst}\left(\int \frac{e^{3x}}{a+bx}\,dx, x, \log(c(e+fx))\right)}{c^3df^4} - \frac{(110592(192e-f}{}$$

$$= \frac{576e^{-\frac{a}{b}}(192e-fh)^2\text{Ei}\left(\frac{a+b\log(c(e+fx))}{b}\right)}{bcdf^4} - \frac{110592e^{-\frac{2a}{b}}(192e-fh}{bc^2d}$$

Mathematica [A]
time = 0.24, size = 279, normalized size = 1.58

$$\frac{e^{-\frac{3a}{b}}\left(3c^2e^{\frac{2a}{b}}i(fh-ei)^2\text{Ei}\left(\frac{a}{b}+\log(c(e+fx))\right)-3cee^{a/b}i^3\text{Ei}\left(2\left(\frac{a}{b}+\log(c(e+fx))\right)\right)+i^3\text{Ei}\left(3\left(\frac{a}{b}+\log(c(e+fx))\right)\right)+3ce^{a/b}fhi^2\text{Ei}\left(\frac{2(a+b\log(c(e+fx)))}{b}\right)-3c^3ee^{\frac{3a}{b}}f^2h^2i\log(a+b\log(c(e+fx)))+3c^3e^2e^{\frac{3a}{b}}fhi^2\log(a+b\log(c(e+fx)))-c^3e^3e^{\frac{3a}{b}}i^3\log(a+b\log(c(e+fx)))+c^3e^{\frac{3a}{b}}f^3h^3\log(f(a+b\log(c(e+fx))))\right)}{bc^3df^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(h + i*x)^3/((d*e + d*f*x)*(a + b*Log[c*(e + f*x)])),x]
```

```
[Out] (3*c^2*E^((2*a)/b)*i*(f*h - e*i)^2*ExpIntegralEi[a/b + Log[c*(e + f*x)]] -
3*c*e*E^(a/b)*i^3*ExpIntegralEi[2*(a/b + Log[c*(e + f*x)])] + i^3*ExpIntegr
alEi[3*(a/b + Log[c*(e + f*x)])] + 3*c*E^(a/b)*f*h*i^2*ExpIntegralEi[(2*(a
+ b*Log[c*(e + f*x)]))/b] - 3*c^3*e*E^((3*a)/b)*f^2*h^2*i*Log[a + b*Log[c*(
e + f*x)]] + 3*c^3*e^2*E^((3*a)/b)*f*h*i^2*Log[a + b*Log[c*(e + f*x)]] - c^
3*e^3*E^((3*a)/b)*i^3*Log[a + b*Log[c*(e + f*x)]] + c^3*E^((3*a)/b)*f^3*h^3
*Log[f*(a + b*Log[c*(e + f*x)])])/(b*c^3*d*E^((3*a)/b)*f^4)
```

Maple [B] Leaf count of result is larger than twice the leaf count of optimal. 360 vs. 2(179) = 358.
time = 3.31, size = 361, normalized size = 2.04

method	result

derivativedivides	$-\frac{\frac{i^{3} \mathrm{e}^{-\frac{3a}{b}} \operatorname{expIntegral}\left(1,-3\ln(cfx+ce)-\frac{3a}{b}\right)}{b}-\frac{c^{3} f^{3} h^{3} \ln(a+b\ln(cfx+ce))}{b}+\frac{c^{3} e^{3} i^{3} \ln(a+b\ln(cfx+ce))}{b}-\frac{3ce\, i^{3} \mathrm{e}^{-\frac{2a}{b}} \operatorname{expIntegral}\left(1\right.}{b}}{}$
default	$-\frac{\frac{i^{3} \mathrm{e}^{-\frac{3a}{b}} \operatorname{expIntegral}\left(1,-3\ln(cfx+ce)-\frac{3a}{b}\right)}{b}-\frac{c^{3} f^{3} h^{3} \ln(a+b\ln(cfx+ce))}{b}+\frac{c^{3} e^{3} i^{3} \ln(a+b\ln(cfx+ce))}{b}-\frac{3ce\, i^{3} \mathrm{e}^{-\frac{2a}{b}} \operatorname{expIntegral}\left(1\right.}{b}}{}$
risch	$-\frac{i^{3} \mathrm{e}^{-\frac{3a}{b}} \operatorname{expIntegral}\left(1,-3\ln(cfx+ce)-\frac{3a}{b}\right)}{d f^{4} c^{3} b}+\frac{h^{3} \ln(a+b\ln(cfx+ce))}{dfb}-\frac{e^{3} i^{3} \ln(a+b\ln(cfx+ce))}{d f^{4} b}+\frac{3e\, i^{3} \mathrm{e}^{-\frac{2a}{b}} \operatorname{exp}}{}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((i*x+h)^3/(d*f*x+d*e)/(a+b*ln(c*(f*x+e))),x,method=_RETURNVERBOSE)
```

```
[Out] -1/c^3/f^4/d*(i^3/b*exp(-3*a/b)*Ei(1,-3*ln(c*f*x+c*e)-3*a/b)-c^3*f^3*h^3*ln
(a+b*ln(c*f*x+c*e))/b+c^3*e^3*i^3*ln(a+b*ln(c*f*x+c*e))/b-3*c*e*i^3/b*exp(-
2*a/b)*Ei(1,-2*ln(c*f*x+c*e)-2*a/b)+3*c^2*e^2*i^3/b*exp(-a/b)*Ei(1,-ln(c*f*
x+c*e)-a/b)+3*c*f*h*i^2/b*exp(-2*a/b)*Ei(1,-2*ln(c*f*x+c*e)-2*a/b)+3*c^2*f^
2*h^2*i/b*exp(-a/b)*Ei(1,-ln(c*f*x+c*e)-a/b)+3*c^3*e*f^2*h^2*i*ln(a+b*ln(c*
f*x+c*e))/b-3*c^3*e^2*f*h*i^2*ln(a+b*ln(c*f*x+c*e))/b-6*c^2*e*f*h*i^2/b*exp
(-a/b)*Ei(1,-ln(c*f*x+c*e)-a/b))
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^3/(d*f*x+d*e)/(a+b*log(c*(f*x+e))),x, algorithm="maxima")
```

```
[Out] h^3*log((b*log(f*x + e) + b*log(c) + a)/b)/(b*d*f) - integrate((-3*I*h^2*x
 + 3*h*x^2 + I*x^3)/((b*d*f*log(c) + a*d*f)*x + (b*d*log(c) + a*d)*e + (b*d*
f*x + b*d*e)*log(f*x + e)), x)
```

Fricas [A]
time = 0.35, size = 245, normalized size = 1.38

$$\frac{\left(\left(c^{3} f^{3} h^{3} - 3 i\, c^{3} f^{2} h^{2} e - 3\, c^{3} f h e^{2} + i\, c^{3} e^{3}\right) e^{\left(\frac{3a}{b}\right)} \log\left(\frac{b \log(cfx+ce)+a}{b}\right) - 3\,(cfh - i\,ce) e^{\frac{a}{b}} \operatorname{log\_integral}\left(\left(c^{2} f^{2} x^{2} + 2\, c^{2} f x e + c^{2} e^{2}\right) e^{\left(\frac{2a}{b}\right)}\right) - 3\left(-i\, c^{2} f^{2} h^{2} - 2\, c^{2} f h e + i\, c^{2} e^{2}\right) e^{\left(\frac{2a}{b}\right)} \operatorname{log\_integral}\left((cfx+ce) e^{\frac{a}{b}}\right) - i \operatorname{log\_integral}\left(\left(c^{3} f^{3} x^{3} + 3\, c^{3} f^{2} x^{2} e + 3\, c^{3} f x e^{2} + c^{3} e^{3}\right) e^{\left(\frac{3a}{b}\right)}\right)\right) e^{\left(-\frac{3a}{b}\right)}}{b c^{3} d f^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^3/(d*f*x+d*e)/(a+b*log(c*(f*x+e))),x, algorithm="fricas")
```

```
[Out] ((c^3*f^3*h^3 - 3*I*c^3*f^2*h^2*e - 3*c^3*f*h*e^2 + I*c^3*e^3)*e^(3*a/b)*lo
g((b*log(c*f*x + c*e) + a)/b) - 3*(c*f*h - I*c*e)*e^(a/b)*log_integral((c^2
*f^2*x^2 + 2*c^2*f*x*e + c^2*e^2)*e^(2*a/b)) - 3*(-I*c^2*f^2*h^2 - 2*c^2*f*
h*e + I*c^2*e^2)*e^(2*a/b)*log_integral((c*f*x + c*e)*e^(a/b)) - I*log_inte
gral((c^3*f^3*x^3 + 3*c^3*f^2*x^2*e + 3*c^3*f*x*e^2 + c^3*e^3)*e^(3*a/b)))*
e^(-3*a/b)/(b*c^3*d*f^4)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{h^3}{ae+afx+be\log{(ce+cfx)}+bfx\log{(ce+cfx)}}\,dx+\int \frac{i^3x^3}{ae+afx+be\log{(ce+cfx)}+bfx\log{(ce+cfx)}}\,dx+\int \frac{3hi^2x^2}{ae+afx+be\log{(ce+cfx)}+bfx\log{(ce+cfx)}}\,dx+\int \frac{3h^2ix}{ae+afx+be\log{(ce+cfx)}+bfx\log{(ce+cfx)}}\,dx}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)**3/(d*f*x+d*e)/(a+b*ln(c*(f*x+e))),x)
```

```
[Out] (Integral(h**3/(a*e + a*f*x + b*e*log(c*e + c*f*x) + b*f*x*log(c*e + c*f*x)
), x) + Integral(i**3*x**3/(a*e + a*f*x + b*e*log(c*e + c*f*x) + b*f*x*log(
c*e + c*f*x)), x) + Integral(3*h*i**2*x**2/(a*e + a*f*x + b*e*log(c*e + c*f
*x) + b*f*x*log(c*e + c*f*x)), x) + Integral(3*h**2*i*x/(a*e + a*f*x + b*e*
log(c*e + c*f*x) + b*f*x*log(c*e + c*f*x)), x))/d
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^3/(d*f*x+d*e)/(a+b*log(c*(f*x+e))),x, algorithm="giac")
```

```
[Out] integrate((h + I*x)^3/((d*f*x + d*e)*(b*log((f*x + e)*c) + a)), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{{\left(h+i\,x\right)}^3}{\left(d\,e+d\,f\,x\right)\,\left(a+b\,\ln\left(c\,\left(e+f\,x\right)\right)\right)} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h + i*x)^3/((d*e + d*f*x)*(a + b*log(c*(e + f*x)))),x)
```

```
[Out] int((h + i*x)^3/((d*e + d*f*x)*(a + b*log(c*(e + f*x)))), x)
```

3.193 $\int \frac{(h+ix)^2}{(de+dfx)(a+b\log(c(e+fx)))}\,dx$

Optimal. Leaf size=124

$$\frac{2e^{-\frac{a}{b}}i(fh-ei)\text{Ei}\left(\frac{a+b\log(c(e+fx))}{b}\right)}{bcdf^3}+\frac{e^{-\frac{2a}{b}}i^2\text{Ei}\left(\frac{2(a+b\log(c(e+fx)))}{b}\right)}{bc^2df^3}+\frac{(fh-ei)^2\log(a+b\log(c(e+fx)))}{bdf^3}$$

```
[Out] 2*i*(-e*i+f*h)*Ei((a+b*ln(c*(f*x+e)))/b)/b/c/d/exp(a/b)/f^3+i^2*Ei(2*(a+b*l
n(c*(f*x+e)))/b)/b/c^2/d/exp(2*a/b)/f^3+(-e*i+f*h)^2*ln(a+b*ln(c*(f*x+e)))/
b/d/f^3
```

Rubi [A]
time = 0.27, antiderivative size = 124, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 8, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {2458, 12, 2395, 2336, 2209, 2339, 29, 2346}

$$\frac{i^2e^{-\frac{2a}{b}}\text{Ei}\left(\frac{2(a+b\log(c(e+fx)))}{b}\right)}{bc^2df^3}+\frac{2ie^{-\frac{a}{b}}(fh-ei)\text{Ei}\left(\frac{a+b\log(c(e+fx))}{b}\right)}{bcdf^3}+\frac{(fh-ei)^2\log(a+b\log(c(e+fx)))}{bdf^3}$$

Antiderivative was successfully verified.

```
[In] Int[(h + i*x)^2/((d*e + d*f*x)*(a + b*Log[c*(e + f*x)])),x]
```

```
[Out] (2*i*(f*h - e*i)*ExpIntegralEi[(a + b*Log[c*(e + f*x)])/b])/(b*c*d*E^(a/b)*
f^3) + (i^2*ExpIntegralEi[(2*(a + b*Log[c*(e + f*x)]))/b])/(b*c^2*d*E^((2*a
)/b)*f^3) + ((f*h - e*i)^2*Log[a + b*Log[c*(e + f*x)]])/(b*d*f^3)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 29

```
Int[(x_)^(-1), x_Symbol] :> Simp[Log[x], x]
```

Rule 2209

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/((c_.) + (d_.)*(x_)), x_Symbol] :> Si
mp[(F^(g*(e - c*(f/d)))/d)*ExpIntegralEi[f*g*(c + d*x)*(Log[F]/d)], x] /; F
reeQ[{F, c, d, e, f, g}, x] &&  !TrueQ[$UseGamma]
```

Rule 2336

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[1/(n*c^(1
/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b,
```

```
c, p}, x] && IntegerQ[1/n]
```

Rule 2339

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] :> Dist[1/(
b*n), Subst[Int[x^p, x], x, a + b*Log[c*x^n]], x] /; FreeQ[{a, b, c, n, p},
 x]
```

Rule 2346

```
Int[((a_.) + Log[(c_.)*(x_)]*(b_.))^(p_)*(x_)^(m_.), x_Symbol] :> Dist[1/c^
(m + 1), Subst[Int[E^((m + 1)*x)*(a + b*x)^p, x], x, Log[c*x]], x] /; FreeQ
[{a, b, c, p}, x] && IntegerQ[m]
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((f_.)*(x_))^(m_.)*((d_) +
(e_.)*(x_)^(r_.))^(q_.), x_Symbol] :> With[{u = ExpandIntegrand[(a + b*Log[
c*x^n])^p, (f*x)^m*(d + e*x^r)^q, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b
, c, d, e, f, m, n, p, q, r}, x] && IntegerQ[q] && (GtQ[q, 0] || (IGtQ[p, 0
] && IntegerQ[m] && IntegerQ[r]))
```

Rule 2458

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[(g*(x/e))^q*((e*h - d*i)/e + i*(x/e))^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rubi steps

$$\int \frac{(h+193x)^2}{(de+dfx)(a+b\log(c(e+fx)))}\,dx = \frac{\text{Subst}\left(\int \frac{\left(\frac{-193e+fh}{f}+\frac{193x}{f}\right)^2}{dx(a+b\log(cx))}\,dx,x,e+fx\right)}{f}$$

$$= \frac{\text{Subst}\left(\int \frac{\left(\frac{-193e+fh}{f}+\frac{193x}{f}\right)^2}{x(a+b\log(cx))}\,dx,x,e+fx\right)}{df}$$

$$= \frac{\text{Subst}\left(\int \left(-\frac{386(193e-fh)}{f^2(a+b\log(cx))}+\frac{(193e-fh)^2}{f^2x(a+b\log(cx))}+\frac{37249x}{f^2(a+b\log(cx))}\right)\,dx,x,e+\right.}{df}$$

$$= \frac{37249\text{Subst}\left(\int \frac{x}{a+b\log(cx)}\,dx,x,e+fx\right)}{df^3} - \frac{(386(193e-fh))\text{Subst}\left(\right.}{d}$$

$$= \frac{37249\text{Subst}\left(\int \frac{e^{2x}}{a+bx}\,dx,x,\log(c(e+fx))\right)}{c^2df^3} - \frac{(386(193e-fh))\text{Sub}}{}$$

$$= -\frac{386e^{-\frac{a}{b}}(193e-fh)\text{Ei}\left(\frac{a+b\log(c(e+fx))}{b}\right)}{bcdf^3} + \frac{37249e^{-\frac{2a}{b}}\text{Ei}\left(\frac{2(a+b\log(c(}{b}\right.}{bc^2df^3}$$

Mathematica [A]

time = 0.15, size = 137, normalized size = 1.10

$$\frac{e^{-\frac{2a}{b}}\left(2ce^{a/b}i(fh-ei)\text{Ei}\left(\frac{a}{b}+\log(c(e+fx))\right)+i^2\text{Ei}\left(\frac{2(a+b\log(c(e+fx)))}{b}\right)+c^2e^{\frac{2a}{b}}\left(ei(-2fh+ei)\log(a+b\log(c(e+fx)))+f^2h^2\log(f(a+b\log(c(e+fx))))\right)\right)}{bc^2df^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(h + i*x)^2/((d*e + d*f*x)*(a + b*Log[c*(e + f*x)])),x]
[Out] (2*c*E^(a/b)*i*(f*h - e*i)*ExpIntegralEi[a/b + Log[c*(e + f*x)]] + i^2*ExpI
ntegralEi[(2*(a + b*Log[c*(e + f*x)]))/b] + c^2*E^((2*a)/b)*(e*i*(-2*f*h +
e*i)*Log[a + b*Log[c*(e + f*x)]] + f^2*h^2*Log[f*(a + b*Log[c*(e + f*x)])])
)/(b*c^2*d*E^((2*a)/b)*f^3)
```

Maple [A]

time = 2.87, size = 200, normalized size = 1.61

method	result
derivativedivides	$\frac{-\frac{i^2 e^{-\frac{2a}{b}}\,\text{expIntegral}\left(1,-2\ln(cfx+ce)-\frac{2a}{b}\right)}{b}+\frac{c^2e^2i^2\ln(a+b\ln(cfx+ce))}{b}+\frac{c^2f^2h^2\ln(a+b\ln(cfx+ce))}{b}+\frac{2ce\,i^2 e^{-\frac{a}{b}}\,\text{expIntegral}\left(1,-\right.}{b}}{c^2f^3d}$
default	$\frac{-\frac{i^2 e^{-\frac{2a}{b}}\,\text{expIntegral}\left(1,-2\ln(cfx+ce)-\frac{2a}{b}\right)}{b}+\frac{c^2e^2i^2\ln(a+b\ln(cfx+ce))}{b}+\frac{c^2f^2h^2\ln(a+b\ln(cfx+ce))}{b}+\frac{2ce\,i^2 e^{-\frac{a}{b}}\,\text{expIntegral}\left(1,-\right.}{b}}{c^2f^3d}$

risch	$-\frac{i^2 e^{-\frac{2a}{b}} \operatorname{expIntegral}\left(1,-2\ln(cfx+ce)-\frac{2a}{b}\right)}{d f^3 c^2 b}+\frac{e^2 i^2 \ln(a+b\ln(cfx+ce))}{d f^3 b}+\frac{h^2 \ln(a+b\ln(cfx+ce))}{dfb}+\frac{2e\, i^2 e^{-\frac{a}{b}} \exp$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((i*x+h)^2/(d*f*x+d*e)/(a+b*ln(c*(f*x+e))),x,method=_RETURNVERBOSE)
```

```
[Out] 1/c^2/f^3/d*(-i^2/b*exp(-2*a/b)*Ei(1,-2*ln(c*f*x+c*e)-2*a/b)+c^2*e^2*i^2*ln
(a+b*ln(c*f*x+c*e))/b+c^2*f^2*h^2*ln(a+b*ln(c*f*x+c*e))/b+2*c*e*i^2/b*exp(-
a/b)*Ei(1,-ln(c*f*x+c*e)-a/b)-2*c*f*h*i/b*exp(-a/b)*Ei(1,-ln(c*f*x+c*e)-a/b
)-2*c^2*e*f*h*i*ln(a+b*ln(c*f*x+c*e))/b)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^2/(d*f*x+d*e)/(a+b*log(c*(f*x+e))),x, algorithm="maxima")
```

```
[Out] h^2*log((b*log(f*x + e) + b*log(c) + a)/b)/(b*d*f) - integrate((-2*I*h*x +
x^2)/((b*d*f*log(c) + a*d*f)*x + (b*d*log(c) + a*d)*e + (b*d*f*x + b*d*e)*l
og(f*x + e)), x)
```

Fricas [A]
time = 0.40, size = 148, normalized size = 1.19

$$\frac{\left(\left(c^2f^2h^2-2i\,c^2fhe-c^2e^2\right)e^{\left(\frac{2a}{b}\right)}\log\left(\frac{b\log(cfx+ce)+a}{b}\right)-2\left(-i\,cfh-ce\right)e^{\frac{a}{b}}\operatorname{log\_integral}\left(\left(cfx+ce\right)e^{\frac{a}{b}}\right)-\operatorname{log\_integral}\left(\left(c^2f^2x^2+2\,c^2fxe+c^2e^2\right)e^{\left(\frac{2a}{b}\right)}\right)\right)e^{\left(-\frac{2a}{b}\right)}}{bc^2df^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^2/(d*f*x+d*e)/(a+b*log(c*(f*x+e))),x, algorithm="fricas")
```

```
[Out] ((c^2*f^2*h^2 - 2*I*c^2*f*h*e - c^2*e^2)*e^(2*a/b)*log((b*log(c*f*x + c*e)
+ a)/b) - 2*(-I*c*f*h - c*e)*e^(a/b)*log_integral((c*f*x + c*e)*e^(a/b)) -
log_integral((c^2*f^2*x^2 + 2*c^2*f*x*e + c^2*e^2)*e^(2*a/b)))*e^(-2*a/b)/(
b*c^2*d*f^3)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{h^2}{ae+afx+be\log(ce+cfx)+bfx\log(ce+cfx)}\,dx+\int \frac{i^2x^2}{ae+afx+be\log(ce+cfx)+bfx\log(ce+cfx)}\,dx+\int \frac{2hix}{ae+afx+be\log(ce+cfx)+bfx\log(ce+cfx)}\,dx}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)**2/(d*f*x+d*e)/(a+b*ln(c*(f*x+e))),x)
```

```
[Out] (Integral(h**2/(a*e + a*f*x + b*e*log(c*e + c*f*x) + b*f*x*log(c*e + c*f*x)
), x) + Integral(i**2*x**2/(a*e + a*f*x + b*e*log(c*e + c*f*x) + b*f*x*log(
c*e + c*f*x)), x) + Integral(2*h*i*x/(a*e + a*f*x + b*e*log(c*e + c*f*x) +
b*f*x*log(c*e + c*f*x)), x))/d
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^2/(d*f*x+d*e)/(a+b*log(c*(f*x+e))),x, algorithm="giac")
```

```
[Out] integrate((h + I*x)^2/((d*f*x + d*e)*(b*log((f*x + e)*c) + a)), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(h+i\,x)^2}{(d\,e+d\,f\,x)\,\left(a+b\,\ln\left(c\,\left(e+f\,x\right)\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h + i*x)^2/((d*e + d*f*x)*(a + b*log(c*(e + f*x)))),x)
```

```
[Out] int((h + i*x)^2/((d*e + d*f*x)*(a + b*log(c*(e + f*x)))), x)
```

3.194 $\int \frac{h+ix}{(de+dfx)(a+b\log(c(e+fx)))}\,dx$

Optimal. Leaf size=71

$$\frac{e^{-\frac{a}{b}}i\mathrm{Ei}\left(\frac{a+b\log(c(e+fx))}{b}\right)}{bcdf^2}+\frac{(fh-ei)\log(a+b\log(c(e+fx)))}{bdf^2}$$

```
[Out] i*Ei((a+b*ln(c*(f*x+e)))/b)/b/c/d/exp(a/b)/f^2+(-e*i+f*h)*ln(a+b*ln(c*(f*x+
e)))/b/d/f^2
```

Rubi [A]
time = 0.15, antiderivative size = 71, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 7, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}} = 0.233$, Rules used = {2458, 12, 2395, 2336, 2209, 2339, 29}

$$\frac{ie^{-\frac{a}{b}}\mathrm{Ei}\left(\frac{a+b\log(c(e+fx))}{b}\right)}{bcdf^2}+\frac{(fh-ei)\log(a+b\log(c(e+fx)))}{bdf^2}$$

Antiderivative was successfully verified.

```
[In] Int[(h + i*x)/((d*e + d*f*x)*(a + b*Log[c*(e + f*x)])),x]
```

```
[Out] (i*ExpIntegralEi[(a + b*Log[c*(e + f*x)])/b])/(b*c*d*E^(a/b)*f^2) + ((f*h -
 e*i)*Log[a + b*Log[c*(e + f*x)]])/(b*d*f^2)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 29

```
Int[(x_)^(-1), x_Symbol] :> Simp[Log[x], x]
```

Rule 2209

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/((c_.) + (d_.)*(x_)), x_Symbol] :> Si
mp[(F^(g*(e - c*(f/d)))/d)*ExpIntegralEi[f*g*(c + d*x)*(Log[F]/d)], x] /; F
reeQ[{F, c, d, e, f, g}, x] &&  !TrueQ[$UseGamma]
```

Rule 2336

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[1/(n*c^(1
/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b,
 c, p}, x] && IntegerQ[1/n]
```

Rule 2339

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] :> Dist[1/(
b*n), Subst[Int[x^p, x], x, a + b*Log[c*x^n]], x] /; FreeQ[{a, b, c, n, p},
 x]
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((f_.)*(x_))^(m_.)*((d_) +
(e_.)*(x_)^(r_.))^(q_.), x_Symbol] :> With[{u = ExpandIntegrand[(a + b*Log[
c*x^n])^p, (f*x)^m*(d + e*x^r)^q, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b
, c, d, e, f, m, n, p, q, r}, x] && IntegerQ[q] && (GtQ[q, 0] || (IGtQ[p, 0
] && IntegerQ[m] && IntegerQ[r]))
```

Rule 2458

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[(g*(x/e))^q*((e*h - d*i)/e + i*(x/e))^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rubi steps

$$
\begin{aligned}
\int \frac{h+194x}{(de+dfx)(a+b\log(c(e+fx)))}\,dx &= \frac{\text{Subst}\left(\int \frac{\frac{-194e+fh}{f}+\frac{194x}{f}}{dx(a+b\log(cx))}\,dx, x, e+fx\right)}{f}\\
&= \frac{\text{Subst}\left(\int \frac{\frac{-194e+fh}{f}+\frac{194x}{f}}{x(a+b\log(cx))}\,dx, x, e+fx\right)}{df}\\
&= \frac{\text{Subst}\left(\int \left(\frac{194}{f(a+b\log(cx))}+\frac{-194e+fh}{fx(a+b\log(cx))}\right)\,dx, x, e+fx\right)}{df}\\
&= \frac{194\text{Subst}\left(\int \frac{1}{a+b\log(cx)}\,dx, x, e+fx\right)}{df^2} - \frac{(194e-fh)\text{Subst}\left(\int \frac{1}{x(a+b\log(cx))}\,dx, x, e+fx\right)}{df^2}\\
&= \frac{194\text{Subst}\left(\int \frac{e^x}{a+bx}\,dx, x, \log(c(e+fx))\right)}{cdf^2} - \frac{(194e-fh)\text{Subst}\left(\int \frac{1}{x}\,dx, \ldots\right)}{bd\ldots}\\
&= \frac{194e^{-\frac{a}{b}}\text{Ei}\left(\frac{a+b\log(c(e+fx))}{b}\right)}{bcdf^2} - \frac{(194e-fh)\log(a+b\log(c(e+fx)))}{bdf^2}
\end{aligned}
$$

Mathematica [A]

time = 0.08, size = 76, normalized size = 1.07

$$\frac{e^{-\frac{a}{b}}i\text{Ei}\left(\frac{a}{b}+\log(c(e+fx))\right)-cei\log(a+b\log(c(e+fx)))+cfh\log(f(a+b\log(c(e+fx))))}{bcdf^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(h + i*x)/((d*e + d*f*x)*(a + b*Log[c*(e + f*x)])),x]
```

```
[Out] ((i*ExpIntegralEi[a/b + Log[c*(e + f*x)]])/E^(a/b) - c*e*i*Log[a + b*Log[c*
(e + f*x)]] + c*f*h*Log[f*(a + b*Log[c*(e + f*x)])])/(b*c*d*f^2)
```

Maple [A]
time = 2.04, size = 88, normalized size = 1.24

method	result	size
derivativedivides	$-\frac{\frac{i\,e^{-\frac{a}{b}}\,\text{expIntegral}\left(1,-\ln(cfx+ce)-\frac{a}{b}\right)}{b}-\frac{hcf\ln(a+b\ln(cfx+ce))}{b}+\frac{cei\ln(a+b\ln(cfx+ce))}{b}}{c\,f^2d}$	88
default	$-\frac{\frac{i\,e^{-\frac{a}{b}}\,\text{expIntegral}\left(1,-\ln(cfx+ce)-\frac{a}{b}\right)}{b}-\frac{hcf\ln(a+b\ln(cfx+ce))}{b}+\frac{cei\ln(a+b\ln(cfx+ce))}{b}}{c\,f^2d}$	88
risch	$-\frac{i\,e^{-\frac{a}{b}}\,\text{expIntegral}(1,-\ln(cfx+ce)-\frac{a}{b})}{d\,f^2cb}+\frac{h\ln(a+b\ln(cfx+ce))}{dfb}-\frac{ei\ln(a+b\ln(cfx+ce))}{d\,f^2b}$	96

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((i*x+h)/(d*f*x+d*e)/(a+b*ln(c*(f*x+e))),x,method=_RETURNVERBOSE)
```

```
[Out] -1/c/f^2/d*(i/b*exp(-a/b)*Ei(1,-ln(c*f*x+c*e)-a/b)-h*c*f*ln(a+b*ln(c*f*x+c*
e))/b+c*e*i*ln(a+b*ln(c*f*x+c*e))/b)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)/(d*f*x+d*e)/(a+b*log(c*(f*x+e))),x, algorithm="maxima")
```

```
[Out] h*log((b*log(f*x + e) + b*log(c) + a)/b)/(b*d*f) + I*integrate(x/((b*d*f*lo
g(c) + a*d*f)*x + (b*d*log(c) + a*d)*e + (b*d*f*x + b*d*e)*log(f*x + e)), x
)
```

Fricas [A]
time = 0.36, size = 76, normalized size = 1.07

$$\frac{\left((cfh-i\,ce)e^{\frac{a}{b}}\log\left(\frac{b\log(cfx+ce)+a}{b}\right)+i\ \text{log\_integral}\left((cfx+ce)e^{\frac{a}{b}}\right)\right)e^{\left(-\frac{a}{b}\right)}}{bcdf^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)/(d*f*x+d*e)/(a+b*log(c*(f*x+e))),x, algorithm="fricas")
```

```
[Out] ((c*f*h - I*c*e)*e^(a/b)*log((b*log(c*f*x + c*e) + a)/b) + I*log_integral((
c*f*x + c*e)*e^(a/b)))*e^(-a/b)/(b*c*d*f^2)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{h}{ae+afx+be\log\left(ce+cfx\right)+bfx\log\left(ce+cfx\right)}\,dx+\int \frac{ix}{ae+afx+be\log\left(ce+cfx\right)+bfx\log\left(ce+cfx\right)}\,dx}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)/(d*f*x+d*e)/(a+b*ln(c*(f*x+e))),x)
```

```
[Out] (Integral(h/(a*e + a*f*x + b*e*log(c*e + c*f*x) + b*f*x*log(c*e + c*f*x)),
x) + Integral(i*x/(a*e + a*f*x + b*e*log(c*e + c*f*x) + b*f*x*log(c*e + c*f
*x)), x))/d
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)/(d*f*x+d*e)/(a+b*log(c*(f*x+e))),x, algorithm="giac")
```

```
[Out] integrate((h + I*x)/((d*f*x + d*e)*(b*log((f*x + e)*c) + a)), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{h+i\,x}{\left(d\,e+d\,f\,x\right)\,\left(a+b\,\ln\left(c\,\left(e+f\,x\right)\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h + i*x)/((d*e + d*f*x)*(a + b*log(c*(e + f*x)))),x)
```

```
[Out] int((h + i*x)/((d*e + d*f*x)*(a + b*log(c*(e + f*x)))), x)
```

3.195 $\int \frac{1}{(de+dfx)(a+b\log(c(e+fx)))}\,dx$

Optimal. Leaf size=23

$$\frac{\log(a+b\log(c(e+fx)))}{bdf}$$

```
[Out] ln(a+b*ln(c*(f*x+e)))/b/d/f
```

Rubi [A]
time = 0.04, antiderivative size = 23, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.160$, Rules used = {2437, 12, 2339, 29}

$$\frac{\log(a+b\log(c(e+fx)))}{bdf}$$

Antiderivative was successfully verified.

```
[In] Int[1/((d*e + d*f*x)*(a + b*Log[c*(e + f*x)])),x]
```

```
[Out] Log[a + b*Log[c*(e + f*x)]]/(b*d*f)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 29

```
Int[(x_)^(-1), x_Symbol] :> Simp[Log[x], x]
```

Rule 2339

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] :> Dist[1/(
b*n), Subst[Int[x^p, x], x, a + b*Log[c*x^n]], x] /; FreeQ[{a, b, c, n, p},
 x]
```

Rule 2437

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[(f*(x/d))^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rubi steps

$$\int \frac{1}{(de+dfx)(a+b\log(c(e+fx)))}\,dx = \frac{\text{Subst}\left(\int \frac{1}{dx(a+b\log(cx))}\,dx, x, e+fx\right)}{f}$$
$$= \frac{\text{Subst}\left(\int \frac{1}{x(a+b\log(cx))}\,dx, x, e+fx\right)}{df}$$
$$= \frac{\text{Subst}\left(\int \frac{1}{x}\,dx, x, a+b\log(c(e+fx))\right)}{bdf}$$
$$= \frac{\log(a+b\log(c(e+fx)))}{bdf}$$

Mathematica [A]
time = 0.01, size = 23, normalized size = 1.00

$$\frac{\log(a+b\log(c(e+fx)))}{bdf}$$

Antiderivative was successfully verified.

```
[In] Integrate[1/((d*e + d*f*x)*(a + b*Log[c*(e + f*x)])),x]
```

```
[Out] Log[a + b*Log[c*(e + f*x)]]/(b*d*f)
```

Maple [A]
time = 0.51, size = 25, normalized size = 1.09

method	result	size
norman	$\frac{\ln(a+b\ln(c(fx+e)))}{bdf}$	24
derivativedivides	$\frac{\ln(a+b\ln(cfx+ce))}{fdb}$	25
default	$\frac{\ln(a+b\ln(cfx+ce))}{fdb}$	25
risch	$\frac{\ln\left(\ln(c(fx+e))+\frac{a}{b}\right)}{bdf}$	26

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(d*f*x+d*e)/(a+b*ln(c*(f*x+e))),x,method=_RETURNVERBOSE)
```

```
[Out] 1/f/d*ln(a+b*ln(c*f*x+c*e))/b
```

Maxima [A]
time = 0.27, size = 30, normalized size = 1.30

$$\frac{\log\left(\frac{b\log(fx+e)+b\log(c)+a}{b}\right)}{bdf}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*f*x+d*e)/(a+b*log(c*(f*x+e))),x, algorithm="maxima")
```

```
[Out] log((b*log(f*x + e) + b*log(c) + a)/b)/(b*d*f)
```

Fricas [A]
time = 0.35, size = 25, normalized size = 1.09

$$\frac{\log \left(b \log \left(cfx+ce\right)+a\right)}{bdf}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*f*x+d*e)/(a+b*log(c*(f*x+e))),x, algorithm="fricas")
```

```
[Out] log(b*log(c*f*x + c*e) + a)/(b*d*f)
```

Sympy [A]
time = 0.08, size = 17, normalized size = 0.74

$$\frac{\log \left(\frac{a}{b}+\log \left(c(e+fx)\right)\right)}{bdf}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*f*x+d*e)/(a+b*ln(c*(f*x+e))),x)
```

```
[Out] log(a/b + log(c*(e + f*x)))/(b*d*f)
```

Giac [A]
time = 4.64, size = 25, normalized size = 1.09

$$\frac{\log \left(b \log \left(cfx+ce\right)+a\right)}{bdf}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*f*x+d*e)/(a+b*log(c*(f*x+e))),x, algorithm="giac")
```

```
[Out] log(b*log(c*f*x + c*e) + a)/(b*d*f)
```

Mupad [B]
time = 0.85, size = 23, normalized size = 1.00

$$\frac{\ln \left(a+b\,\ln \left(c\,\left(e+f\,x\right)\right)\right)}{b\,d\,f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((d*e + d*f*x)*(a + b*log(c*(e + f*x)))),x)
```

```
[Out] log(a + b*log(c*(e + f*x)))/(b*d*f)
```

3.196 $\int \frac{1}{(de+dfx)(h+ix)(a+b\log(c(e+fx)))}\,dx$

Optimal. Leaf size=72

$$\frac{\log(a+b\log(c(e+fx)))}{bd(fh-ei)}-\frac{i\text{Int}\left(\frac{1}{(h+ix)(a+b\log(c(e+fx)))},x\right)}{d(fh-ei)}$$

```
[Out] ln(a+b*ln(c*(f*x+e)))/b/d/(-e*i+f*h)-i*Unintegrable(1/(i*x+h)/(a+b*ln(c*(f*
x+e))),x)/d/(-e*i+f*h)
```

Rubi [A]
time = 0.17, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}=0.000$, Rules used = {}

$$\int \frac{1}{(de+dfx)(h+ix)(a+b\log(c(e+fx)))}\,dx$$

Verification is not applicable to the result.

```
[In] Int[1/((d*e + d*f*x)*(h + i*x)*(a + b*Log[c*(e + f*x)])),x]
```

```
[Out] Log[a + b*Log[c*(e + f*x)]]/(b*d*(f*h - e*i)) - (i*Defer[Int][1/((h + i*x)*
(a + b*Log[c*(e + f*x)])), x])/(d*(f*h - e*i))
```

Rubi steps

$$\begin{aligned}\int \frac{1}{(h+196x)(de+dfx)(a+b\log(c(e+fx)))}\,dx &= \int \left(\frac{196}{d(196e-fh)(h+196x)(a+b\log(c(e+fx)))}-\ldots\right)\\ &= \frac{196\int \frac{1}{(h+196x)(a+b\log(c(e+fx)))}\,dx}{d(196e-fh)}-\frac{f\int \frac{1}{(e+fx)(a+b\log(c(e+fx)))}\ldots}{d(196e-fh)}\\ &= -\frac{\text{Subst}\left(\int \frac{1}{x(a+b\log(cx))}\,dx,x,e+fx\right)}{d(196e-fh)}+\frac{196\int \frac{1}{(h+196x)(a\ldots}}{d(196e\ldots}\\ &= \frac{196\int \frac{1}{(h+196x)(a+b\log(c(e+fx)))}\,dx}{d(196e-fh)}-\frac{\text{Subst}\left(\int \frac{1}{x}\,dx,x,a+b\ldots\right.}{bd(196e-\ldots}\\ &= -\frac{\log(a+b\log(c(e+fx)))}{bd(196e-fh)}+\frac{196\int \frac{1}{(h+196x)(a+b\log(c(e+fx\ldots}}{d(196e-fh)}\end{aligned}$$

Mathematica [A]
time = 0.29, size = 0, normalized size = 0.00

$$\int \frac{1}{(de+dfx)(h+ix)(a+b\log(c(e+fx)))}\,dx$$

Verification is not applicable to the result.

```
[In] Integrate[1/((d*e + d*f*x)*(h + i*x)*(a + b*Log[c*(e + f*x)])),x]
```

```
[Out] Integrate[1/((d*e + d*f*x)*(h + i*x)*(a + b*Log[c*(e + f*x)])), x]
```

Maple [A]
time = 1.03, size = 0, normalized size = 0.00

$$\int \frac{1}{(dfx+ed)\,(ix+h)\,(a+b\ln(c\,(fx+e)))}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(d*f*x+d*e)/(i*x+h)/(a+b*ln(c*(f*x+e))),x)
```

```
[Out] int(1/(d*f*x+d*e)/(i*x+h)/(a+b*ln(c*(f*x+e))),x)
```

Maxima [A]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*f*x+d*e)/(i*x+h)/(a+b*log(c*(f*x+e))),x, algorithm="maxima")
```

```
[Out] integrate(1/((d*f*x + d*e)*(b*log((f*x + e)*c) + a)*(h + I*x)), x)
```

Fricas [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*f*x+d*e)/(i*x+h)/(a+b*log(c*(f*x+e))),x, algorithm="fricas")
```

```
[Out] integral(-I/(-I*a*d*f*h*x + a*d*f*x^2 + (-I*a*d*h + a*d*x)*e + (-I*b*d*f*h*
x + b*d*f*x^2 + (-I*b*d*h + b*d*x)*e)*log(c*f*x + c*e)), x)
```

Sympy [A]
time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{1}{aeh+aeix+afhx+afix^2+beh\log(ce+cfx)+beix\log(ce+cfx)+bfhx\log(ce+cfx)+bfix^2\log(ce+cfx)}\,dx}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*f*x+d*e)/(i*x+h)/(a+b*ln(c*(f*x+e))),x)
```

```
[Out] Integral(1/(a*e*h + a*e*i*x + a*f*h*x + a*f*i*x**2 + b*e*h*log(c*e + c*f*x)
 + b*e*i*x*log(c*e + c*f*x) + b*f*h*x*log(c*e + c*f*x) + b*f*i*x**2*log(c*e
 + c*f*x)), x)/d
```

Giac [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*f*x+d*e)/(i*x+h)/(a+b*log(c*(f*x+e))),x, algorithm="giac")
[Out] integrate(1/((d*f*x + d*e)*(b*log((f*x + e)*c) + a)*(h + I*x)), x)
```

Mupad [A]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{1}{(h+i\,x)\,\left(d\,e+d\,f\,x\right)\,\left(a+b\,\ln\left(c\,\left(e+f\,x\right)\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((h + i*x)*(d*e + d*f*x)*(a + b*log(c*(e + f*x)))),x)
[Out] int(1/((h + i*x)*(d*e + d*f*x)*(a + b*log(c*(e + f*x)))), x)
```

3.197 $\int \frac{1}{(de+dfx)(h+ix)^2(a+b\log(c(e+fx)))}\,dx$

Optimal. Leaf size=115

$$\frac{f\log(a+b\log(c(e+fx)))}{bd(fh-ei)^2}-\frac{i\text{Int}\left(\frac{1}{(h+ix)^2(a+b\log(c(e+fx)))},x\right)}{d(fh-ei)}-\frac{fi\text{Int}\left(\frac{1}{(h+ix)(a+b\log(c(e+fx)))},x\right)}{d(fh-ei)^2}$$

```
[Out] f*ln(a+b*ln(c*(f*x+e)))/b/d/(-e*i+f*h)^2-i*Unintegrable(1/(i*x+h)^2/(a+b*ln
(c*(f*x+e))),x)/d/(-e*i+f*h)-f*i*Unintegrable(1/(i*x+h)/(a+b*ln(c*(f*x+e)))
,x)/d/(-e*i+f*h)^2
```

Rubi [A]
time = 0.20, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{1}{(de+dfx)(h+ix)^2(a+b\log(c(e+fx)))}\,dx$$

Verification is not applicable to the result.

```
[In] Int[1/((d*e + d*f*x)*(h + i*x)^2*(a + b*Log[c*(e + f*x)])),x]
```

```
[Out] (f*Log[a + b*Log[c*(e + f*x)]])/(b*d*(f*h - e*i)^2) - (i*Defer[Int][1/((h +
 i*x)^2*(a + b*Log[c*(e + f*x)])), x])/(d*(f*h - e*i)) - (f*i*Defer[Int][1/
((h + i*x)*(a + b*Log[c*(e + f*x)])), x])/(d*(f*h - e*i)^2)
```

Rubi steps

$$\int \frac{1}{(h+197x)^2(de+dfx)(a+b\log(c(e+fx)))}\,dx = \int \left(\frac{197}{d(197e-fh)(h+197x)^2(a+b\log(c(e+fx)))} \ldots\right.$$

$$= -\frac{(197f)\int \frac{1}{(h+197x)(a+b\log(c(e+fx)))}\,dx}{d(197e-fh)^2}+\frac{f^2\int \frac{\ldots}{(e+fx)(a+b \ldots}}{d(197e \ldots}$$

$$= \frac{f\text{Subst}\left(\int \frac{1}{x(a+b\log(cx))}\,dx,x,e+fx\right)}{d(197e-fh)^2}-\frac{(197f)\int \frac{\ldots}{(h+1 \ldots}}{d(1 \ldots}$$

$$= -\frac{(197f)\int \frac{1}{(h+197x)(a+b\log(c(e+fx)))}\,dx}{d(197e-fh)^2}+\frac{f\text{Subst}\left(\int \frac{1}{x}\,d \ldots\right.}{bd \ldots}$$

$$= \frac{f\log(a+b\log(c(e+fx)))}{bd(197e-fh)^2}-\frac{(197f)\int \frac{1}{(h+197x)(a+b\log(\ldots}}{d(197e-fh) \ldots}$$

Mathematica [A]
time = 6.84, size = 0, normalized size = 0.00

$$\int \frac{1}{(de+dfx)(h+ix)^2(a+b\log(c(e+fx)))}\,dx$$

Verification is not applicable to the result.

```
[In] Integrate[1/((d*e + d*f*x)*(h + i*x)^2*(a + b*Log[c*(e + f*x)])),x]
```

```
[Out] Integrate[1/((d*e + d*f*x)*(h + i*x)^2*(a + b*Log[c*(e + f*x)])), x]
```

Maple [A]
time = 0.95, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(dfx+ed\right)\left(ix+h\right)^{2}\left(a+b\ln\left(c\left(fx+e\right)\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(d*f*x+d*e)/(i*x+h)^2/(a+b*ln(c*(f*x+e))),x)
```

```
[Out] int(1/(d*f*x+d*e)/(i*x+h)^2/(a+b*ln(c*(f*x+e))),x)
```

Maxima [A]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*f*x+d*e)/(i*x+h)^2/(a+b*log(c*(f*x+e))),x, algorithm="maxima
")
```

```
[Out] integrate(1/((d*f*x + d*e)*(b*log((f*x + e)*c) + a)*(h + I*x)^2), x)
```

Fricas [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*f*x+d*e)/(i*x+h)^2/(a+b*log(c*(f*x+e))),x, algorithm="fricas
")
```

```
[Out] integral(1/(a*d*f*h^2*x + 2*I*a*d*f*h*x^2 - a*d*f*x^3 + (a*d*h^2 + 2*I*a*d*
h*x - a*d*x^2)*e + (b*d*f*h^2*x + 2*I*b*d*f*h*x^2 - b*d*f*x^3 + (b*d*h^2 +
2*I*b*d*h*x - b*d*x^2)*e)*log(c*f*x + c*e)), x)
```

Sympy [A]
time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{1}{aeh^{2}+2aehix+aei^{2}x^{2}+afh^{2}x+2afhix^{2}+afi^{2}x^{3}+beh^{2}\log\left(ce+cfx\right)+2behix\log\left(ce+cfx\right)+bei^{2}x^{2}\log\left(ce+cfx\right)+bfh^{2}x\log\left(ce+cfx\right)+2bfhix^{2}\log\left(ce+cfx\right)+bfi^{2}x^{3}\log\left(ce+cfx\right)}\,dx}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*f*x+d*e)/(i*x+h)**2/(a+b*ln(c*(f*x+e))),x)
```

```
[Out] Integral(1/(a*e*h**2 + 2*a*e*h*i*x + a*e*i**2*x**2 + a*f*h**2*x + 2*a*f*h*i
*x**2 + a*f*i**2*x**3 + b*e*h**2*log(c*e + c*f*x) + 2*b*e*h*i*x*log(c*e + c
*f*x) + b*e*i**2*x**2*log(c*e + c*f*x) + b*f*h**2*x*log(c*e + c*f*x) + 2*b*
f*h*i*x**2*log(c*e + c*f*x) + b*f*i**2*x**3*log(c*e + c*f*x)), x)/d
```

Giac [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*f*x+d*e)/(i*x+h)^2/(a+b*log(c*(f*x+e))),x, algorithm="giac")
```

```
[Out] integrate(1/((d*f*x + d*e)*(b*log((f*x + e)*c) + a)*(h + I*x)^2), x)
```

Mupad [A]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{1}{{\left(h+i\,x\right)}^2\,\left(d\,e+d\,f\,x\right)\,\left(a+b\,\ln\left(c\,\left(e+f\,x\right)\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((h + i*x)^2*(d*e + d*f*x)*(a + b*log(c*(e + f*x)))),x)
```

```
[Out] int(1/((h + i*x)^2*(d*e + d*f*x)*(a + b*log(c*(e + f*x)))), x)
```

3.198 $\int \frac{(f+gx)^{5/2}(a+b\log(c(d+ex)^n))}{d+ex}\,dx$

Optimal. Leaf size=485

$$-\frac{92b(ef-dg)^2n\sqrt{f+gx}}{15e^3}-\frac{32b(ef-dg)n(f+gx)^{3/2}}{45e^2}-\frac{4bn(f+gx)^{5/2}}{25e}+\frac{92b(ef-dg)^{5/2}n\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{}}{\sqrt{ef}}\right.}{15e^{7/2}}$$

```
[Out] -32/45*b*(-d*g+e*f)*n*(g*x+f)^(3/2)/e^2-4/25*b*n*(g*x+f)^(5/2)/e+92/15*b*(-
d*g+e*f)^(5/2)*n*arctanh(e^(1/2)*(g*x+f)^(1/2)/(-d*g+e*f)^(1/2))/e^(7/2)+2*
b*(-d*g+e*f)^(5/2)*n*arctanh(e^(1/2)*(g*x+f)^(1/2)/(-d*g+e*f)^(1/2))^2/e^(7
/2)+2/3*(-d*g+e*f)*(g*x+f)^(3/2)*(a+b*ln(c*(e*x+d)^n))/e^2+2/5*(g*x+f)^(5/2
)*(a+b*ln(c*(e*x+d)^n))/e-2*(-d*g+e*f)^(5/2)*arctanh(e^(1/2)*(g*x+f)^(1/2)/
(-d*g+e*f)^(1/2))*(a+b*ln(c*(e*x+d)^n))/e^(7/2)-4*b*(-d*g+e*f)^(5/2)*n*arct
anh(e^(1/2)*(g*x+f)^(1/2)/(-d*g+e*f)^(1/2))*ln(2/(1-e^(1/2)*(g*x+f)^(1/2)/(
-d*g+e*f)^(1/2)))/e^(7/2)-2*b*(-d*g+e*f)^(5/2)*n*polylog(2,1-2/(1-e^(1/2)*(
g*x+f)^(1/2)/(-d*g+e*f)^(1/2)))/e^(7/2)-92/15*b*(-d*g+e*f)^2*n*(g*x+f)^(1/2
)/e^3+2*(-d*g+e*f)^2*(a+b*ln(c*(e*x+d)^n))*(g*x+f)^(1/2)/e^3
```

Rubi [A]
time = 1.45, antiderivative size = 485, normalized size of antiderivative = 1.00, number of steps used = 27, number of rules used = 14, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.452$, Rules used = {2458, 2388, 65, 214, 2390, 12, 1601, 6873, 6131, 6055, 2449, 2352, 2356, 52}

$$-\frac{2bn(ef-dg)^{5/2}\text{PolyLog}\left(2,1-\frac{2}{1-\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}}\right)}{e^{7/2}}-\frac{2(ef-dg)^{5/2}\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)(a+b\log(c(d+ex)^n))}{e^{7/2}}+\frac{2\sqrt{f+gx}(ef-dg)^2(a+b\log(c(d+ex)^n))}{e^3}+\frac{2(f+gx)^{3/2}(ef-dg)(a+b\log(c(d+ex)^n))}{3e^2}+\frac{2(f+gx)^{5/2}(a+b\log(c(d+ex)^n))}{5e}+\frac{2bn(ef-dg)^{5/2}\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)^2}{e^{7/2}}+\frac{92bn(ef-dg)^{5/2}\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{15e^{7/2}}-\frac{4bn(ef-dg)^{5/2}\log\left(\frac{2}{1-\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}}\right)\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{e^{7/2}}-\frac{92bn\sqrt{f+gx}(ef-dg)^2}{15e^3}-\frac{32bn(f+gx)^{3/2}(ef-dg)}{45e^2}-\frac{4bn(f+gx)^{5/2}}{25e}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)^(5/2)*(a + b*Log[c*(d + e*x)^n]))/(d + e*x),x]
```

```
[Out] (-92*b*(e*f - d*g)^2*n*Sqrt[f + g*x])/(15*e^3) - (32*b*(e*f - d*g)*n*(f + g
*x)^(3/2))/(45*e^2) - (4*b*n*(f + g*x)^(5/2))/(25*e) + (92*b*(e*f - d*g)^(5
/2)*n*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]])/(15*e^(7/2)) + (2*b
*(e*f - d*g)^(5/2)*n*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]]^2)/e^
(7/2) + (2*(e*f - d*g)^2*Sqrt[f + g*x]*(a + b*Log[c*(d + e*x)^n]))/e^3 + (2
*(e*f - d*g)*(f + g*x)^(3/2)*(a + b*Log[c*(d + e*x)^n]))/(3*e^2) + (2*(f +
g*x)^(5/2)*(a + b*Log[c*(d + e*x)^n]))/(5*e) - (2*(e*f - d*g)^(5/2)*ArcTanh
[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]]*(a + b*Log[c*(d + e*x)^n]))/e^(7/
2) - (4*b*(e*f - d*g)^(5/2)*n*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*
g]]*Log[2/(1 - (Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g])])/e^(7/2) - (2*b*(e
*f - d*g)^(5/2)*n*PolyLog[2, 1 - 2/(1 - (Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f -
d*g])])/e^(7/2)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 52

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
(a + b*x)^(m + 1)*((c + d*x)^n/(b*(m + n + 1))), x] + Dist[n*((b*c - a*d)/(
b*(m + n + 1))), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 65

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - a*(d/b) +
d*(x^p/b))^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 214

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-a/b, 2]/a)*ArcTanh[x
/Rt[-a/b, 2]], x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 1601

```
Int[(Pp_)/(Qq_), x_Symbol] :> With[{p = Expon[Pp, x], q = Expon[Qq, x]}, Si
mp[Coeff[Pp, x, p]*(Log[RemoveContent[Qq, x]]/(q*Coeff[Qq, x, q])), x] /; E
qQ[p, q - 1] && EqQ[Pp, Simplify[(Coeff[Pp, x, p]/(q*Coeff[Qq, x, q]))*D[Qq
, x]]]] /; PolyQ[Pp, x] && PolyQ[Qq, x]
```

Rule 2352

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> Simp[(-e^(-1))*PolyLo
g[2, 1 - c*x], x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2356

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.),
x_Symbol] :> Simp[(d + e*x)^(q + 1)*((a + b*Log[c*x^n])^p/(e*(q + 1))), x]
- Dist[b*n*(p/(e*(q + 1))), Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^(p -
1))/x, x], x] /; FreeQ[{a, b, c, d, e, n, p, q}, x] && GtQ[p, 0] && NeQ[q,
-1] && (EqQ[p, 1] || (IntegersQ[2*p, 2*q] &&  !IGtQ[q, 0]) || (EqQ[p, 2] &&
 NeQ[q, 1]))
```

Rule 2388

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.))
/(x_), x_Symbol] :> Dist[d, Int[(d + e*x)^(q - 1)*((a + b*Log[c*x^n])^p/x),
 x], x] + Dist[e, Int[(d + e*x)^(q - 1)*(a + b*Log[c*x^n])^p, x], x] /; Fre
eQ[{a, b, c, d, e, n}, x] && IGtQ[p, 0] && GtQ[q, 0] && IntegerQ[2*q]
```

Rule 2390

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_) + (e_.)*(x_)^(r_.))^(q_.))
/(x_), x_Symbol] :> With[{u = IntHide[(d + e*x^r)^q/x, x]}, Simp[u*(a + b*L
og[c*x^n]), x] - Dist[b*n, Int[Dist[1/x, u, x], x], x]] /; FreeQ[{a, b, c,
d, e, n, r}, x] && IntegerQ[q - 1/2]
```

Rule 2449

```
Int[Log[(c_.)/((d_) + (e_.)*(x_))]/((f_) + (g_.)*(x_)^2), x_Symbol] :> Dist
[-e/g, Subst[Int[Log[2*d*x]/(1 - 2*d*x), x], x, 1/(d + e*x)], x] /; FreeQ[{
c, d, e, f, g}, x] && EqQ[c, 2*d] && EqQ[e^2*f + d^2*g, 0]
```

Rule 2458

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[(g*(x/e))^q*((e*h - d*i)/e + i*(x/e))^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 6055

```
Int[((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symbol
] :> Simp[(-(a + b*ArcTanh[c*x])^p)*(Log[2/(1 + e*(x/d))]/e), x] + Dist[b*c
*(p/e), Int[(a + b*ArcTanh[c*x])^(p - 1)*(Log[2/(1 + e*(x/d))]/(1 - c^2*x^2
)), x], x] /; FreeQ[{a, b, c, d, e}, x] && IGtQ[p, 0] && EqQ[c^2*d^2 - e^2,
 0]
```

Rule 6131

```
Int[(((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)*(x_))/((d_) + (e_.)*(x_)^2),
 x_Symbol] :> Simp[(a + b*ArcTanh[c*x])^(p + 1)/(b*e*(p + 1)), x] + Dist[1/
(c*d), Int[(a + b*ArcTanh[c*x])^p/(1 - c*x), x], x] /; FreeQ[{a, b, c, d, e
}, x] && EqQ[c^2*d + e, 0] && IGtQ[p, 0]
```

Rule 6873

```
Int[u_, x_Symbol] :> With[{v = NormalizeIntegrand[u, x]}, Int[v, x] /; v =!
= u]
```

Rubi steps

$$\int \frac{(f+gx)^{5/2}\left(a+b\log\left(c(d+ex)^n\right)\right)}{d+ex}\,dx = \frac{\text{Subst}\left(\int \frac{\left(\frac{ef-dg}{e}+\frac{gx}{e}\right)^{5/2}(a+b\log(cx^n))}{x}\,dx, x, d+ex\right)}{e}$$

$$= \frac{g\text{Subst}\left(\int \left(\frac{ef-dg}{e}+\frac{gx}{e}\right)^{3/2}\left(a+b\log\left(cx^n\right)\right)\,dx, x, d+ex\right)}{e^2} + \frac{(ef}{\cdots}$$

$$= \frac{2(f+gx)^{5/2}\left(a+b\log\left(c(d+ex)^n\right)\right)}{5e} + \frac{(g(ef-dg))\text{Subst}\left(\int \sqrt{\cdots}\right.}{\cdots}$$

$$= -\frac{4bn(f+gx)^{5/2}}{25e} + \frac{2(ef-dg)(f+gx)^{3/2}\left(a+b\log\left(c(d+ex)^n\right.\right.}{3e^2}$$

$$= -\frac{32b(ef-dg)n(f+gx)^{3/2}}{45e^2} - \frac{4bn(f+gx)^{5/2}}{25e} + \frac{2(ef-dg)^2\sqrt{\cdots}}{\cdots}$$

$$= -\frac{92b(ef-dg)^2n\sqrt{f+gx}}{15e^3} - \frac{32b(ef-dg)n(f+gx)^{3/2}}{45e^2} - \frac{4bn}{\cdots}$$

$$= -\frac{92b(ef-dg)^2n\sqrt{f+gx}}{15e^3} - \frac{32b(ef-dg)n(f+gx)^{3/2}}{45e^2} - \frac{4bn}{\cdots}$$

$$= -\frac{92b(ef-dg)^2n\sqrt{f+gx}}{15e^3} - \frac{32b(ef-dg)n(f+gx)^{3/2}}{45e^2} - \frac{4bn}{\cdots}$$

Mathematica [C] Result contains higher order function than in optimal. Order 5 vs. order 4 in optimal.
time = 14.54, size = 1400, normalized size = 2.89

[illegible]

Warning: Unable to verify antiderivative.

```
[In] Integrate[((f + g*x)^(5/2)*(a + b*Log[c*(d + e*x)^n]))/(d + e*x),x]
```

```
[Out] (-2*b*f^2*n*(f + g*x)^(3/2)*(2*Sqrt[g]*Sqrt[d + e*x]*HypergeometricPFQ[{-1/
2, -1/2, -1/2}, {1/2, 1/2}, (-(e*f) + d*g)/(g*(d + e*x))] + (-(Sqrt[g]*Sqrt
[d + e*x]*Sqrt[(e*(f + g*x))/(g*(d + e*x))]) + Sqrt[e*f - d*g]*ArcSinh[Sqrt
[e*f - d*g]/(Sqrt[g]*Sqrt[d + e*x])])*Log[d + e*x]))/(g^(3/2)*(d + e*x)^(3/
2)*((e*(f + g*x))/(g*(d + e*x)))^(3/2)) + (2*b*f*n*Sqrt[f + g*x]*(12*d*g*Sq
rt[d + e*x]*Sqrt[(e*(f + g*x))/(e*f - d*g)]*HypergeometricPFQ[{-1/2, -1/2,
-1/2}, {1/2, 1/2}, (-(e*f) + d*g)/(g*(d + e*x))] - 3*g*(d + e*x)^(3/2)*Sqrt
[(e*(f + g*x))/(g*(d + e*x))]*HypergeometricPFQ[{-1/2, 1, 1}, {2, 2}, (g*(d
 + e*x))/(-(e*f) + d*g)] + 2*(Sqrt[d + e*x]*Sqrt[(e*(f + g*x))/(g*(d + e*x)
)]*(d*g - 3*d*g*Sqrt[(e*(f + g*x))/(e*f - d*g)] + e*g*x*Sqrt[(e*(f + g*x))/
(e*f - d*g)] + e*f*(-1 + Sqrt[(e*(f + g*x))/(e*f - d*g)])) + 3*d*Sqrt[g]*Sq
rt[e*f - d*g]*Sqrt[(e*(f + g*x))/(e*f - d*g)]*ArcSinh[Sqrt[e*f - d*g]/(Sqrt
[g]*Sqrt[d + e*x])])*Log[d + e*x]))/(3*e^2*Sqrt[d + e*x]*Sqrt[(e*(f + g*x))
/(e*f - d*g)]*Sqrt[(e*(f + g*x))/(g*(d + e*x))]) + (b*g^2*n*((-2*d*(d + e*x
)*Sqrt[f + g*x]*(-HypergeometricPFQ[{-1/2, 1, 1}, {2, 2}, (g*(d + e*x))/(-(
e*f) + d*g)] + (2*(e*f - d*g)*(-1 + ((e*(f + g*x))/(e*f - d*g))^(3/2))*Log[
d + e*x])/(3*g*(d + e*x))))/Sqrt[(e*(f + g*x))/(e*f - d*g)] - (2*Sqrt[f + g
*x]*(4*d*e*f*g - 2*d^2*g^2 + 2*e^2*(2*f*g*x*Sqrt[(e*(f + g*x))/(e*f - d*g)]
 + g^2*x^2*Sqrt[(e*(f + g*x))/(e*f - d*g)] + f^2*(-1 + Sqrt[(e*(f + g*x))/(
e*f - d*g)])) + 5*g*(-(e*f) + d*g)*(d + e*x)*HypergeometricPFQ[{-3/2, 1, 1}
, {2, 2}, (g*(d + e*x))/(-(e*f) + d*g)] + (-2*d^2*g^2 + e^2*(-(f*g*x*Sqrt[(
e*(f + g*x))/(e*f - d*g)]) - 3*g^2*x^2*Sqrt[(e*(f + g*x))/(e*f - d*g)] + 2*
f^2*(-1 + Sqrt[(e*(f + g*x))/(e*f - d*g)])) - d*e*g*(5*g*x*Sqrt[(e*(f + g*x
))/(e*f - d*g)] + f*(-4 + 5*Sqrt[(e*(f + g*x))/(e*f - d*g)])))*Log[d + e*x]
))/(15*g^2*Sqrt[(e*(f + g*x))/(e*f - d*g)]) - (2*d^2*Sqrt[f + g*x]*(2*Sqrt[
g]*Sqrt[d + e*x]*HypergeometricPFQ[{-1/2, -1/2, -1/2}, {1/2, 1/2}, (-(e*f)
+ d*g)/(g*(d + e*x))] + (-(Sqrt[g]*Sqrt[d + e*x]*Sqrt[(e*(f + g*x))/(g*(d +
 e*x))]) + Sqrt[e*f - d*g]*ArcSinh[Sqrt[e*f - d*g]/(Sqrt[g]*Sqrt[d + e*x])]
)*Log[d + e*x]))/(Sqrt[g]*Sqrt[d + e*x]*Sqrt[(e*(f + g*x))/(g*(d + e*x))]))
)/e^3 + (2*Sqrt[f + g*x]*(15*d^2*g^2 - 5*d*e*g*(7*f + g*x) + e^2*(23*f^2 +
11*f*g*x + 3*g^2*x^2))*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n]))/(15*e
^3) - (2*(e*f - d*g)^(5/2)*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]]
*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n]))/e^(7/2)
```

Maple [F]

time = 0.31, size = 0, normalized size = 0.00

$$\int \frac{(gx+f)^{\frac{5}{2}} \left(a+b\ln \left(c(ex+d)^n\right)\right)}{ex+d}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^(5/2)*(a+b*ln(c*(e*x+d)^n))/(e*x+d),x)
```

```
[Out] int((g*x+f)^(5/2)*(a+b*ln(c*(e*x+d)^n))/(e*x+d),x)
```

Maxima [**F(-2)**]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^(5/2)*(a+b*log(c*(e*x+d)^n))/(e*x+d),x, algorithm="maxima
")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*%e^2*f-4*%e*d*g>0)', see `assume?
` for m
```

Fricas [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^(5/2)*(a+b*log(c*(e*x+d)^n))/(e*x+d),x, algorithm="fricas
")
```

```
[Out] integral(((b*g^2*x^2 + 2*b*f*g*x + b*f^2)*sqrt(g*x + f)*log((x*e + d)^n*c)
+ (a*g^2*x^2 + 2*a*f*g*x + a*f^2)*sqrt(g*x + f))/(x*e + d), x)
```

Sympy [**F(-1)**] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**(5/2)*(a+b*ln(c*(e*x+d)**n))/(e*x+d),x)
```

```
[Out] Timed out
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^(5/2)*(a+b*log(c*(e*x+d)^n))/(e*x+d),x, algorithm="giac")
[Out] integrate((g*x + f)^(5/2)*(b*log((x*e + d)^n*c) + a)/(x*e + d), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(f+g\,x)^{5/2}\,(a+b\,\ln\left(c\,(d+e\,x)^n\right))}{d+e\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)^(5/2)*(a + b*log(c*(d + e*x)^n)))/(d + e*x),x)
[Out] int(((f + g*x)^(5/2)*(a + b*log(c*(d + e*x)^n)))/(d + e*x), x)
```

3.199 $\int \frac{(f+gx)^{3/2}(a+b\log(c(d+ex)^n))}{d+ex}\,dx$

Optimal. Leaf size=417

$$-\frac{16b(ef-dg)n\sqrt{f+gx}}{3e^2}-\frac{4bn(f+gx)^{3/2}}{9e}+\frac{16b(ef-dg)^{3/2}n\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{3e^{5/2}}+\frac{2b(ef-dg)^{3/2}n\,t}{}$$

```
[Out] -4/9*b*n*(g*x+f)^(3/2)/e+16/3*b*(-d*g+e*f)^(3/2)*n*arctanh(e^(1/2)*(g*x+f)^
(1/2)/(-d*g+e*f)^(1/2))/e^(5/2)+2*b*(-d*g+e*f)^(3/2)*n*arctanh(e^(1/2)*(g*x
+f)^(1/2)/(-d*g+e*f)^(1/2))^2/e^(5/2)+2/3*(g*x+f)^(3/2)*(a+b*ln(c*(e*x+d)^n
))/e-2*(-d*g+e*f)^(3/2)*arctanh(e^(1/2)*(g*x+f)^(1/2)/(-d*g+e*f)^(1/2))*(a+
b*ln(c*(e*x+d)^n))/e^(5/2)-4*b*(-d*g+e*f)^(3/2)*n*arctanh(e^(1/2)*(g*x+f)^(
1/2)/(-d*g+e*f)^(1/2))*ln(2/(1-e^(1/2)*(g*x+f)^(1/2)/(-d*g+e*f)^(1/2)))/e^(
5/2)-2*b*(-d*g+e*f)^(3/2)*n*polylog(2,1-2/(1-e^(1/2)*(g*x+f)^(1/2)/(-d*g+e*
f)^(1/2)))/e^(5/2)-16/3*b*(-d*g+e*f)*n*(g*x+f)^(1/2)/e^2+2*(-d*g+e*f)*(a+b*
ln(c*(e*x+d)^n))*(g*x+f)^(1/2)/e^2
```

Rubi [A]
time = 0.98, antiderivative size = 417, normalized size of antiderivative = 1.00, number of steps used = 20, number of rules used = 14, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.452$, Rules used = {2458, 2388, 65, 214, 2390, 12, 1601, 6873, 6131, 6055, 2449, 2352, 2356, 52}

$$-\frac{2bn(ef-dg)^{3/2}\text{PolyLog}\left(2,1-\frac{2}{1-\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}}\right)}{e^{5/2}}-\frac{2(ef-dg)^{3/2}\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)(a+b\log(c(d+ex)^n))}{e^{5/2}}+\frac{2\sqrt{f+gx}(ef-dg)(a+b\log(c(d+ex)^n))}{e^2}+\frac{2(f+gx)^{3/2}(a+b\log(c(d+ex)^n))}{3e}+\frac{2bn(ef-dg)^{3/2}\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)^2}{e^{5/2}}+\frac{16bn(ef-dg)^{3/2}\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{3e^{5/2}}-\frac{4bn(ef-dg)^{3/2}\log\left(\frac{2}{1-\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}}\right)\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{e^{5/2}}-\frac{16bn\sqrt{f+gx}(ef-dg)}{3e^2}-\frac{4bn(f+gx)^{3/2}}{9e}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)^(3/2)*(a + b*Log[c*(d + e*x)^n]))/(d + e*x),x]
```

```
[Out] (-16*b*(e*f - d*g)*n*Sqrt[f + g*x])/(3*e^2) - (4*b*n*(f + g*x)^(3/2))/(9*e)
 + (16*b*(e*f - d*g)^(3/2)*n*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g
]])/(3*e^(5/2)) + (2*b*(e*f - d*g)^(3/2)*n*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/
Sqrt[e*f - d*g]]^2)/e^(5/2) + (2*(e*f - d*g)*Sqrt[f + g*x]*(a + b*Log[c*(d
+ e*x)^n]))/e^2 + (2*(f + g*x)^(3/2)*(a + b*Log[c*(d + e*x)^n]))/(3*e) - (2
*(e*f - d*g)^(3/2)*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]]*(a + b*
Log[c*(d + e*x)^n]))/e^(5/2) - (4*b*(e*f - d*g)^(3/2)*n*ArcTanh[(Sqrt[e]*Sq
rt[f + g*x])/Sqrt[e*f - d*g]]*Log[2/(1 - (Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f -
 d*g])])/e^(5/2) - (2*b*(e*f - d*g)^(3/2)*n*PolyLog[2, 1 - 2/(1 - (Sqrt[e]*
Sqrt[f + g*x])/Sqrt[e*f - d*g])])/e^(5/2)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 52

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
(a + b*x)^(m + 1)*((c + d*x)^n/(b*(m + n + 1))), x] + Dist[n*((b*c - a*d)/(
b*(m + n + 1))), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] && !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) && !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 65

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - a*(d/b) +
d*(x^p/b))^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 214

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-a/b, 2]/a)*ArcTanh[x
/Rt[-a/b, 2]], x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 1601

```
Int[(Pp_)/(Qq_), x_Symbol] :> With[{p = Expon[Pp, x], q = Expon[Qq, x]}, Si
mp[Coeff[Pp, x, p]*(Log[RemoveContent[Qq, x]]/(q*Coeff[Qq, x, q])), x] /; E
qQ[p, q - 1] && EqQ[Pp, Simplify[(Coeff[Pp, x, p]/(q*Coeff[Qq, x, q]))*D[Qq
, x]]]] /; PolyQ[Pp, x] && PolyQ[Qq, x]
```

Rule 2352

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> Simp[(-e^(-1))*PolyLo
g[2, 1 - c*x], x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2356

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.),
x_Symbol] :> Simp[(d + e*x)^(q + 1)*((a + b*Log[c*x^n])^p/(e*(q + 1))), x]
- Dist[b*n*(p/(e*(q + 1))), Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^(p -
1))/x, x], x] /; FreeQ[{a, b, c, d, e, n, p, q}, x] && GtQ[p, 0] && NeQ[q,
-1] && (EqQ[p, 1] || (IntegersQ[2*p, 2*q] && !IGtQ[q, 0]) || (EqQ[p, 2] &&
 NeQ[q, 1]))
```

Rule 2388

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.))
/(x_), x_Symbol] :> Dist[d, Int[(d + e*x)^(q - 1)*((a + b*Log[c*x^n])^p/x),
```

```
 x], x] + Dist[e, Int[(d + e*x)^(q - 1)*(a + b*Log[c*x^n])^p, x], x] /; Fre
eQ[{a, b, c, d, e, n}, x] && IGtQ[p, 0] && GtQ[q, 0] && IntegerQ[2*q]
```

Rule 2390

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_) + (e_.)*(x_)^(r_.))^(q_.))
/(x_), x_Symbol] :> With[{u = IntHide[(d + e*x^r)^q/x, x]}, Simp[u*(a + b*L
og[c*x^n]), x] - Dist[b*n, Int[Dist[1/x, u, x], x], x]] /; FreeQ[{a, b, c,
d, e, n, r}, x] && IntegerQ[q - 1/2]
```

Rule 2449

```
Int[Log[(c_.)/((d_) + (e_.)*(x_))]/((f_) + (g_.)*(x_)^2), x_Symbol] :> Dist
[-e/g, Subst[Int[Log[2*d*x]/(1 - 2*d*x), x], x, 1/(d + e*x)], x] /; FreeQ[{
c, d, e, f, g}, x] && EqQ[c, 2*d] && EqQ[e^2*f + d^2*g, 0]
```

Rule 2458

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[(g*(x/e))^q*((e*h - d*i)/e + i*(x/e))^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 6055

```
Int[((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symbol
] :> Simp[(-(a + b*ArcTanh[c*x])^p)*(Log[2/(1 + e*(x/d))]/e), x] + Dist[b*c
*(p/e), Int[(a + b*ArcTanh[c*x])^(p - 1)*(Log[2/(1 + e*(x/d))]/(1 - c^2*x^2
)), x], x] /; FreeQ[{a, b, c, d, e}, x] && IGtQ[p, 0] && EqQ[c^2*d^2 - e^2,
 0]
```

Rule 6131

```
Int[(((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)*(x_))/((d_) + (e_.)*(x_)^2),
 x_Symbol] :> Simp[(a + b*ArcTanh[c*x])^(p + 1)/(b*e*(p + 1)), x] + Dist[1/
(c*d), Int[(a + b*ArcTanh[c*x])^p/(1 - c*x), x], x] /; FreeQ[{a, b, c, d, e
}, x] && EqQ[c^2*d + e, 0] && IGtQ[p, 0]
```

Rule 6873

```
Int[u_, x_Symbol] :> With[{v = NormalizeIntegrand[u, x]}, Int[v, x] /; v =!
= u]
```

Rubi steps

$$\int \frac{(f+gx)^{3/2} \left(a+b\log \left(c(d+ex)^n\right)\right)}{d+ex} \, dx = \frac{\text{Subst}\left(\int \frac{\left(\frac{ef-dg}{e}+\frac{gx}{e}\right)^{3/2}(a+b\log(cx^n))}{x} \, dx, x, d+ex\right)}{e}$$

$$= \frac{g\text{Subst}\left(\int \sqrt{\frac{ef-dg}{e}+\frac{gx}{e}} \left(a+b\log\left(cx^n\right)\right) \, dx, x, d+ex\right)}{e^2} +$$

$$= \frac{2(f+gx)^{3/2} \left(a+b\log \left(c(d+ex)^n\right)\right)}{3e} + \frac{(g(ef-dg))\text{Subst}\left(\int \right.}{}$$

$$= -\frac{4bn(f+gx)^{3/2}}{9e} + \frac{2(ef-dg)\sqrt{f+gx} \left(a+b\log \left(c(d+ex)^n\right.\right.}{e^2}$$

$$= -\frac{16b(ef-dg)n\sqrt{f+gx}}{3e^2} - \frac{4bn(f+gx)^{3/2}}{9e} + \frac{2(ef-dg)\sqrt{f}}{}$$

$$= -\frac{16b(ef-dg)n\sqrt{f+gx}}{3e^2} - \frac{4bn(f+gx)^{3/2}}{9e} + \frac{2(ef-dg)\sqrt{f}}{}$$

$$= -\frac{16b(ef-dg)n\sqrt{f+gx}}{3e^2} - \frac{4bn(f+gx)^{3/2}}{9e} + \frac{16b(ef-dg)^{3/}}{}$$

$$= -\frac{16b(ef-dg)n\sqrt{f+gx}}{3e^2} - \frac{4bn(f+gx)^{3/2}}{9e} + \frac{16b(ef-dg)^{3/}}{}$$

Mathematica [C] Result contains higher order function than in optimal. Order 5 vs. order 4 in optimal.
time = 5.53, size = 576, normalized size = 1.38

$$\frac{12bg(-ef+dg)n(d+ex)\sqrt{\frac{e(f+gx)}{g(d+ex)}}\,{}_3F_2\left(-\frac{1}{2},-\frac{1}{2},-\frac{1}{2};\frac{1}{2},\frac{1}{2};\frac{-ef+dg}{g(d+ex)}\right)+3bg(-ef+dg)n(d+ex)\sqrt{\frac{e(f+gx)}{ef-dg}}\,{}_3F_2\left(-\frac{1}{2},1,1;2,2;\frac{g(d+ex)}{-ef+dg}\right)+2\left(4ae^2f^2-3adefg+5ae^2fgx-3adeg^2x+ae^2g^2x^2-be^2f^2n\sqrt{\frac{e(f+gx)}{ef-dg}}\log(d+ex)+2bdefgn\sqrt{\frac{e(f+gx)}{ef-dg}}\log(d+ex)-bd^2g^2n\sqrt{\frac{e(f+gx)}{ef-dg}}\log(d+ex)-3b\sqrt{g}\,(ef-dg)^{3/2}n\sqrt{d+ex}\sqrt{\frac{e(f+gx)}{g(d+ex)}}\sinh^{-1}\left(\frac{\sqrt{ef-dg}}{\sqrt{g}\sqrt{d+ex}}\right)\log(d+ex)+4be^2f^2\log\left(c(d+ex)^n\right)-3bdefg\log\left(c(d+ex)^n\right)+5be^2fgx\log\left(c(d+ex)^n\right)-3bdeg^2x\log\left(c(d+ex)^n\right)+be^2g^2x^2\log\left(c(d+ex)^n\right)-3\sqrt{e}\,(ef-dg)^{3/2}\sqrt{f+gx}\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)\left(a-bn\log(d+ex)+b\log\left(c(d+ex)^n\right)\right)\right)}{3e^3\sqrt{f+gx}}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[((f + g*x)^(3/2)*(a + b*Log[c*(d + e*x)^n]))/(d + e*x),x]
```

```
[Out] (12*b*g*(-(e*f) + d*g)*n*(d + e*x)*Sqrt[(e*(f + g*x))/(g*(d + e*x))]*Hyperg
eometricPFQ[{-1/2, -1/2, -1/2}, {1/2, 1/2}, (-(e*f) + d*g)/(g*(d + e*x))] +
 3*b*g*(-(e*f) + d*g)*n*(d + e*x)*Sqrt[(e*(f + g*x))/(e*f - d*g)]*Hypergeom
etricPFQ[{-1/2, 1, 1}, {2, 2}, (g*(d + e*x))/(-(e*f) + d*g)] + 2*(4*a*e^2*f
^2 - 3*a*d*e*f*g + 5*a*e^2*f*g*x - 3*a*d*e*g^2*x + a*e^2*g^2*x^2 - b*e^2*f^
2*n*Sqrt[(e*(f + g*x))/(e*f - d*g)]*Log[d + e*x] + 2*b*d*e*f*g*n*Sqrt[(e*(f
 + g*x))/(e*f - d*g)]*Log[d + e*x] - b*d^2*g^2*n*Sqrt[(e*(f + g*x))/(e*f -
d*g)]*Log[d + e*x] - 3*b*Sqrt[g]*(e*f - d*g)^(3/2)*n*Sqrt[d + e*x]*Sqrt[(e*
(f + g*x))/(g*(d + e*x))]*ArcSinh[Sqrt[e*f - d*g]/(Sqrt[g]*Sqrt[d + e*x])]*
Log[d + e*x] + 4*b*e^2*f^2*Log[c*(d + e*x)^n] - 3*b*d*e*f*g*Log[c*(d + e*x)
^n] + 5*b*e^2*f*g*x*Log[c*(d + e*x)^n] - 3*b*d*e*g^2*x*Log[c*(d + e*x)^n] +
 b*e^2*g^2*x^2*Log[c*(d + e*x)^n] - 3*Sqrt[e]*(e*f - d*g)^(3/2)*Sqrt[f + g*
x]*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]]*(a - b*n*Log[d + e*x] +
 b*Log[c*(d + e*x)^n])))/(3*e^3*Sqrt[f + g*x])
```

Maple [F]
time = 0.29, size = 0, normalized size = 0.00

$$\int \frac{(gx+f)^{\frac{3}{2}}\left(a+b\ln\left(c(ex+d)^{n}\right)\right)}{ex+d}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^(3/2)*(a+b*ln(c*(e*x+d)^n))/(e*x+d),x)
```

```
[Out] int((g*x+f)^(3/2)*(a+b*ln(c*(e*x+d)^n))/(e*x+d),x)
```

Maxima [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^(3/2)*(a+b*log(c*(e*x+d)^n))/(e*x+d),x, algorithm="maxima
")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
```

```
elp (example of legal syntax is 'assume(4*%e^2*f-4*%e*d*g>0)', see `assume?
` for m
```

Fricas [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^(3/2)*(a+b*log(c*(e*x+d)^n))/(e*x+d),x, algorithm="fricas
")
```

```
[Out] integral(((b*g*x + b*f)*sqrt(g*x + f)*log((x*e + d)^n*c) + (a*g*x + a*f)*sq
rt(g*x + f))/(x*e + d), x)
```

Sympy [**F(-1)**] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**(3/2)*(a+b*ln(c*(e*x+d)**n))/(e*x+d),x)
```

```
[Out] Timed out
```

Giac [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^(3/2)*(a+b*log(c*(e*x+d)^n))/(e*x+d),x, algorithm="giac")
```

```
[Out] integrate((g*x + f)^(3/2)*(b*log((x*e + d)^n*c) + a)/(x*e + d), x)
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(f+g\,x)^{3/2}\,\left(a+b\,\ln\left(c\,{(d+e\,x)}^n\right)\right)}{d+e\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)^(3/2)*(a + b*log(c*(d + e*x)^n)))/(d + e*x),x)
```

```
[Out] int(((f + g*x)^(3/2)*(a + b*log(c*(d + e*x)^n)))/(d + e*x), x)
```

3.200 $\int \frac{\sqrt{f+gx}\,(a+b\log(c(d+ex)^n))}{d+ex}\,dx$

Optimal. Leaf size=349

$$-\frac{4bn\sqrt{f+gx}}{e}+\frac{4b\sqrt{ef-dg}\,n\tanh^{-1}\left(\frac{\sqrt{e}\,\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{e^{3/2}}+\frac{2b\sqrt{ef-dg}\,n\tanh^{-1}\left(\frac{\sqrt{e}\,\sqrt{f+gx}}{\sqrt{ef-dg}}\right)^2}{e^{3/2}}+\frac{2\sqrt{}}{}$$

```
[Out] 4*b*n*arctanh(e^(1/2)*(g*x+f)^(1/2)/(-d*g+e*f)^(1/2))*(-d*g+e*f)^(1/2)/e^(3
/2)+2*b*n*arctanh(e^(1/2)*(g*x+f)^(1/2)/(-d*g+e*f)^(1/2))^2*(-d*g+e*f)^(1/2
)/e^(3/2)-2*arctanh(e^(1/2)*(g*x+f)^(1/2)/(-d*g+e*f)^(1/2))*(a+b*ln(c*(e*x+
d)^n))*(-d*g+e*f)^(1/2)/e^(3/2)-4*b*n*arctanh(e^(1/2)*(g*x+f)^(1/2)/(-d*g+e
*f)^(1/2))*ln(2/(1-e^(1/2)*(g*x+f)^(1/2)/(-d*g+e*f)^(1/2)))*(-d*g+e*f)^(1/2
)/e^(3/2)-2*b*n*polylog(2,1-2/(1-e^(1/2)*(g*x+f)^(1/2)/(-d*g+e*f)^(1/2)))*(
-d*g+e*f)^(1/2)/e^(3/2)-4*b*n*(g*x+f)^(1/2)/e+2*(a+b*ln(c*(e*x+d)^n))*(g*x+
f)^(1/2)/e
```

Rubi [A]
time = 0.70, antiderivative size = 349, normalized size of antiderivative = 1.00, number of steps used = 14, number of rules used = 14, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.452$, Rules used = {2458, 2388, 65, 214, 2390, 12, 1601, 6873, 6131, 6055, 2449, 2352, 2356, 52}

$$-\frac{2bn\sqrt{ef-dg}\,\text{PolyLog}\left(2,1-\frac{2}{1-\frac{\sqrt{e}\,\sqrt{f+gx}}{\sqrt{ef-dg}}}\right)}{e^{3/2}}-\frac{2\sqrt{ef-dg}\,\tanh^{-1}\left(\frac{\sqrt{e}\,\sqrt{f+gx}}{\sqrt{ef-dg}}\right)(a+b\log(c(d+ex)^n))}{e^{3/2}}+\frac{2\sqrt{f+gx}\,(a+b\log(c(d+ex)^n))}{e}+\frac{2bn\sqrt{ef-dg}\,\tanh^{-1}\left(\frac{\sqrt{e}\,\sqrt{f+gx}}{\sqrt{ef-dg}}\right)^2}{e^{3/2}}+\frac{4bn\sqrt{ef-dg}\,\tanh^{-1}\left(\frac{\sqrt{e}\,\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{e^{3/2}}-\frac{4bn\sqrt{ef-dg}\,\log\left(\frac{2}{1-\frac{\sqrt{e}\,\sqrt{f+gx}}{\sqrt{ef-dg}}}\right)\tanh^{-1}\left(\frac{\sqrt{e}\,\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{e^{3/2}}-\frac{4bn\sqrt{f+gx}}{e}$$

Antiderivative was successfully verified.

```
[In] Int[(Sqrt[f + g*x]*(a + b*Log[c*(d + e*x)^n]))/(d + e*x),x]
```

```
[Out] (-4*b*n*Sqrt[f + g*x])/e + (4*b*Sqrt[e*f - d*g]*n*ArcTanh[(Sqrt[e]*Sqrt[f +
 g*x])/Sqrt[e*f - d*g]])/e^(3/2) + (2*b*Sqrt[e*f - d*g]*n*ArcTanh[(Sqrt[e]*
Sqrt[f + g*x])/Sqrt[e*f - d*g]]^2)/e^(3/2) + (2*Sqrt[f + g*x]*(a + b*Log[c*
(d + e*x)^n]))/e - (2*Sqrt[e*f - d*g]*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[
e*f - d*g]]*(a + b*Log[c*(d + e*x)^n]))/e^(3/2) - (4*b*Sqrt[e*f - d*g]*n*Ar
cTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]]*Log[2/(1 - (Sqrt[e]*Sqrt[f +
 g*x])/Sqrt[e*f - d*g])])/e^(3/2) - (2*b*Sqrt[e*f - d*g]*n*PolyLog[2, 1 - 2
/(1 - (Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g])])/e^(3/2)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 52

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
(a + b*x)^(m + 1)*((c + d*x)^n/(b*(m + n + 1))), x] + Dist[n*((b*c - a*d)/(
b*(m + n + 1))), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 65

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - a*(d/b) +
d*(x^p/b))^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 214

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-a/b, 2]/a)*ArcTanh[x
/Rt[-a/b, 2]], x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 1601

```
Int[(Pp_)/(Qq_), x_Symbol] :> With[{p = Expon[Pp, x], q = Expon[Qq, x]}, Si
mp[Coeff[Pp, x, p]*(Log[RemoveContent[Qq, x]]/(q*Coeff[Qq, x, q])), x] /; E
qQ[p, q - 1] && EqQ[Pp, Simplify[(Coeff[Pp, x, p]/(q*Coeff[Qq, x, q]))*D[Qq
, x]]]] /; PolyQ[Pp, x] && PolyQ[Qq, x]
```

Rule 2352

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> Simp[(-e^(-1))*PolyLo
g[2, 1 - c*x], x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2356

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.),
x_Symbol] :> Simp[(d + e*x)^(q + 1)*((a + b*Log[c*x^n])^p/(e*(q + 1))), x]
- Dist[b*n*(p/(e*(q + 1))), Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^(p -
1))/x, x], x] /; FreeQ[{a, b, c, d, e, n, p, q}, x] && GtQ[p, 0] && NeQ[q,
-1] && (EqQ[p, 1] || (IntegersQ[2*p, 2*q] &&  !IGtQ[q, 0]) || (EqQ[p, 2] &&
 NeQ[q, 1]))
```

Rule 2388

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.))
/(x_), x_Symbol] :> Dist[d, Int[(d + e*x)^(q - 1)*((a + b*Log[c*x^n])^p/x),
 x], x] + Dist[e, Int[(d + e*x)^(q - 1)*(a + b*Log[c*x^n])^p, x], x] /; Fre
```

```
eQ[{a, b, c, d, e, n}, x] && IGtQ[p, 0] && GtQ[q, 0] && IntegerQ[2*q]
```

Rule 2390

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_) + (e_.)*(x_)^(r_.))^(q_.))
/(x_), x_Symbol] :> With[{u = IntHide[(d + e*x^r)^q/x, x]}, Simp[u*(a + b*L
og[c*x^n]), x] - Dist[b*n, Int[Dist[1/x, u, x], x], x]] /; FreeQ[{a, b, c,
d, e, n, r}, x] && IntegerQ[q - 1/2]
```

Rule 2449

```
Int[Log[(c_.)/((d_) + (e_.)*(x_))]/((f_) + (g_.)*(x_)^2), x_Symbol] :> Dist
[-e/g, Subst[Int[Log[2*d*x]/(1 - 2*d*x), x], x, 1/(d + e*x)], x] /; FreeQ[{
c, d, e, f, g}, x] && EqQ[c, 2*d] && EqQ[e^2*f + d^2*g, 0]
```

Rule 2458

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[(g*(x/e))^q*((e*h - d*i)/e + i*(x/e))^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 6055

```
Int[((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symbol
] :> Simp[(-(a + b*ArcTanh[c*x])^p)*(Log[2/(1 + e*(x/d))]/e), x] + Dist[b*c
*(p/e), Int[(a + b*ArcTanh[c*x])^(p - 1)*(Log[2/(1 + e*(x/d))]/(1 - c^2*x^2
)), x], x] /; FreeQ[{a, b, c, d, e}, x] && IGtQ[p, 0] && EqQ[c^2*d^2 - e^2,
 0]
```

Rule 6131

```
Int[(((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)*(x_))/((d_) + (e_.)*(x_)^2),
 x_Symbol] :> Simp[(a + b*ArcTanh[c*x])^(p + 1)/(b*e*(p + 1)), x] + Dist[1/
(c*d), Int[(a + b*ArcTanh[c*x])^p/(1 - c*x), x], x] /; FreeQ[{a, b, c, d, e
}, x] && EqQ[c^2*d + e, 0] && IGtQ[p, 0]
```

Rule 6873

```
Int[u_, x_Symbol] :> With[{v = NormalizeIntegrand[u, x]}, Int[v, x] /; v =!
= u]
```

Rubi steps

$$\int \frac{\sqrt{f+gx}\,(a+b\log(c(d+ex)^n))}{d+ex}\,dx = \frac{\text{Subst}\left(\int \frac{\sqrt{\frac{ef-dg}{e}+\frac{gx}{e}}\,(a+b\log(cx^n))}{x}\,dx, x, d+ex\right)}{e}$$

$$= \frac{g\text{Subst}\left(\int \frac{a+b\log(cx^n)}{\sqrt{\frac{ef-dg}{e}+\frac{gx}{e}}}\,dx, x, d+ex\right)}{e^2} + \frac{(ef-dg)\text{Subst}}{}$$

$$= \frac{2\sqrt{f+gx}\,(a+b\log(c(d+ex)^n))}{e} - \frac{2\sqrt{ef-dg}\,\tanh^{-1}\left(\frac{\sqrt{e}}{\sqrt{}}\right.}{}$$

$$= -\frac{4bn\sqrt{f+gx}}{e} + \frac{2\sqrt{f+gx}\,(a+b\log(c(d+ex)^n))}{e} - \frac{2\sqrt{ef}}{}$$

$$= -\frac{4bn\sqrt{f+gx}}{e} + \frac{2\sqrt{f+gx}\,(a+b\log(c(d+ex)^n))}{e} - \frac{2\sqrt{ef}}{}$$

$$= -\frac{4bn\sqrt{f+gx}}{e} + \frac{4b\sqrt{ef-dg}\,n\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{e^{3/2}} + \frac{2}{}$$

$$= -\frac{4bn\sqrt{f+gx}}{e} + \frac{4b\sqrt{ef-dg}\,n\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{e^{3/2}} + \frac{2}{}$$

Mathematica [C] Result contains higher order function than in optimal. Order 5 vs. order 4 in optimal.
time = 1.37, size = 268, normalized size = 0.77

$$\frac{2\left(-\frac{2ben\sqrt{f+gx}\,{}_3F_2\left(-\frac{1}{2},-\frac{1}{2},-\frac{1}{2};\frac{1}{2},\frac{1}{2};\frac{-ef+dg}{g(d+ex)}\right)}{\sqrt{\frac{e(f+gx)}{g(d+ex)}}}-\frac{b\sqrt{g}\,\sqrt{ef-dg}\,n\sqrt{d+ex}\,\sqrt{\frac{e(f+gx)}{g(d+ex)}}\,\sinh^{-1}\left(\frac{\sqrt{ef-dg}}{\sqrt{g}\,\sqrt{d+ex}}\right)\log(d+ex)}{\sqrt{f+gx}}+e\sqrt{f+gx}\,(a+b\log\left(c(d+ex)^n\right))-\sqrt{e}\,\sqrt{ef-dg}\,\tanh^{-1}\left(\frac{\sqrt{e}\,\sqrt{f+gx}}{\sqrt{ef-dg}}\right)(a-bn\log(d+ex)+b\log\left(c(d+ex)^n\right))\right)}{e^2}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(Sqrt[f + g*x]*(a + b*Log[c*(d + e*x)^n]))/(d + e*x),x]
```

```
[Out] (2*((-2*b*e*n*Sqrt[f + g*x]*HypergeometricPFQ[{-1/2, -1/2, -1/2}, {1/2, 1/2
}, (-(e*f) + d*g)/(g*(d + e*x))])/Sqrt[(e*(f + g*x))/(g*(d + e*x))] - (b*Sq
rt[g]*Sqrt[e*f - d*g]*n*Sqrt[d + e*x]*Sqrt[(e*(f + g*x))/(g*(d + e*x))]*Arc
Sinh[Sqrt[e*f - d*g]/(Sqrt[g]*Sqrt[d + e*x])]*Log[d + e*x])/Sqrt[f + g*x] +
 e*Sqrt[f + g*x]*(a + b*Log[c*(d + e*x)^n]) - Sqrt[e]*Sqrt[e*f - d*g]*ArcTa
nh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]]*(a - b*n*Log[d + e*x] + b*Log[c
*(d + e*x)^n])))/e^2
```

Maple [F]
time = 0.33, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{gx+f}\,\left(a+b\ln\left(c(ex+d)^n\right)\right)}{ex+d}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^(1/2)*(a+b*ln(c*(e*x+d)^n))/(e*x+d),x)
```

```
[Out] int((g*x+f)^(1/2)*(a+b*ln(c*(e*x+d)^n))/(e*x+d),x)
```

Maxima [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^(1/2)*(a+b*log(c*(e*x+d)^n))/(e*x+d),x, algorithm="maxima
")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*%e^2*f-4*%e*d*g>0)', see `assume?
` for m
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^(1/2)*(a+b*log(c*(e*x+d)^n))/(e*x+d),x, algorithm="fricas
")
```

```
[Out] integral((sqrt(g*x + f)*b*log((x*e + d)^n*c) + sqrt(g*x + f)*a)/(x*e + d),
x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a + b\log(c(d + ex)^n))\sqrt{f + gx}}{d + ex}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**(1/2)*(a+b*ln(c*(e*x+d)**n))/(e*x+d),x)
```

```
[Out] Integral((a + b*log(c*(d + e*x)**n))*sqrt(f + g*x)/(d + e*x), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^(1/2)*(a+b*log(c*(e*x+d)^n))/(e*x+d),x, algorithm="giac")
```

```
[Out] integrate(sqrt(g*x + f)*(b*log((x*e + d)^n*c) + a)/(x*e + d), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\sqrt{f + g\,x}\,\left(a + b\,\ln\left(c\,{\left(d + e\,x\right)}^n\right)\right)}{d + e\,x}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)^(1/2)*(a + b*log(c*(d + e*x)^n)))/(d + e*x),x)
```

```
[Out] int(((f + g*x)^(1/2)*(a + b*log(c*(d + e*x)^n)))/(d + e*x), x)
```

3.201 $\int \frac{a+b\log(c(d+ex)^n)}{(d+ex)\sqrt{f+gx}}\,dx$

Optimal. Leaf size=256

$$\frac{2bn\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)^2}{\sqrt{e}\sqrt{ef-dg}}-\frac{2\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)(a+b\log(c(d+ex)^n))}{\sqrt{e}\sqrt{ef-dg}}-\frac{4bn\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f-}}{\sqrt{ef-}}\right.}{\sqrt{e}}$$

```
[Out] 2*b*n*arctanh(e^(1/2)*(g*x+f)^(1/2)/(-d*g+e*f)^(1/2))^2/e^(1/2)/(-d*g+e*f)^
(1/2)-2*arctanh(e^(1/2)*(g*x+f)^(1/2)/(-d*g+e*f)^(1/2))*(a+b*ln(c*(e*x+d)^n
))/e^(1/2)/(-d*g+e*f)^(1/2)-4*b*n*arctanh(e^(1/2)*(g*x+f)^(1/2)/(-d*g+e*f)^
(1/2))*ln(2/(1-e^(1/2)*(g*x+f)^(1/2)/(-d*g+e*f)^(1/2)))/e^(1/2)/(-d*g+e*f)^
(1/2)-2*b*n*polylog(2,1-2/(1-e^(1/2)*(g*x+f)^(1/2)/(-d*g+e*f)^(1/2)))/e^(1/
2)/(-d*g+e*f)^(1/2)
```

Rubi [A]
time = 0.48, antiderivative size = 256, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 11, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.355$, Rules used = {2458, 65, 214, 2390, 12, 1601, 6873, 6131, 6055, 2449, 2352}

$$-\frac{2bn\,\text{PolyLog}\left(2,1-\frac{2}{1-\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}}\right)}{\sqrt{e}\sqrt{ef-dg}}-\frac{2\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)(a+b\log(c(d+ex)^n))}{\sqrt{e}\sqrt{ef-dg}}+\frac{2bn\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)^2}{\sqrt{e}\sqrt{ef-dg}}-\frac{4bn\log\left(\frac{2}{1-\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}}\right)\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{\sqrt{e}\sqrt{ef-dg}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])/((d + e*x)*Sqrt[f + g*x]),x]
```

```
[Out] (2*b*n*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]]^2)/(Sqrt[e]*Sqrt[e*
f - d*g]) - (2*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]]*(a + b*Log[
c*(d + e*x)^n]))/(Sqrt[e]*Sqrt[e*f - d*g]) - (4*b*n*ArcTanh[(Sqrt[e]*Sqrt[f
 + g*x])/Sqrt[e*f - d*g]]*Log[2/(1 - (Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g
])])/(Sqrt[e]*Sqrt[e*f - d*g]) - (2*b*n*PolyLog[2, 1 - 2/(1 - (Sqrt[e]*Sqrt
[f + g*x])/Sqrt[e*f - d*g])])/(Sqrt[e]*Sqrt[e*f - d*g])
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 65

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - a*(d/b) +
```

```
d*(x^p/b))^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 214

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-a/b, 2]/a)*ArcTanh[x
/Rt[-a/b, 2]], x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 1601

```
Int[(Pp_)/(Qq_), x_Symbol] :> With[{p = Expon[Pp, x], q = Expon[Qq, x]}, Si
mp[Coeff[Pp, x, p]*(Log[RemoveContent[Qq, x]]/(q*Coeff[Qq, x, q])), x] /; E
qQ[p, q - 1] && EqQ[Pp, Simplify[(Coeff[Pp, x, p]/(q*Coeff[Qq, x, q]))*D[Qq
, x]]]] /; PolyQ[Pp, x] && PolyQ[Qq, x]
```

Rule 2352

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> Simp[(-e^(-1))*PolyLo
g[2, 1 - c*x], x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2390

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_) + (e_.)*(x_)^(r_.))^(q_.))
/(x_), x_Symbol] :> With[{u = IntHide[(d + e*x^r)^q/x, x]}, Simp[u*(a + b*L
og[c*x^n]), x] - Dist[b*n, Int[Dist[1/x, u, x], x], x]] /; FreeQ[{a, b, c,
d, e, n, r}, x] && IntegerQ[q - 1/2]
```

Rule 2449

```
Int[Log[(c_.)/((d_) + (e_.)*(x_))]/((f_) + (g_.)*(x_)^2), x_Symbol] :> Dist
[-e/g, Subst[Int[Log[2*d*x]/(1 - 2*d*x), x], x, 1/(d + e*x)], x] /; FreeQ[{
c, d, e, f, g}, x] && EqQ[c, 2*d] && EqQ[e^2*f + d^2*g, 0]
```

Rule 2458

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[(g*(x/e))^q*((e*h - d*i)/e + i*(x/e))^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 6055

```
Int[((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symbol
] :> Simp[(-(a + b*ArcTanh[c*x])^p)*(Log[2/(1 + e*(x/d))]/e), x] + Dist[b*c
```

```
*(p/e), Int[(a + b*ArcTanh[c*x])^(p - 1)*(Log[2/(1 + e*(x/d))]/(1 - c^2*x^2
)), x], x] /; FreeQ[{a, b, c, d, e}, x] && IGtQ[p, 0] && EqQ[c^2*d^2 - e^2,
 0]
```

Rule 6131

```
Int[(((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)*(x_))/((d_) + (e_.)*(x_)^2),
 x_Symbol] :> Simp[(a + b*ArcTanh[c*x])^(p + 1)/(b*e*(p + 1)), x] + Dist[1/
(c*d), Int[(a + b*ArcTanh[c*x])^p/(1 - c*x), x], x] /; FreeQ[{a, b, c, d, e
}, x] && EqQ[c^2*d + e, 0] && IGtQ[p, 0]
```

Rule 6873

```
Int[u_, x_Symbol] :> With[{v = NormalizeIntegrand[u, x]}, Int[v, x] /; v =!
= u]
```

Rubi steps

$$\int \frac{a+b\log\left(c(d+ex)^n\right)}{(d+ex)\sqrt{f+gx}}\,dx = \frac{\text{Subst}\left(\int \frac{a+b\log(cx^n)}{x\sqrt{\frac{ef-dg}{e}+\frac{gx}{e}}}\,dx, x, d+ex\right)}{e}$$

$$= -\frac{2\tanh^{-1}\left(\frac{\sqrt{e}\,\sqrt{f+gx}}{\sqrt{ef-dg}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{\sqrt{e}\,\sqrt{ef-dg}} - \frac{(bn)\text{Subst}\left(\int -\frac{2\sqrt{e}\cdots}{\cdots}\right)}{\cdots}$$

$$= -\frac{2\tanh^{-1}\left(\frac{\sqrt{e}\,\sqrt{f+gx}}{\sqrt{ef-dg}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{\sqrt{e}\,\sqrt{ef-dg}} + \frac{(2bn)\text{Subst}\left(\int \frac{\tanh^{-}\cdots}{\cdots}\right)}{\cdots}$$

$$= -\frac{2\tanh^{-1}\left(\frac{\sqrt{e}\,\sqrt{f+gx}}{\sqrt{ef-dg}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{\sqrt{e}\,\sqrt{ef-dg}} + \frac{\left(4b\sqrt{e}\,n\right)\text{Subst}\left(\int \cdots\right)}{\cdots}$$

$$= -\frac{2\tanh^{-1}\left(\frac{\sqrt{e}\,\sqrt{f+gx}}{\sqrt{ef-dg}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{\sqrt{e}\,\sqrt{ef-dg}} + \frac{\left(4b\sqrt{e}\,n\right)\text{Subst}\left(\int \cdots\right)}{\cdots}$$

$$= \frac{2bn\tanh^{-1}\left(\frac{\sqrt{e}\,\sqrt{f+gx}}{\sqrt{ef-dg}}\right)^2}{\sqrt{e}\,\sqrt{ef-dg}} - \frac{2\tanh^{-1}\left(\frac{\sqrt{e}\,\sqrt{f+gx}}{\sqrt{ef-dg}}\right)\left(a+b\log\left(c(d\cdots\right.\right.}{\sqrt{e}\,\sqrt{ef-dg}}$$

$$\frac{2bn\tanh^{-1}\left(\frac{\sqrt{e}\,\sqrt{f+gx}}{\cdots}\right)^2}{\cdots} \quad \frac{2\tanh^{-1}\left(\frac{\sqrt{e}\,\sqrt{f+gx}}{\cdots}\right)\left(a+b\log\left(c(d\cdots\right.\right.}{\cdots}$$

Mathematica [A]
time = 2.99, size = 314, normalized size = 1.23

$$\frac{-\frac{2\sqrt{e}\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)(a-bn\log(d+ex)+b\log(c(d+ex)^n))}{\sqrt{ef-dg}}+bn\left(-\frac{2\tanh^{-1}\left(\frac{\sqrt{f+gx}}{\sqrt{f-\frac{dg}{e}}}\right)\left(\log(d+ex)-\log\left(\frac{g(d+ex)}{-ef+dg}\right)\right)}{\sqrt{f-\frac{dg}{e}}}+\frac{\sqrt{\frac{e(f+gx)}{ef-dg}}\left(\log^2\left(\frac{g(d+ex)}{-ef+dg}\right)-4\log\left(\frac{g(d+ex)}{-ef+dg}\right)\log\left(\frac{1}{2}\left(1+\sqrt{\frac{e(f+gx)}{ef-dg}}\right)\right)+2\log^2\left(\frac{1}{2}\left(1+\sqrt{\frac{e(f+gx)}{ef-dg}}\right)\right)-4\text{Li}_2\left(\frac{1}{2}-\frac{1}{2}\sqrt{\frac{e(f+gx)}{ef-dg}}\right)\right)}{2\sqrt{f+gx}}\right)}{e}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])/((d + e*x)*Sqrt[f + g*x]),x]
```

```
[Out] ((-2*Sqrt[e]*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]]*(a - b*n*Log[
d + e*x] + b*Log[c*(d + e*x)^n]))/Sqrt[e*f - d*g] + b*n*((-2*ArcTanh[Sqrt[f
 + g*x]/Sqrt[f - (d*g)/e]]*(Log[d + e*x] - Log[(g*(d + e*x))/(-(e*f) + d*g)
]))/Sqrt[f - (d*g)/e] + (Sqrt[(e*(f + g*x))/(e*f - d*g)]*(Log[(g*(d + e*x))
/(-(e*f) + d*g)]^2 - 4*Log[(g*(d + e*x))/(-(e*f) + d*g)]*Log[(1 + Sqrt[(e*(
f + g*x))/(e*f - d*g)])/2] + 2*Log[(1 + Sqrt[(e*(f + g*x))/(e*f - d*g)])/2]
^2 - 4*PolyLog[2, 1/2 - Sqrt[(e*(f + g*x))/(e*f - d*g)]/2]))/(2*Sqrt[f + g*
x])))/e
```

Maple [F]
time = 0.27, size = 0, normalized size = 0.00

$$\int \frac{a+b\ln\left(c(ex+d)^n\right)}{(ex+d)\sqrt{gx+f}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))/(e*x+d)/(g*x+f)^(1/2),x)
```

```
[Out] int((a+b*ln(c*(e*x+d)^n))/(e*x+d)/(g*x+f)^(1/2),x)
```

Maxima [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(e*x+d)/(g*x+f)^(1/2),x, algorithm="maxima
")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*%e^2*f-4*%e*d*g>0)', see `assume?
` for m
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(e*x+d)/(g*x+f)^(1/2),x, algorithm="fricas
")
```

```
[Out] integral((sqrt(g*x + f)*b*log((x*e + d)^n*c) + sqrt(g*x + f)*a)/(d*g*x + d*
f + (g*x^2 + f*x)*e), x)
```

Sympy [F(-1)] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))/(e*x+d)/(g*x+f)**(1/2),x)
```

```
[Out] Timed out
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(e*x+d)/(g*x+f)^(1/2),x, algorithm="giac")
```

```
[Out] integrate((b*log((x*e + d)^n*c) + a)/(sqrt(g*x + f)*(x*e + d)), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)}{\sqrt{f+g\,x}\,\left(d+e\,x\right)} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))/((f + g*x)^(1/2)*(d + e*x)),x)
```

```
[Out] int((a + b*log(c*(d + e*x)^n))/((f + g*x)^(1/2)*(d + e*x)), x)
```

3.202 $\int \frac{a+b\log(c(d+ex)^n)}{(d+ex)(f+gx)^{3/2}}\,dx$

Optimal. Leaf size=340

$$\frac{4b\sqrt{e}\,n\tanh^{-1}\left(\frac{\sqrt{e}\,\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{(ef-dg)^{3/2}}+\frac{2b\sqrt{e}\,n\tanh^{-1}\left(\frac{\sqrt{e}\,\sqrt{f+gx}}{\sqrt{ef-dg}}\right)^2}{(ef-dg)^{3/2}}+\frac{2(a+b\log(c(d+ex)^n))}{(ef-dg)\sqrt{f+gx}}-\frac{2\sqrt{e}\ \tan$$

```
[Out] 4*b*n*arctanh(e^(1/2)*(g*x+f)^(1/2)/(-d*g+e*f)^(1/2))*e^(1/2)/(-d*g+e*f)^(3
/2)+2*b*n*arctanh(e^(1/2)*(g*x+f)^(1/2)/(-d*g+e*f)^(1/2))^2*e^(1/2)/(-d*g+e
*f)^(3/2)-2*arctanh(e^(1/2)*(g*x+f)^(1/2)/(-d*g+e*f)^(1/2))*(a+b*ln(c*(e*x+
d)^n))*e^(1/2)/(-d*g+e*f)^(3/2)-4*b*n*arctanh(e^(1/2)*(g*x+f)^(1/2)/(-d*g+e
*f)^(1/2))*ln(2/(1-e^(1/2)*(g*x+f)^(1/2)/(-d*g+e*f)^(1/2)))*e^(1/2)/(-d*g+e
*f)^(3/2)-2*b*n*polylog(2,1-2/(1-e^(1/2)*(g*x+f)^(1/2)/(-d*g+e*f)^(1/2)))*e
^(1/2)/(-d*g+e*f)^(3/2)+2*(a+b*ln(c*(e*x+d)^n))/(-d*g+e*f)/(g*x+f)^(1/2)
```

Rubi [A]
time = 0.74, antiderivative size = 340, normalized size of antiderivative = 1.00, number of steps used = 13, number of rules used = 13, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.419$, Rules used = {2458, 2389, 65, 214, 2390, 12, 1601, 6873, 6131, 6055, 2449, 2352, 2356}

$$-\frac{2b\sqrt{e}\,n\text{PolyLog}\left(2,1-\frac{2}{1-\frac{\sqrt{e}\,\sqrt{f+gx}}{\sqrt{ef-dg}}}\right)}{(ef-dg)^{3/2}}+\frac{2(a+b\log(c(d+ex)^n))}{\sqrt{f+gx}\,(ef-dg)}-\frac{2\sqrt{e}\ \tanh^{-1}\left(\frac{\sqrt{e}\,\sqrt{f+gx}}{\sqrt{ef-dg}}\right)(a+b\log(c(d+ex)^n))}{(ef-dg)^{3/2}}+\frac{2b\sqrt{e}\,n\tanh^{-1}\left(\frac{\sqrt{e}\,\sqrt{f+gx}}{\sqrt{ef-dg}}\right)^2}{(ef-dg)^{3/2}}+\frac{4b\sqrt{e}\,n\tanh^{-1}\left(\frac{\sqrt{e}\,\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{(ef-dg)^{3/2}}-\frac{4b\sqrt{e}\,n\log\left(\frac{2}{1-\frac{\sqrt{e}\,\sqrt{f+gx}}{\sqrt{ef-dg}}}\right)\tanh^{-1}\left(\frac{\sqrt{e}\,\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{(ef-dg)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])/((d + e*x)*(f + g*x)^(3/2)),x]
```

```
[Out] (4*b*Sqrt[e]*n*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]])/(e*f - d*g
)^(3/2) + (2*b*Sqrt[e]*n*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]]^2
)/(e*f - d*g)^(3/2) + (2*(a + b*Log[c*(d + e*x)^n]))/((e*f - d*g)*Sqrt[f +
g*x]) - (2*Sqrt[e]*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]]*(a + b*
Log[c*(d + e*x)^n]))/(e*f - d*g)^(3/2) - (4*b*Sqrt[e]*n*ArcTanh[(Sqrt[e]*Sq
rt[f + g*x])/Sqrt[e*f - d*g]]*Log[2/(1 - (Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f -
 d*g])])/(e*f - d*g)^(3/2) - (2*b*Sqrt[e]*n*PolyLog[2, 1 - 2/(1 - (Sqrt[e]*
Sqrt[f + g*x])/Sqrt[e*f - d*g])])/(e*f - d*g)^(3/2)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 65

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - a*(d/b) +
d*(x^p/b))^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 214

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-a/b, 2]/a)*ArcTanh[x
/Rt[-a/b, 2]], x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 1601

```
Int[(Pp_)/(Qq_), x_Symbol] :> With[{p = Expon[Pp, x], q = Expon[Qq, x]}, Si
mp[Coeff[Pp, x, p]*(Log[RemoveContent[Qq, x]]/(q*Coeff[Qq, x, q])), x] /; E
qQ[p, q - 1] && EqQ[Pp, Simplify[(Coeff[Pp, x, p]/(q*Coeff[Qq, x, q]))*D[Qq
, x]]]] /; PolyQ[Pp, x] && PolyQ[Qq, x]
```

Rule 2352

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> Simp[(-e^(-1))*PolyLo
g[2, 1 - c*x], x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2356

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.),
x_Symbol] :> Simp[(d + e*x)^(q + 1)*((a + b*Log[c*x^n])^p/(e*(q + 1))), x]
- Dist[b*n*(p/(e*(q + 1))), Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^(p -
1))/x, x], x] /; FreeQ[{a, b, c, d, e, n, p, q}, x] && GtQ[p, 0] && NeQ[q,
-1] && (EqQ[p, 1] || (IntegersQ[2*p, 2*q] &&  !IGtQ[q, 0]) || (EqQ[p, 2] &&
 NeQ[q, 1]))
```

Rule 2389

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_))/
(x_), x_Symbol] :> Dist[1/d, Int[(d + e*x)^(q + 1)*((a + b*Log[c*x^n])^p/x)
, x], x] - Dist[e/d, Int[(d + e*x)^q*(a + b*Log[c*x^n])^p, x], x] /; FreeQ[
{a, b, c, d, e, n}, x] && IGtQ[p, 0] && LtQ[q, -1] && IntegerQ[2*q]
```

Rule 2390

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_) + (e_.)*(x_)^(r_.))^(q_.))
/(x_), x_Symbol] :> With[{u = IntHide[(d + e*x^r)^q/x, x]}, Simp[u*(a + b*L
og[c*x^n]), x] - Dist[b*n, Int[Dist[1/x, u, x], x], x]] /; FreeQ[{a, b, c,
d, e, n, r}, x] && IntegerQ[q - 1/2]
```

Rule 2449

```
Int[Log[(c_.)/((d_) + (e_.)*(x_))]/((f_) + (g_.)*(x_)^2), x_Symbol] :> Dist
[-e/g, Subst[Int[Log[2*d*x]/(1 - 2*d*x), x], x, 1/(d + e*x)], x] /; FreeQ[{
c, d, e, f, g}, x] && EqQ[c, 2*d] && EqQ[e^2*f + d^2*g, 0]
```

Rule 2458

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[(g*(x/e))^q*((e*h - d*i)/e + i*(x/e))^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 6055

```
Int[((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symbol
] :> Simp[(-(a + b*ArcTanh[c*x])^p)*(Log[2/(1 + e*(x/d))]/e), x] + Dist[b*c
*(p/e), Int[(a + b*ArcTanh[c*x])^(p - 1)*(Log[2/(1 + e*(x/d))]/(1 - c^2*x^2
)), x], x] /; FreeQ[{a, b, c, d, e}, x] && IGtQ[p, 0] && EqQ[c^2*d^2 - e^2,
 0]
```

Rule 6131

```
Int[(((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)*(x_))/((d_) + (e_.)*(x_)^2),
 x_Symbol] :> Simp[(a + b*ArcTanh[c*x])^(p + 1)/(b*e*(p + 1)), x] + Dist[1/
(c*d), Int[(a + b*ArcTanh[c*x])^p/(1 - c*x), x], x] /; FreeQ[{a, b, c, d, e
}, x] && EqQ[c^2*d + e, 0] && IGtQ[p, 0]
```

Rule 6873

```
Int[u_, x_Symbol] :> With[{v = NormalizeIntegrand[u, x]}, Int[v, x] /; v =!
= u]
```

Rubi steps

$$\int \frac{a+b\log\left(c(d+ex)^n\right)}{(d+ex)(f+gx)^{3/2}}\,dx = \frac{\text{Subst}\left(\int \frac{a+b\log(cx^n)}{x\left(\frac{ef-dg}{e}+\frac{gx}{e}\right)^{3/2}}\,dx, x, d+ex\right)}{e}$$

$$= \frac{\text{Subst}\left(\int \frac{a+b\log(cx^n)}{x\sqrt{\frac{ef-dg}{e}+\frac{gx}{e}}}\,dx, x, d+ex\right)}{ef-dg} - \frac{g\text{Subst}\left(\int \frac{a+b\log(cx^n)}{\left(\frac{ef-dg}{e}+\frac{gx}{e}\right)^{3/2}}\,dx, x\right.}{e(ef-dg)}$$

$$= \frac{2(a+b\log\left(c(d+ex)^n\right))}{(ef-dg)\sqrt{f+gx}} - \frac{2\sqrt{e}\,\tanh^{-1}\left(\frac{\sqrt{e}\,\sqrt{f+gx}}{\sqrt{ef-dg}}\right)\left(a+b\log\left(c(d+\right.\right.}{(ef-dg)^{3/2}}$$

$$= \frac{2(a+b\log\left(c(d+ex)^n\right))}{(ef-dg)\sqrt{f+gx}} - \frac{2\sqrt{e}\,\tanh^{-1}\left(\frac{\sqrt{e}\,\sqrt{f+gx}}{\sqrt{ef-dg}}\right)\left(a+b\log\left(c(d+\right.\right.}{(ef-dg)^{3/2}}$$

$$= \frac{4b\sqrt{e}\,n\tanh^{-1}\left(\frac{\sqrt{e}\,\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{(ef-dg)^{3/2}} + \frac{2(a+b\log\left(c(d+ex)^n\right))}{(ef-dg)\sqrt{f+gx}} - \frac{2\sqrt{e}\,\tanh^{-}}{}$$

$$= \frac{4b\sqrt{e}\,n\tanh^{-1}\left(\frac{\sqrt{e}\,\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{(ef-dg)^{3/2}} + \frac{2(a+b\log\left(c(d+ex)^n\right))}{(ef-dg)\sqrt{f+gx}} - \frac{2\sqrt{e}\,\tanh^{-}}{}$$

$$= \frac{4b\sqrt{e}\,n\tanh^{-1}\left(\frac{\sqrt{e}\,\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{(ef-dg)^{3/2}} + \frac{2b\sqrt{e}\,n\tanh^{-1}\left(\frac{\sqrt{e}\,\sqrt{f+gx}}{\sqrt{ef-dg}}\right)^2}{(ef-dg)^{3/2}} + \frac{2}{}$$

Mathematica [C] Result contains higher order function than in optimal. Order 5 vs. order 4 in optimal.
time = 2.09, size = 267, normalized size = 0.79

$$\frac{2\left(-\frac{2bn\left(\frac{e(f+gx)}{g(d+ex)}\right)^{3/2}{}_3F_2\left(\frac{3}{2},\frac{3}{2},\frac{3}{2};\frac{5}{2},\frac{5}{2};\frac{-ef+dg}{g(d+ex)}\right)}{e}+\frac{9(f+gx)\left(-b\sqrt{g}\,n\sqrt{d+ex}\,\sqrt{\frac{e(f+gx)}{g(d+ex)}}\,\sinh^{-1}\left(\frac{\sqrt{ef-dg}}{\sqrt{g}\,\sqrt{d+ex}}\right)\log(d+ex)+\sqrt{ef-dg}\,(a+b\log(c(d+ex)^n))-\sqrt{e}\,\sqrt{f+gx}\,\tanh^{-1}\left(\frac{\sqrt{e}\,\sqrt{f+gx}}{\sqrt{ef-dg}}\right)(a-bn\log(d+ex)+b\log(c(d+ex)^n))\right)}{(ef-dg)^{3/2}}\right)}{9(f+gx)^{3/2}}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])/((d + e*x)*(f + g*x)^(3/2)),x]
```

```
[Out] (2*((-2*b*n*((e*(f + g*x))/(g*(d + e*x)))^(3/2)*HypergeometricPFQ[{3/2, 3/2
, 3/2}, {5/2, 5/2}, (-(e*f) + d*g)/(g*(d + e*x))])/e + (9*(f + g*x)*(-(b*Sq
rt[g]*n*Sqrt[d + e*x]*Sqrt[(e*(f + g*x))/(g*(d + e*x))]*ArcSinh[Sqrt[e*f -
d*g]/(Sqrt[g]*Sqrt[d + e*x])]*Log[d + e*x]) + Sqrt[e*f - d*g]*(a + b*Log[c*
(d + e*x)^n]) - Sqrt[e]*Sqrt[f + g*x]*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[
e*f - d*g]]*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])))/(e*f - d*g)^(3/
2)))/(9*(f + g*x)^(3/2))
```

Maple [F]
time = 0.29, size = 0, normalized size = 0.00

$$\int \frac{a+b\ln\left(c(ex+d)^n\right)}{(ex+d)\,(gx+f)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))/(e*x+d)/(g*x+f)^(3/2),x)
```

```
[Out] int((a+b*ln(c*(e*x+d)^n))/(e*x+d)/(g*x+f)^(3/2),x)
```

Maxima [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(e*x+d)/(g*x+f)^(3/2),x, algorithm="maxima
")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*%e^2*f-4*%e*d*g>0)', see `assume?
` for m
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(e*x+d)/(g*x+f)^(3/2),x, algorithm="fricas
")
```

```
[Out] integral((sqrt(g*x + f)*b*log((x*e + d)^n*c) + sqrt(g*x + f)*a)/(d*g^2*x^2
+ 2*d*f*g*x + d*f^2 + (g^2*x^3 + 2*f*g*x^2 + f^2*x)*e), x)
```

Sympy [**F(-1)**] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))/(e*x+d)/(g*x+f)**(3/2),x)
```

```
[Out] Timed out
```

Giac [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(e*x+d)/(g*x+f)^(3/2),x, algorithm="giac")
```

```
[Out] integrate((b*log((x*e + d)^n*c) + a)/((g*x + f)^(3/2)*(x*e + d)), x)
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)}{{\left(f+g\,x\right)}^{3/2}\,\left(d+e\,x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))/((f + g*x)^(3/2)*(d + e*x)),x)
```

```
[Out] int((a + b*log(c*(d + e*x)^n))/((f + g*x)^(3/2)*(d + e*x)), x)
```

3.203 $\int \frac{a+b\log(c(d+ex)^n)}{(d+ex)(f+gx)^{5/2}}\,dx$

Optimal. Leaf size=406

$$-\frac{4ben}{3(ef-dg)^2\sqrt{f+gx}}+\frac{16be^{3/2}n\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{3(ef-dg)^{5/2}}+\frac{2be^{3/2}n\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)^2}{(ef-dg)^{5/2}}+\frac{2(a+b\,\mathrm{lo}}{3(ef-}$$

```
[Out] 16/3*b*e^(3/2)*n*arctanh(e^(1/2)*(g*x+f)^(1/2)/(-d*g+e*f)^(1/2))/(-d*g+e*f)
^(5/2)+2*b*e^(3/2)*n*arctanh(e^(1/2)*(g*x+f)^(1/2)/(-d*g+e*f)^(1/2))^2/(-d*
g+e*f)^(5/2)+2/3*(a+b*ln(c*(e*x+d)^n))/(-d*g+e*f)/(g*x+f)^(3/2)-2*e^(3/2)*a
rctanh(e^(1/2)*(g*x+f)^(1/2)/(-d*g+e*f)^(1/2))*(a+b*ln(c*(e*x+d)^n))/(-d*g+
e*f)^(5/2)-4*b*e^(3/2)*n*arctanh(e^(1/2)*(g*x+f)^(1/2)/(-d*g+e*f)^(1/2))*ln
(2/(1-e^(1/2)*(g*x+f)^(1/2)/(-d*g+e*f)^(1/2)))/(-d*g+e*f)^(5/2)-2*b*e^(3/2)
*n*polylog(2,1-2/(1-e^(1/2)*(g*x+f)^(1/2)/(-d*g+e*f)^(1/2)))/(-d*g+e*f)^(5/
2)-4/3*b*e*n/(-d*g+e*f)^2/(g*x+f)^(1/2)+2*e*(a+b*ln(c*(e*x+d)^n))/(-d*g+e*f
)^2/(g*x+f)^(1/2)
```

Rubi [A]

time = 1.01, antiderivative size = 406, normalized size of antiderivative = 1.00, number of steps used = 18, number of rules used = 14, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.452$, Rules used = {2458, 2389, 65, 214, 2390, 12, 1601, 6873, 6131, 6055, 2449, 2352, 2356, 53}

$$-\frac{2be^{3/2}n\,\mathrm{PolyLog}\left(2,1-\frac{2}{1-\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}}\right)}{(ef-dg)^{5/2}}-\frac{2e^{3/2}\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)(a+b\log(c(d+ex)^n))}{(ef-dg)^{5/2}}+\frac{2e(a+b\log(c(d+ex)^n))}{\sqrt{f+gx}\,(ef-dg)^2}+\frac{2(a+b\log(c(d+ex)^n))}{3(f+gx)^{3/2}(ef-dg)}+\frac{2be^{3/2}n\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)^2}{(ef-dg)^{5/2}}+\frac{16be^{3/2}n\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{3(ef-dg)^{5/2}}-\frac{4be^{3/2}n\log\left(\frac{2}{1-\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}}\right)\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{(ef-dg)^{5/2}}-\frac{4ben}{3\sqrt{f+gx}\,(ef-dg)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])/((d + e*x)*(f + g*x)^(5/2)),x]
```

```
[Out] (-4*b*e*n)/(3*(e*f - d*g)^2*Sqrt[f + g*x]) + (16*b*e^(3/2)*n*ArcTanh[(Sqrt[
e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]])/(3*(e*f - d*g)^(5/2)) + (2*b*e^(3/2)*n*
ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]]^2)/(e*f - d*g)^(5/2) + (2*
(a + b*Log[c*(d + e*x)^n]))/(3*(e*f - d*g)*(f + g*x)^(3/2)) + (2*e*(a + b*L
og[c*(d + e*x)^n]))/((e*f - d*g)^2*Sqrt[f + g*x]) - (2*e^(3/2)*ArcTanh[(Sqr
t[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]]*(a + b*Log[c*(d + e*x)^n]))/(e*f - d*g
)^(5/2) - (4*b*e^(3/2)*n*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]]*L
og[2/(1 - (Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g])])/(e*f - d*g)^(5/2) - (2
*b*e^(3/2)*n*PolyLog[2, 1 - 2/(1 - (Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g])
])/(e*f - d*g)^(5/2)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 53

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
(a + b*x)^(m + 1)*((c + d*x)^(n + 1)/((b*c - a*d)*(m + 1))), x] - Dist[d*((
m + n + 2)/((b*c - a*d)*(m + 1))), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 65

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - a*(d/b) +
d*(x^p/b))^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 214

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-a/b, 2]/a)*ArcTanh[x
/Rt[-a/b, 2]], x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 1601

```
Int[(Pp_)/(Qq_), x_Symbol] :> With[{p = Expon[Pp, x], q = Expon[Qq, x]}, Si
mp[Coeff[Pp, x, p]*(Log[RemoveContent[Qq, x]]/(q*Coeff[Qq, x, q])), x] /; E
qQ[p, q - 1] && EqQ[Pp, Simplify[(Coeff[Pp, x, p]/(q*Coeff[Qq, x, q]))*D[Qq
, x]]]] /; PolyQ[Pp, x] && PolyQ[Qq, x]
```

Rule 2352

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> Simp[(-e^(-1))*PolyLo
g[2, 1 - c*x], x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2356

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.),
x_Symbol] :> Simp[(d + e*x)^(q + 1)*((a + b*Log[c*x^n])^p/(e*(q + 1))), x]
- Dist[b*n*(p/(e*(q + 1))), Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^(p -
1))/x, x], x] /; FreeQ[{a, b, c, d, e, n, p, q}, x] && GtQ[p, 0] && NeQ[q,
-1] && (EqQ[p, 1] || (IntegersQ[2*p, 2*q] &&  !IGtQ[q, 0]) || (EqQ[p, 2] &&
 NeQ[q, 1]))
```

Rule 2389

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_))/
(x_), x_Symbol] :> Dist[1/d, Int[(d + e*x)^(q + 1)*((a + b*Log[c*x^n])^p/x)
```

```
, x], x] - Dist[e/d, Int[(d + e*x)^q*(a + b*Log[c*x^n])^p, x], x] /; FreeQ[
{a, b, c, d, e, n}, x] && IGtQ[p, 0] && LtQ[q, -1] && IntegerQ[2*q]
```

Rule 2390

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_) + (e_.)*(x_)^(r_.))^(q_.))
/(x_), x_Symbol] :> With[{u = IntHide[(d + e*x^r)^q/x, x]}, Simp[u*(a + b*L
og[c*x^n]), x] - Dist[b*n, Int[Dist[1/x, u, x], x], x]] /; FreeQ[{a, b, c,
d, e, n, r}, x] && IntegerQ[q - 1/2]
```

Rule 2449

```
Int[Log[(c_.)/((d_) + (e_.)*(x_))]/((f_) + (g_.)*(x_)^2), x_Symbol] :> Dist
[-e/g, Subst[Int[Log[2*d*x]/(1 - 2*d*x), x], x, 1/(d + e*x)], x] /; FreeQ[{
c, d, e, f, g}, x] && EqQ[c, 2*d] && EqQ[e^2*f + d^2*g, 0]
```

Rule 2458

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[(g*(x/e))^q*((e*h - d*i)/e + i*(x/e))^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 6055

```
Int[((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symbol
] :> Simp[(-(a + b*ArcTanh[c*x])^p)*(Log[2/(1 + e*(x/d))]/e), x] + Dist[b*c
*(p/e), Int[(a + b*ArcTanh[c*x])^(p - 1)*(Log[2/(1 + e*(x/d))]/(1 - c^2*x^2
)), x], x] /; FreeQ[{a, b, c, d, e}, x] && IGtQ[p, 0] && EqQ[c^2*d^2 - e^2,
 0]
```

Rule 6131

```
Int[(((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)*(x_))/((d_) + (e_.)*(x_)^2),
 x_Symbol] :> Simp[(a + b*ArcTanh[c*x])^(p + 1)/(b*e*(p + 1)), x] + Dist[1/
(c*d), Int[(a + b*ArcTanh[c*x])^p/(1 - c*x), x], x] /; FreeQ[{a, b, c, d, e
}, x] && EqQ[c^2*d + e, 0] && IGtQ[p, 0]
```

Rule 6873

```
Int[u_, x_Symbol] :> With[{v = NormalizeIntegrand[u, x]}, Int[v, x] /; v =!
= u]
```

Rubi steps

$$\int \frac{a+b\log(c(d+ex)^n)}{(d+ex)(f+gx)^{5/2}}\,dx = \frac{\text{Subst}\left(\int \frac{a+b\log(cx^n)}{x\left(\frac{ef-dg}{e}+\frac{gx}{e}\right)^{5/2}}\,dx,x,d+ex\right)}{e}$$

$$= \frac{\text{Subst}\left(\int \frac{a+b\log(cx^n)}{x\left(\frac{ef-dg}{e}+\frac{gx}{e}\right)^{3/2}}\,dx,x,d+ex\right)}{ef-dg} - \frac{g\text{Subst}\left(\int \frac{a+b\log(cx^n)}{\left(\frac{ef-dg}{e}+\frac{gx}{e}\right)^{5/2}}\,dx,x,d+\right.}{e(ef-dg)}$$

$$= \frac{2(a+b\log(c(d+ex)^n))}{3(ef-dg)(f+gx)^{3/2}} + \frac{e\text{Subst}\left(\int \frac{a+b\log(cx^n)}{x\sqrt{\frac{ef-dg}{e}+\frac{gx}{e}}}\,dx,x,d+ex\right)}{(ef-dg)^2} -$$

$$= -\frac{4ben}{3(ef-dg)^2\sqrt{f+gx}} + \frac{2(a+b\log(c(d+ex)^n))}{3(ef-dg)(f+gx)^{3/2}} + \frac{2e(a+b\log(c(d+ex}{(ef-dg)^2\sqrt{f+g}$$

$$= -\frac{4ben}{3(ef-dg)^2\sqrt{f+gx}} + \frac{2(a+b\log(c(d+ex)^n))}{3(ef-dg)(f+gx)^{3/2}} + \frac{2e(a+b\log(c(d+ex}{(ef-dg)^2\sqrt{f+g}$$

$$= -\frac{4ben}{3(ef-dg)^2\sqrt{f+gx}} + \frac{16be^{3/2}n\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{3(ef-dg)^{5/2}} + \frac{2(a+b\log}{3(ef-dg}$$

$$= -\frac{4ben}{3(ef-dg)^2\sqrt{f+gx}} + \frac{16be^{3/2}n\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{3(ef-dg)^{5/2}} + \frac{2(a+b\log}{3(ef-dg}$$

$$= -\frac{4ben}{3(ef-dg)^2\sqrt{f+gx}} + \frac{16be^{3/2}n\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{3(ef-dg)^{5/2}} + \frac{2be^{3/2}n\tan}{}$$

Mathematica [C] Result contains higher order function than in optimal. Order 5 vs. order 4 in optimal.
time = 4.81, size = 332, normalized size = 0.82

$$\frac{2bn\left(-\frac{6\left(\frac{e(f+gx)}{g(d+ex)}\right)^{3/2}{}_3F_2\left(\frac{5}{2},\frac{5}{2},\frac{5}{2};\frac{7}{2},\frac{7}{2};\frac{-ef+dg}{g(d+ex)}\right)}{g(d+ex)}+\frac{25\left(\sqrt{ef-dg}\,(4ef-dg+3egx)-3g^{3/2}(d+ex)^{3/2}\left(\frac{e(f+gx)}{g(d+ex)}\right)^{3/2}\sinh^{-1}\left(\frac{\sqrt{ef-dg}}{\sqrt{g}\,\sqrt{d+ex}}\right)\right)\log(d+ex)}{(ef-dg)^{5/2}}\right)}{75(f+gx)^{3/2}}+\frac{2(4ef-dg+3egx)\,(a-bn\log(d+ex)+b\log\left(c(d+ex)^n\right))}{3(ef-dg)^2(f+gx)^{3/2}}-\frac{2e^{3/2}\tanh^{-1}\left(\frac{\sqrt{e}\,\sqrt{f+gx}}{\sqrt{ef-dg}}\right)(a-bn\log(d+ex)+b\log\left(c(d+ex)^n\right))}{(ef-dg)^{5/2}}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])/((d + e*x)*(f + g*x)^(5/2)),x]
```

```
[Out] (2*b*n*((-6*((e*(f + g*x))/(g*(d + e*x)))^(3/2)*HypergeometricPFQ[{5/2, 5/2
, 5/2}, {7/2, 7/2}, (-(e*f) + d*g)/(g*(d + e*x))])/(g*(d + e*x)) + (25*(Sqr
t[e*f - d*g]*(4*e*f - d*g + 3*e*g*x) - 3*g^(3/2)*(d + e*x)^(3/2)*((e*(f + g
*x))/(g*(d + e*x)))^(3/2)*ArcSinh[Sqrt[e*f - d*g]/(Sqrt[g]*Sqrt[d + e*x])])
*Log[d + e*x])/(e*f - d*g)^(5/2)))/(75*(f + g*x)^(3/2)) + (2*(4*e*f - d*g +
 3*e*g*x)*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n]))/(3*(e*f - d*g)^2*(
f + g*x)^(3/2)) - (2*e^(3/2)*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g
]]*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n]))/(e*f - d*g)^(5/2)
```

Maple [F]
time = 0.28, size = 0, normalized size = 0.00

$$\int \frac{a+b\ln\left(c(ex+d)^{n}\right)}{(ex+d)\,(gx+f)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))/(e*x+d)/(g*x+f)^(5/2),x)
```

```
[Out] int((a+b*ln(c*(e*x+d)^n))/(e*x+d)/(g*x+f)^(5/2),x)
```

Maxima [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(e*x+d)/(g*x+f)^(5/2),x, algorithm="maxima
")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*%e^2*f-4*%e*d*g>0)', see `assume?
` for m
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(e*x+d)/(g*x+f)^(5/2),x, algorithm="fricas
")
```

```
[Out] integral((sqrt(g*x + f)*b*log((x*e + d)^n*c) + sqrt(g*x + f)*a)/(d*g^3*x^3
+ 3*d*f*g^2*x^2 + 3*d*f^2*g*x + d*f^3 + (g^3*x^4 + 3*f*g^2*x^3 + 3*f^2*g*x^
2 + f^3*x)*e), x)
```

Sympy [**F(-1)**] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))/(e*x+d)/(g*x+f)**(5/2),x)
```

```
[Out] Timed out
```

Giac [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(e*x+d)/(g*x+f)^(5/2),x, algorithm="giac")
```

```
[Out] integrate((b*log((x*e + d)^n*c) + a)/((g*x + f)^(5/2)*(x*e + d)), x)
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)}{{\left(f+g\,x\right)}^{5/2}\,\left(d+e\,x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))/((f + g*x)^(5/2)*(d + e*x)),x)
```

```
[Out] int((a + b*log(c*(d + e*x)^n))/((f + g*x)^(5/2)*(d + e*x)), x)
```

3.204 $\int \frac{(d+ex)^{3/2}\log(a+bx)}{a+bx}\,dx$

Optimal. Leaf size=381

$$-\frac{16(bd-ae)\sqrt{d+ex}}{3b^2}-\frac{4(d+ex)^{3/2}}{9b}+\frac{16(bd-ae)^{3/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{3b^{5/2}}+\frac{2(bd-ae)^{3/2}\tanh^{-1}\left(\frac{\sqrt{b}}{\sqrt{}}\right.}{b^{5/2}}$$

```
[Out] -4/9*(e*x+d)^(3/2)/b+16/3*(-a*e+b*d)^(3/2)*arctanh(b^(1/2)*(e*x+d)^(1/2)/(-
a*e+b*d)^(1/2))/b^(5/2)+2*(-a*e+b*d)^(3/2)*arctanh(b^(1/2)*(e*x+d)^(1/2)/(-
a*e+b*d)^(1/2))^2/b^(5/2)+2/3*(e*x+d)^(3/2)*ln(b*x+a)/b-2*(-a*e+b*d)^(3/2)*
arctanh(b^(1/2)*(e*x+d)^(1/2)/(-a*e+b*d)^(1/2))*ln(b*x+a)/b^(5/2)-4*(-a*e+b
*d)^(3/2)*arctanh(b^(1/2)*(e*x+d)^(1/2)/(-a*e+b*d)^(1/2))*ln(2/(1-b^(1/2)*(
e*x+d)^(1/2)/(-a*e+b*d)^(1/2)))/b^(5/2)-2*(-a*e+b*d)^(3/2)*polylog(2,1-2/(1
-b^(1/2)*(e*x+d)^(1/2)/(-a*e+b*d)^(1/2)))/b^(5/2)-16/3*(-a*e+b*d)*(e*x+d)^(
1/2)/b^2+2*(-a*e+b*d)*ln(b*x+a)*(e*x+d)^(1/2)/b^2
```

Rubi [A]
time = 1.08, antiderivative size = 381, normalized size of antiderivative = 1.00, number of steps used = 20, number of rules used = 14, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.609$, Rules used = {2458, 2388, 65, 214, 2390, 12, 1601, 6873, 6131, 6055, 2449, 2352, 2356, 52}

$$-\frac{2(bd-ae)^{3/2}\text{PolyLog}\left(2,1-\frac{2}{1-\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}}\right)}{b^{5/2}}+\frac{2(bd-ae)^{3/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)^2}{b^{5/2}}+\frac{16(bd-ae)^{3/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{3b^{5/2}}-\frac{2(bd-ae)^{3/2}\log(a+bx)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{b^{5/2}}-\frac{4(bd-ae)^{3/2}\log\left(\frac{2}{1-\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}}\right)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{b^{5/2}}-\frac{16\sqrt{d+ex}\,(bd-ae)}{3b^2}+\frac{2\sqrt{d+ex}\,(bd-ae)\log(a+bx)}{b^2}+\frac{2(d+ex)^{3/2}\log(a+bx)}{3b}-\frac{4(d+ex)^{3/2}}{9b}$$

Antiderivative was successfully verified.

```
[In] Int[((d + e*x)^(3/2)*Log[a + b*x])/(a + b*x),x]
```

```
[Out] (-16*(b*d - a*e)*Sqrt[d + e*x])/(3*b^2) - (4*(d + e*x)^(3/2))/(9*b) + (16*(
b*d - a*e)^(3/2)*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]])/(3*b^(5/
2)) + (2*(b*d - a*e)^(3/2)*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]]
^2)/b^(5/2) + (2*(b*d - a*e)*Sqrt[d + e*x]*Log[a + b*x])/b^2 + (2*(d + e*x)
^(3/2)*Log[a + b*x])/(3*b) - (2*(b*d - a*e)^(3/2)*ArcTanh[(Sqrt[b]*Sqrt[d +
 e*x])/Sqrt[b*d - a*e]]*Log[a + b*x])/b^(5/2) - (4*(b*d - a*e)^(3/2)*ArcTan
h[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]]*Log[2/(1 - (Sqrt[b]*Sqrt[d + e*x
])/Sqrt[b*d - a*e])])/b^(5/2) - (2*(b*d - a*e)^(3/2)*PolyLog[2, 1 - 2/(1 -
(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e])])/b^(5/2)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 52

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
(a + b*x)^(m + 1)*((c + d*x)^n/(b*(m + n + 1))), x] + Dist[n*((b*c - a*d)/(
b*(m + n + 1))), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 65

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - a*(d/b) +
d*(x^p/b))^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 214

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-a/b, 2]/a)*ArcTanh[x
/Rt[-a/b, 2]], x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 1601

```
Int[(Pp_)/(Qq_), x_Symbol] :> With[{p = Expon[Pp, x], q = Expon[Qq, x]}, Si
mp[Coeff[Pp, x, p]*(Log[RemoveContent[Qq, x]]/(q*Coeff[Qq, x, q])), x] /; E
qQ[p, q - 1] && EqQ[Pp, Simplify[(Coeff[Pp, x, p]/(q*Coeff[Qq, x, q]))*D[Qq
, x]]]] /; PolyQ[Pp, x] && PolyQ[Qq, x]
```

Rule 2352

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> Simp[(-e^(-1))*PolyLo
g[2, 1 - c*x], x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2356

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.),
x_Symbol] :> Simp[(d + e*x)^(q + 1)*((a + b*Log[c*x^n])^p/(e*(q + 1))), x]
- Dist[b*n*(p/(e*(q + 1))), Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^(p -
1))/x, x], x] /; FreeQ[{a, b, c, d, e, n, p, q}, x] && GtQ[p, 0] && NeQ[q,
-1] && (EqQ[p, 1] || (IntegersQ[2*p, 2*q] &&  !IGtQ[q, 0]) || (EqQ[p, 2] &&
 NeQ[q, 1]))
```

Rule 2388

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.))
/(x_), x_Symbol] :> Dist[d, Int[(d + e*x)^(q - 1)*((a + b*Log[c*x^n])^p/x),
 x], x] + Dist[e, Int[(d + e*x)^(q - 1)*(a + b*Log[c*x^n])^p, x], x] /; Fre
```

```
eQ[{a, b, c, d, e, n}, x] && IGtQ[p, 0] && GtQ[q, 0] && IntegerQ[2*q]
```

Rule 2390

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_) + (e_.)*(x_)^(r_.))^(q_.))
/(x_), x_Symbol] :> With[{u = IntHide[(d + e*x^r)^q/x, x]}, Simp[u*(a + b*L
og[c*x^n]), x] - Dist[b*n, Int[Dist[1/x, u, x], x], x]] /; FreeQ[{a, b, c,
d, e, n, r}, x] && IntegerQ[q - 1/2]
```

Rule 2449

```
Int[Log[(c_.)/((d_) + (e_.)*(x_))]/((f_) + (g_.)*(x_)^2), x_Symbol] :> Dist
[-e/g, Subst[Int[Log[2*d*x]/(1 - 2*d*x), x], x, 1/(d + e*x)], x] /; FreeQ[{
c, d, e, f, g}, x] && EqQ[c, 2*d] && EqQ[e^2*f + d^2*g, 0]
```

Rule 2458

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[(g*(x/e))^q*((e*h - d*i)/e + i*(x/e))^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 6055

```
Int[((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symbol
] :> Simp[(-(a + b*ArcTanh[c*x])^p)*(Log[2/(1 + e*(x/d))]/e), x] + Dist[b*c
*(p/e), Int[(a + b*ArcTanh[c*x])^(p - 1)*(Log[2/(1 + e*(x/d))]/(1 - c^2*x^2
)), x], x] /; FreeQ[{a, b, c, d, e}, x] && IGtQ[p, 0] && EqQ[c^2*d^2 - e^2,
 0]
```

Rule 6131

```
Int[(((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)*(x_))/((d_) + (e_.)*(x_)^2),
 x_Symbol] :> Simp[(a + b*ArcTanh[c*x])^(p + 1)/(b*e*(p + 1)), x] + Dist[1/
(c*d), Int[(a + b*ArcTanh[c*x])^p/(1 - c*x), x], x] /; FreeQ[{a, b, c, d, e
}, x] && EqQ[c^2*d + e, 0] && IGtQ[p, 0]
```

Rule 6873

```
Int[u_, x_Symbol] :> With[{v = NormalizeIntegrand[u, x]}, Int[v, x] /; v =!
= u]
```

Rubi steps

$$\int \frac{(d+ex)^{3/2}\log(a+bx)}{a+bx}\,dx = \frac{\text{Subst}\left(\int \frac{\left(\frac{bd-ae}{b}+\frac{ex}{b}\right)^{3/2}\log(x)}{x}\,dx, x, a+bx\right)}{b}$$

$$= \frac{e\text{Subst}\left(\int \sqrt{\frac{bd-ae}{b}+\frac{ex}{b}}\,\log(x)\,dx, x, a+bx\right)}{b^2} + \frac{(bd-ae)\text{Subst}\left(\int \sqrt{\vphantom{x}}\right.}{}$$

$$= \frac{2(d+ex)^{3/2}\log(a+bx)}{3b} - \frac{2\text{Subst}\left(\int \frac{\left(\frac{bd-ae}{b}+\frac{ex}{b}\right)^{3/2}}{x}\,dx, x, a+bx\right)}{3b} + \frac{(e(bd}{}$$

$$= -\frac{4(d+ex)^{3/2}}{9b} + \frac{2(bd-ae)\sqrt{d+ex}\,\log(a+bx)}{b^2} + \frac{2(d+ex)^{3/2}\log(a+b}{3b}$$

$$= -\frac{16(bd-ae)\sqrt{d+ex}}{3b^2} - \frac{4(d+ex)^{3/2}}{9b} + \frac{2(bd-ae)\sqrt{d+ex}\,\log(a+bx)}{b^2}$$

$$= -\frac{16(bd-ae)\sqrt{d+ex}}{3b^2} - \frac{4(d+ex)^{3/2}}{9b} + \frac{2(bd-ae)\sqrt{d+ex}\,\log(a+bx)}{b^2}$$

$$= -\frac{16(bd-ae)\sqrt{d+ex}}{3b^2} - \frac{4(d+ex)^{3/2}}{9b} + \frac{16(bd-ae)^{3/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d-}}{\sqrt{bd-}}\right.}{3b^{5/2}}$$

$$= -\frac{16(bd-ae)\sqrt{d+ex}}{3b^2} - \frac{4(d+ex)^{3/2}}{9b} + \frac{16(bd-ae)^{3/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d-}}{\sqrt{bd-}}\right.}{3b^{5/2}}$$

Mathematica [C] Result contains higher order function than in optimal. Order 5 vs. order 4 in optimal.
time = 4.12, size = 407, normalized size = 1.07

$$\frac{\sqrt{e}\sqrt{a+bx}\sqrt{\frac{b(d+ex)}{e(a+bx)}}\left(-\frac{12b\sqrt{e}\sqrt{a+bx}\,(d+ex)\,{}_3F_2\left(-\frac{1}{2},-\frac{1}{2},-\frac{1}{2};\frac{1}{2},\frac{1}{2};\frac{-bd+ae}{e(a+bx)}\right)}{\sqrt{\frac{b(d+ex)}{bd-ae}}}-3e^{3/2}(a+bx)^{3/2}\sqrt{\frac{b(d+ex)}{e(a+bx)}}\,{}_3F_2\left(-\frac{1}{2},1,1;2,2;\frac{e(a+bx)}{-bd+ae}\right)+2\left(\sqrt{e}\sqrt{a+bx}\sqrt{\frac{b(d+ex)}{e(a+bx)}}\left(bex\sqrt{\frac{b(d+ex)}{bd-ae}}+ae\left(1-3\sqrt{\frac{b(d+ex)}{bd-ae}}\right)+bd\left(-1+4\sqrt{\frac{b(d+ex)}{bd-ae}}\right)\right)-3(bd-ae)^{3/2}\sqrt{\frac{b(d+ex)}{bd-ae}}\sinh^{-1}\left(\frac{\sqrt{bd-ae}}{\sqrt{e}\sqrt{a+bx}}\right)\right)\log(a+bx)\right)}{3b^3\sqrt{d+ex}\sqrt{\frac{b(d+ex)}{bd-ae}}}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[((d + e*x)^(3/2)*Log[a + b*x])/(a + b*x),x]
```

```
[Out] (Sqrt[e]*Sqrt[a + b*x]*Sqrt[(b*(d + e*x))/(e*(a + b*x))]*((-12*b*Sqrt[e]*Sq
rt[a + b*x]*(d + e*x)*HypergeometricPFQ[{-1/2, -1/2, -1/2}, {1/2, 1/2}, (-(
b*d) + a*e)/(e*(a + b*x))])/Sqrt[(b*(d + e*x))/(b*d - a*e)] - 3*e^(3/2)*(a
+ b*x)^(3/2)*Sqrt[(b*(d + e*x))/(e*(a + b*x))]*HypergeometricPFQ[{-1/2, 1,
1}, {2, 2}, (e*(a + b*x))/(-(b*d) + a*e)] + 2*(Sqrt[e]*Sqrt[a + b*x]*Sqrt[(
b*(d + e*x))/(e*(a + b*x))]*(b*e*x*Sqrt[(b*(d + e*x))/(b*d - a*e)] + a*e*(1
 - 3*Sqrt[(b*(d + e*x))/(b*d - a*e)]) + b*d*(-1 + 4*Sqrt[(b*(d + e*x))/(b*d
 - a*e)])) - 3*(b*d - a*e)^(3/2)*Sqrt[(b*(d + e*x))/(b*d - a*e)]*ArcSinh[Sq
rt[b*d - a*e]/(Sqrt[e]*Sqrt[a + b*x])])*Log[a + b*x]))/(3*b^3*Sqrt[d + e*x]
*Sqrt[(b*(d + e*x))/(b*d - a*e)])
```

Maple [F]
time = 180.00, size = 0, normalized size = 0.00

$$\int \frac{(ex+d)^{\frac{3}{2}}\ln(bx+a)}{bx+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)^(3/2)*ln(b*x+a)/(b*x+a),x)
```

```
[Out] int((e*x+d)^(3/2)*ln(b*x+a)/(b*x+a),x)
```

Maxima [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(3/2)*log(b*x+a)/(b*x+a),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*d-%e*a>0)', see `assume?` for mor
e detai
```

Fricas [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(3/2)*log(b*x+a)/(b*x+a),x, algorithm="fricas")
[Out] integral((x*e + d)^(3/2)*log(b*x + a)/(b*x + a), x)
```

Sympy [**F(-1)**] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)**(3/2)*ln(b*x+a)/(b*x+a),x)
[Out] Timed out
```

Giac [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(3/2)*log(b*x+a)/(b*x+a),x, algorithm="giac")
[Out] integrate((x*e + d)^(3/2)*log(b*x + a)/(b*x + a), x)
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\ln\left(a+b\,x\right)\,{\left(d+e\,x\right)}^{3/2}}{a+b\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((log(a + b*x)*(d + e*x)^(3/2))/(a + b*x),x)
[Out] int((log(a + b*x)*(d + e*x)^(3/2))/(a + b*x), x)
```

3.205 $\int \frac{\sqrt{d+ex}\log(a+bx)}{a+bx}\,dx$

Optimal. Leaf size=323

$$-\frac{4\sqrt{d+ex}}{b}+\frac{4\sqrt{bd-ae}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{b^{3/2}}+\frac{2\sqrt{bd-ae}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)^2}{b^{3/2}}+\frac{2\sqrt{d+ex}\log}{b}$$

```
[Out] 4*arctanh(b^(1/2)*(e*x+d)^(1/2)/(-a*e+b*d)^(1/2))*(-a*e+b*d)^(1/2)/b^(3/2)+
2*arctanh(b^(1/2)*(e*x+d)^(1/2)/(-a*e+b*d)^(1/2))^2*(-a*e+b*d)^(1/2)/b^(3/2
)-2*arctanh(b^(1/2)*(e*x+d)^(1/2)/(-a*e+b*d)^(1/2))*ln(b*x+a)*(-a*e+b*d)^(1
/2)/b^(3/2)-4*arctanh(b^(1/2)*(e*x+d)^(1/2)/(-a*e+b*d)^(1/2))*ln(2/(1-b^(1/
2)*(e*x+d)^(1/2)/(-a*e+b*d)^(1/2)))*(-a*e+b*d)^(1/2)/b^(3/2)-2*polylog(2,1-
2/(1-b^(1/2)*(e*x+d)^(1/2)/(-a*e+b*d)^(1/2)))*(-a*e+b*d)^(1/2)/b^(3/2)-4*(e
*x+d)^(1/2)/b+2*ln(b*x+a)*(e*x+d)^(1/2)/b
```

Rubi [A]
time = 0.63, antiderivative size = 323, normalized size of antiderivative = 1.00, number of steps used = 14, number of rules used = 14, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.609$, Rules used = {2458, 2388, 65, 214, 2390, 12, 1601, 6873, 6131, 6055, 2449, 2352, 2356, 52}

$$-\frac{2\sqrt{bd-ae}\,\text{PolyLog}\left(2,1-\frac{2}{1-\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}}\right)}{b^{3/2}}+\frac{2\sqrt{bd-ae}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)^2}{b^{3/2}}+\frac{4\sqrt{bd-ae}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{b^{3/2}}-\frac{2\sqrt{bd-ae}\log(a+bx)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{b^{3/2}}-\frac{4\sqrt{bd-ae}\log\left(\frac{2}{1-\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}}\right)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{b^{3/2}}+\frac{2\sqrt{d+ex}\log(a+bx)}{b}-\frac{4\sqrt{d+ex}}{b}$$

Antiderivative was successfully verified.

```
[In] Int[(Sqrt[d + e*x]*Log[a + b*x])/(a + b*x),x]
```

```
[Out] (-4*Sqrt[d + e*x])/b + (4*Sqrt[b*d - a*e]*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/S
qrt[b*d - a*e]])/b^(3/2) + (2*Sqrt[b*d - a*e]*ArcTanh[(Sqrt[b]*Sqrt[d + e*x
])/Sqrt[b*d - a*e]]^2)/b^(3/2) + (2*Sqrt[d + e*x]*Log[a + b*x])/b - (2*Sqrt
[b*d - a*e]*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]]*Log[a + b*x])/
b^(3/2) - (4*Sqrt[b*d - a*e]*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e
]]*Log[2/(1 - (Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e])])/b^(3/2) - (2*Sqrt[
b*d - a*e]*PolyLog[2, 1 - 2/(1 - (Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e])])
/b^(3/2)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 52

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
(a + b*x)^(m + 1)*((c + d*x)^n/(b*(m + n + 1))), x] + Dist[n*((b*c - a*d)/(
```

```
b*(m + n + 1))), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 65

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - a*(d/b) +
d*(x^p/b))^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 214

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-a/b, 2]/a)*ArcTanh[x
/Rt[-a/b, 2]], x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 1601

```
Int[(Pp_)/(Qq_), x_Symbol] :> With[{p = Expon[Pp, x], q = Expon[Qq, x]}, Si
mp[Coeff[Pp, x, p]*(Log[RemoveContent[Qq, x]]/(q*Coeff[Qq, x, q])), x] /; E
qQ[p, q - 1] && EqQ[Pp, Simplify[(Coeff[Pp, x, p]/(q*Coeff[Qq, x, q]))*D[Qq
, x]]]] /; PolyQ[Pp, x] && PolyQ[Qq, x]
```

Rule 2352

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> Simp[(-e^(-1))*PolyLo
g[2, 1 - c*x], x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2356

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.),
x_Symbol] :> Simp[(d + e*x)^(q + 1)*((a + b*Log[c*x^n])^p/(e*(q + 1))), x]
- Dist[b*n*(p/(e*(q + 1))), Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^(p -
1))/x, x], x] /; FreeQ[{a, b, c, d, e, n, p, q}, x] && GtQ[p, 0] && NeQ[q,
-1] && (EqQ[p, 1] || (IntegersQ[2*p, 2*q] &&  !IGtQ[q, 0]) || (EqQ[p, 2] &&
 NeQ[q, 1]))
```

Rule 2388

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.))
/(x_), x_Symbol] :> Dist[d, Int[(d + e*x)^(q - 1)*((a + b*Log[c*x^n])^p/x),
 x], x] + Dist[e, Int[(d + e*x)^(q - 1)*(a + b*Log[c*x^n])^p, x], x] /; Fre
eQ[{a, b, c, d, e, n}, x] && IGtQ[p, 0] && GtQ[q, 0] && IntegerQ[2*q]
```

Rule 2390

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_) + (e_.)*(x_)^(r_.))^(q_.))
/(x_), x_Symbol] :> With[{u = IntHide[(d + e*x^r)^q/x, x]}, Simp[u*(a + b*L
og[c*x^n]), x] - Dist[b*n, Int[Dist[1/x, u, x], x], x]] /; FreeQ[{a, b, c,
d, e, n, r}, x] && IntegerQ[q - 1/2]
```

Rule 2449

```
Int[Log[(c_.)/((d_) + (e_.)*(x_))]/((f_) + (g_.)*(x_)^2), x_Symbol] :> Dist
[-e/g, Subst[Int[Log[2*d*x]/(1 - 2*d*x), x], x, 1/(d + e*x)], x] /; FreeQ[{
c, d, e, f, g}, x] && EqQ[c, 2*d] && EqQ[e^2*f + d^2*g, 0]
```

Rule 2458

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[(g*(x/e))^q*((e*h - d*i)/e + i*(x/e))^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 6055

```
Int[((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symbol
] :> Simp[(-(a + b*ArcTanh[c*x])^p)*(Log[2/(1 + e*(x/d))]/e), x] + Dist[b*c
*(p/e), Int[(a + b*ArcTanh[c*x])^(p - 1)*(Log[2/(1 + e*(x/d))]/(1 - c^2*x^2
)), x], x] /; FreeQ[{a, b, c, d, e}, x] && IGtQ[p, 0] && EqQ[c^2*d^2 - e^2,
 0]
```

Rule 6131

```
Int[(((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)*(x_))/((d_) + (e_.)*(x_)^2),
 x_Symbol] :> Simp[(a + b*ArcTanh[c*x])^(p + 1)/(b*e*(p + 1)), x] + Dist[1/
(c*d), Int[(a + b*ArcTanh[c*x])^p/(1 - c*x), x], x] /; FreeQ[{a, b, c, d, e
}, x] && EqQ[c^2*d + e, 0] && IGtQ[p, 0]
```

Rule 6873

```
Int[u_, x_Symbol] :> With[{v = NormalizeIntegrand[u, x]}, Int[v, x] /; v =!
= u]
```

Rubi steps

$$\int \frac{\sqrt{d+ex}\log(a+bx)}{a+bx}\,dx = \frac{\text{Subst}\left(\int \frac{\sqrt{\frac{bd-ae}{b}+\frac{ex}{b}}\log(x)}{x}\,dx, x, a+bx\right)}{b}$$

$$= \frac{e\text{Subst}\left(\int \frac{\log(x)}{\sqrt{\frac{bd-ae}{b}+\frac{ex}{b}}}\,dx, x, a+bx\right)}{b^2} + \frac{(bd-ae)\text{Subst}\left(\int \frac{\log(x)}{x\sqrt{\frac{bd-a}{b}}}\right.}{b^2}$$

$$= \frac{2\sqrt{d+ex}\log(a+bx)}{b} - \frac{2\sqrt{bd-ae}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)\log(a+bx)}{b^{3/2}} -$$

$$= -\frac{4\sqrt{d+ex}}{b} + \frac{2\sqrt{d+ex}\log(a+bx)}{b} - \frac{2\sqrt{bd-ae}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right.}{b^{3/2}}$$

$$= -\frac{4\sqrt{d+ex}}{b} + \frac{2\sqrt{d+ex}\log(a+bx)}{b} - \frac{2\sqrt{bd-ae}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right.}{b^{3/2}}$$

$$= -\frac{4\sqrt{d+ex}}{b} + \frac{4\sqrt{bd-ae}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{b^{3/2}} + \frac{2\sqrt{d+ex}\log(a+b}{b}$$

$$= -\frac{4\sqrt{d+ex}}{b} + \frac{4\sqrt{bd-ae}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{b^{3/2}} + \frac{2\sqrt{bd-ae}\tanh^{-1}(}{b^{3/}}$$

Mathematica [C] Result contains higher order function than in optimal. Order 5 vs. order 4 in optimal.
time = 0.38, size = 186, normalized size = 0.58

$$-\frac{2(d+ex)^{3/2}\left(2\sqrt{e}\sqrt{a+bx}\,{}_3F_2\left(-\frac{1}{2},-\frac{1}{2},-\frac{1}{2};\frac{1}{2},\frac{1}{2};\frac{-bd+ae}{e(a+bx)}\right)+\left(-\sqrt{e}\sqrt{a+bx}\sqrt{\frac{b(d+ex)}{e(a+bx)}}+\sqrt{bd-ae}\sinh^{-1}\left(\frac{\sqrt{bd-ae}}{\sqrt{e}\sqrt{a+bx}}\right)\right)\log(a+bx)\right)}{e^{3/2}(a+bx)^{3/2}\left(\frac{b(d+ex)}{e(a+bx)}\right)^{3/2}}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(Sqrt[d + e*x]*Log[a + b*x])/(a + b*x),x]
```

```
[Out] (-2*(d + e*x)^(3/2)*(2*Sqrt[e]*Sqrt[a + b*x]*HypergeometricPFQ[{-1/2, -1/2,
 -1/2}, {1/2, 1/2}, (-(b*d) + a*e)/(e*(a + b*x))] + (-(Sqrt[e]*Sqrt[a + b*x
]*Sqrt[(b*(d + e*x))/(e*(a + b*x))]) + Sqrt[b*d - a*e]*ArcSinh[Sqrt[b*d - a
*e]/(Sqrt[e]*Sqrt[a + b*x])])*Log[a + b*x]))/(e^(3/2)*(a + b*x)^(3/2)*((b*(
d + e*x))/(e*(a + b*x)))^(3/2))
```

Maple [F]
time = 0.37, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{ex+d}\;\ln(bx+a)}{bx+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)^(1/2)*ln(b*x+a)/(b*x+a),x)
```

```
[Out] int((e*x+d)^(1/2)*ln(b*x+a)/(b*x+a),x)
```

Maxima [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(1/2)*log(b*x+a)/(b*x+a),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*d-%e*a>0)', see `assume?` for mor
e detai
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(1/2)*log(b*x+a)/(b*x+a),x, algorithm="fricas")
```

```
[Out] integral(sqrt(x*e + d)*log(b*x + a)/(b*x + a), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{d+ex}\,\log(a+bx)}{a+bx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)**(1/2)*ln(b*x+a)/(b*x+a),x)
```

```
[Out] Integral(sqrt(d + e*x)*log(a + b*x)/(a + b*x), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(1/2)*log(b*x+a)/(b*x+a),x, algorithm="giac")
```

```
[Out] integrate(sqrt(x*e + d)*log(b*x + a)/(b*x + a), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\ln(a+b\,x)\,\sqrt{d+e\,x}}{a+b\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((log(a + b*x)*(d + e*x)^(1/2))/(a + b*x),x)
```

```
[Out] int((log(a + b*x)*(d + e*x)^(1/2))/(a + b*x), x)
```

3.206 $\int \frac{\log(a+bx)}{(a+bx)\sqrt{d+ex}}\,dx$

Optimal. Leaf size=242

$$\frac{2\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)^2}{\sqrt{b}\sqrt{bd-ae}}-\frac{2\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)\log(a+bx)}{\sqrt{b}\sqrt{bd-ae}}-\frac{4\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)\log\left(\frac{\quad}{1-\frac{\sqrt{b}\ \cdots}{\sqrt{\ \cdots}}}\right.}{\sqrt{b}\sqrt{bd-ae}}$$

[Out] 2*arctanh(b^(1/2)*(e*x+d)^(1/2)/(-a*e+b*d)^(1/2))^2/b^(1/2)/(-a*e+b*d)^(1/2)-2*arctanh(b^(1/2)*(e*x+d)^(1/2)/(-a*e+b*d)^(1/2))*ln(b*x+a)/b^(1/2)/(-a*e+b*d)^(1/2)-4*arctanh(b^(1/2)*(e*x+d)^(1/2)/(-a*e+b*d)^(1/2))*ln(2/(1-b^(1/2)*(e*x+d)^(1/2)/(-a*e+b*d)^(1/2)))/b^(1/2)/(-a*e+b*d)^(1/2)-2*polylog(2,1-2/(1-b^(1/2)*(e*x+d)^(1/2)/(-a*e+b*d)^(1/2)))/b^(1/2)/(-a*e+b*d)^(1/2)

Rubi [A]
time = 0.45, antiderivative size = 242, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 11, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.478$, Rules used = {2458, 65, 214, 2390, 12, 1601, 6873, 6131, 6055, 2449, 2352}

$$-\frac{2\text{PolyLog}\left(2,1-\frac{2}{1-\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}}\right)}{\sqrt{b}\sqrt{bd-ae}}+\frac{2\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)^2}{\sqrt{b}\sqrt{bd-ae}}-\frac{2\log(a+bx)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{\sqrt{b}\sqrt{bd-ae}}-\frac{4\log\left(\frac{2}{1-\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}}\right)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{\sqrt{b}\sqrt{bd-ae}}$$

Antiderivative was successfully verified.

```
[In] Int[Log[a + b*x]/((a + b*x)*Sqrt[d + e*x]),x]
```

```
[Out] (2*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]]^2)/(Sqrt[b]*Sqrt[b*d -
a*e]) - (2*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]]*Log[a + b*x])/(
Sqrt[b]*Sqrt[b*d - a*e]) - (4*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*
e]]*Log[2/(1 - (Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e])])/(Sqrt[b]*Sqrt[b*d
 - a*e]) - (2*PolyLog[2, 1 - 2/(1 - (Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]
)])/(Sqrt[b]*Sqrt[b*d - a*e])
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 65

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - a*(d/b) +
d*(x^p/b))^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
```

```
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 214

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-a/b, 2]/a)*ArcTanh[x
/Rt[-a/b, 2]], x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 1601

```
Int[(Pp_)/(Qq_), x_Symbol] :> With[{p = Expon[Pp, x], q = Expon[Qq, x]}, Si
mp[Coeff[Pp, x, p]*(Log[RemoveContent[Qq, x]]/(q*Coeff[Qq, x, q])), x] /; E
qQ[p, q - 1] && EqQ[Pp, Simplify[(Coeff[Pp, x, p]/(q*Coeff[Qq, x, q]))*D[Qq
, x]]]] /; PolyQ[Pp, x] && PolyQ[Qq, x]
```

Rule 2352

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> Simp[(-e^(-1))*PolyLo
g[2, 1 - c*x], x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2390

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_) + (e_.)*(x_)^(r_.))^(q_.))
/(x_), x_Symbol] :> With[{u = IntHide[(d + e*x^r)^q/x, x]}, Simp[u*(a + b*L
og[c*x^n]), x] - Dist[b*n, Int[Dist[1/x, u, x], x], x]] /; FreeQ[{a, b, c,
d, e, n, r}, x] && IntegerQ[q - 1/2]
```

Rule 2449

```
Int[Log[(c_.)/((d_) + (e_.)*(x_))]/((f_) + (g_.)*(x_)^2), x_Symbol] :> Dist
[-e/g, Subst[Int[Log[2*d*x]/(1 - 2*d*x), x], x, 1/(d + e*x)], x] /; FreeQ[{
c, d, e, f, g}, x] && EqQ[c, 2*d] && EqQ[e^2*f + d^2*g, 0]
```

Rule 2458

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[(g*(x/e))^q*((e*h - d*i)/e + i*(x/e))^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 6055

```
Int[((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symbol
] :> Simp[(-(a + b*ArcTanh[c*x])^p)*(Log[2/(1 + e*(x/d))]/e), x] + Dist[b*c
*(p/e), Int[(a + b*ArcTanh[c*x])^(p - 1)*(Log[2/(1 + e*(x/d))]/(1 - c^2*x^2
)), x], x] /; FreeQ[{a, b, c, d, e}, x] && IGtQ[p, 0] && EqQ[c^2*d^2 - e^2,
```

```
0]
```

Rule 6131

```
Int[(((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)*(x_))/((d_) + (e_.)*(x_)^2),
 x_Symbol] :> Simp[(a + b*ArcTanh[c*x])^(p + 1)/(b*e*(p + 1)), x] + Dist[1/
(c*d), Int[(a + b*ArcTanh[c*x])^p/(1 - c*x), x], x] /; FreeQ[{a, b, c, d, e
}, x] && EqQ[c^2*d + e, 0] && IGtQ[p, 0]
```

Rule 6873

```
Int[u_, x_Symbol] :> With[{v = NormalizeIntegrand[u, x]}, Int[v, x] /; v =!
= u]
```

Rubi steps

$$\int \frac{\log(a+bx)}{(a+bx)\sqrt{d+ex}}\,dx = \frac{\text{Subst}\left(\int \frac{\log(x)}{x\sqrt{\frac{bd-ae}{b}+\frac{ex}{b}}}\,dx, x, a+bx\right)}{b}$$

$$= -\frac{2\tanh^{-1}\left(\frac{\sqrt{b}\,\sqrt{d+ex}}{\sqrt{bd-ae}}\right)\log(a+bx)}{\sqrt{b}\,\sqrt{bd-ae}} - \frac{\text{Subst}\left(\int -\frac{2\sqrt{b}\,\tanh^{-1}\left(\frac{\sqrt{b}\,\sqrt{d-\frac{a}{b}}}{\sqrt{bd-}}\right.}{\sqrt{bd-ae}\,x}\right.}{b}$$

$$= -\frac{2\tanh^{-1}\left(\frac{\sqrt{b}\,\sqrt{d+ex}}{\sqrt{bd-ae}}\right)\log(a+bx)}{\sqrt{b}\,\sqrt{bd-ae}} + \frac{2\text{Subst}\left(\int \frac{\tanh^{-1}\left(\frac{\sqrt{b}\,\sqrt{d-\frac{ae}{b}+\frac{e}{b}}}{\sqrt{bd-ae}}\right.}{x}\right.}{\sqrt{b}\,\sqrt{bd-ae}}$$

$$= -\frac{2\tanh^{-1}\left(\frac{\sqrt{b}\,\sqrt{d+ex}}{\sqrt{bd-ae}}\right)\log(a+bx)}{\sqrt{b}\,\sqrt{bd-ae}} + \frac{\left(4\sqrt{b}\right)\text{Subst}\left(\int \frac{x\tanh^{-1}\left(\frac{\sqrt{b}\,x}{\sqrt{bd-ae}}\right.}{ae+b(-d+x^2)}\right.}{\sqrt{bd-ae}}$$

$$= -\frac{2\tanh^{-1}\left(\frac{\sqrt{b}\,\sqrt{d+ex}}{\sqrt{bd-ae}}\right)\log(a+bx)}{\sqrt{b}\,\sqrt{bd-ae}} + \frac{\left(4\sqrt{b}\right)\text{Subst}\left(\int \frac{x\tanh^{-1}\left(\frac{\sqrt{b}\,x}{\sqrt{bd-ae}}\right.}{-bd+ae+bx^2}\right.}{\sqrt{bd-ae}}$$

$$= \frac{2\tanh^{-1}\left(\frac{\sqrt{b}\,\sqrt{d+ex}}{\sqrt{bd-ae}}\right)^2}{\sqrt{b}\,\sqrt{bd-ae}} - \frac{2\tanh^{-1}\left(\frac{\sqrt{b}\,\sqrt{d+ex}}{\sqrt{bd-ae}}\right)\log(a+bx)}{\sqrt{b}\,\sqrt{bd-ae}} - \frac{4\text{Subst}}{}$$

$$= \frac{2\tanh^{-1}\left(\frac{\sqrt{b}\,\sqrt{d+ex}}{\sqrt{bd-ae}}\right)^2}{\sqrt{b}\,\sqrt{bd-ae}} - \frac{2\tanh^{-1}\left(\frac{\sqrt{b}\,\sqrt{d+ex}}{\sqrt{bd-ae}}\right)\log(a+bx)}{\sqrt{b}\,\sqrt{bd-ae}} - \frac{4\tanh^{-}}{}$$

Mathematica [A]
time = 1.74, size = 239, normalized size = 0.99

$$\frac{-\frac{2\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d-\frac{ae}{b}}}\right)\left(\log(a+bx)-\log\left(\frac{e(a+bx)}{-bd+ae}\right)\right)}{\sqrt{d-\frac{ae}{b}}}+\frac{\sqrt{\frac{b(d+ex)}{bd-ae}}\left(\log^2\left(\frac{e(a+bx)}{-bd+ae}\right)-4\log\left(\frac{e(a+bx)}{-bd+ae}\right)\log\left(\frac{1}{2}\left(1+\sqrt{\frac{b(d+ex)}{bd-ae}}\right)\right)+2\log^2\left(\frac{1}{2}\left(1+\sqrt{\frac{b(d+ex)}{bd-ae}}\right)\right)-4\mathrm{Li}_2\left(\frac{1}{2}-\frac{1}{2}\sqrt{\frac{b(d+ex)}{bd-ae}}\right)\right)}{2\sqrt{d+ex}}}{b}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[a + b*x]/((a + b*x)*Sqrt[d + e*x]),x]
```

```
[Out] ((-2*ArcTanh[Sqrt[d + e*x]/Sqrt[d - (a*e)/b]]*(Log[a + b*x] - Log[(e*(a + b
*x))/(-(b*d) + a*e)]))/Sqrt[d - (a*e)/b] + (Sqrt[(b*(d + e*x))/(b*d - a*e)]
*(Log[(e*(a + b*x))/(-(b*d) + a*e)]^2 - 4*Log[(e*(a + b*x))/(-(b*d) + a*e)]
*Log[(1 + Sqrt[(b*(d + e*x))/(b*d - a*e)])/2] + 2*Log[(1 + Sqrt[(b*(d + e*x
))/(b*d - a*e)])/2]^2 - 4*PolyLog[2, 1/2 - Sqrt[(b*(d + e*x))/(b*d - a*e)]/
2]))/(2*Sqrt[d + e*x]))/b
```

Maple [F]
time = 0.28, size = 0, normalized size = 0.00

$$\int \frac{\ln (bx+a)}{(bx+a)\sqrt{ex+d}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(b*x+a)/(b*x+a)/(e*x+d)^(1/2),x)
```

```
[Out] int(ln(b*x+a)/(b*x+a)/(e*x+d)^(1/2),x)
```

Maxima [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(b*x+a)/(b*x+a)/(e*x+d)^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*d-%e*a>0)', see `assume?` for mor
e detai
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(b*x+a)/(b*x+a)/(e*x+d)^(1/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(x*e + d)*log(b*x + a)/(b*d*x + a*d + (b*x^2 + a*x)*e), x)
```

Sympy [**F(-1)**] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(b*x+a)/(b*x+a)/(e*x+d)**(1/2),x)
```

```
[Out] Timed out
```

Giac [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(b*x+a)/(b*x+a)/(e*x+d)^(1/2),x, algorithm="giac")
```

```
[Out] integrate(log(b*x + a)/((b*x + a)*sqrt(x*e + d)), x)
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\ln(a+b\,x)}{(a+b\,x)\,\sqrt{d+e\,x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(log(a + b*x)/((a + b*x)*(d + e*x)^(1/2)),x)
```

```
[Out] int(log(a + b*x)/((a + b*x)*(d + e*x)^(1/2)), x)
```

3.207 $\int \frac{\log(a+bx)}{(a+bx)(d+ex)^{3/2}}\,dx$

Optimal. Leaf size=316

$$\frac{4\sqrt{b}\,\tanh^{-1}\left(\frac{\sqrt{b}\,\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{(bd-ae)^{3/2}}+\frac{2\sqrt{b}\,\tanh^{-1}\left(\frac{\sqrt{b}\,\sqrt{d+ex}}{\sqrt{bd-ae}}\right)^2}{(bd-ae)^{3/2}}+\frac{2\log(a+bx)}{(bd-ae)\sqrt{d+ex}}-\frac{2\sqrt{b}\,\tanh^{-1}\left(\frac{\sqrt{b}\,\sqrt{}}{\sqrt{bd}}\right.}{(bd-}$$

```
[Out] 4*arctanh(b^(1/2)*(e*x+d)^(1/2)/(-a*e+b*d)^(1/2))*b^(1/2)/(-a*e+b*d)^(3/2)+
2*arctanh(b^(1/2)*(e*x+d)^(1/2)/(-a*e+b*d)^(1/2))^2*b^(1/2)/(-a*e+b*d)^(3/2
)-2*arctanh(b^(1/2)*(e*x+d)^(1/2)/(-a*e+b*d)^(1/2))*ln(b*x+a)*b^(1/2)/(-a*e
+b*d)^(3/2)-4*arctanh(b^(1/2)*(e*x+d)^(1/2)/(-a*e+b*d)^(1/2))*ln(2/(1-b^(1/
2)*(e*x+d)^(1/2)/(-a*e+b*d)^(1/2)))*b^(1/2)/(-a*e+b*d)^(3/2)-2*polylog(2,1-
2/(1-b^(1/2)*(e*x+d)^(1/2)/(-a*e+b*d)^(1/2)))*b^(1/2)/(-a*e+b*d)^(3/2)+2*ln
(b*x+a)/(-a*e+b*d)/(e*x+d)^(1/2)
```

Rubi [A]

time = 0.66, antiderivative size = 316, normalized size of antiderivative = 1.00, number of steps used = 13, number of rules used = 13, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.565$, Rules used = {2458, 2389, 65, 214, 2390, 12, 1601, 6873, 6131, 6055, 2449, 2352, 2356}

$$-\frac{2\sqrt{b}\,\text{PolyLog}\left(2,1-\frac{2}{1-\frac{\sqrt{b}\,\sqrt{d+ex}}{\sqrt{bd-ae}}}\right)}{(bd-ae)^{3/2}}+\frac{2\log(a+bx)}{\sqrt{d+ex}\,(bd-ae)}+\frac{2\sqrt{b}\,\tanh^{-1}\left(\frac{\sqrt{b}\,\sqrt{d+ex}}{\sqrt{bd-ae}}\right)^2}{(bd-ae)^{3/2}}+\frac{4\sqrt{b}\,\tanh^{-1}\left(\frac{\sqrt{b}\,\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{(bd-ae)^{3/2}}-\frac{2\sqrt{b}\,\log(a+bx)\tanh^{-1}\left(\frac{\sqrt{b}\,\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{(bd-ae)^{3/2}}-\frac{4\sqrt{b}\,\log\left(\frac{2}{1-\frac{\sqrt{b}\,\sqrt{d+ex}}{\sqrt{bd-ae}}}\right)\tanh^{-1}\left(\frac{\sqrt{b}\,\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{(bd-ae)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[Log[a + b*x]/((a + b*x)*(d + e*x)^(3/2)),x]
```

```
[Out] (4*Sqrt[b]*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]])/(b*d - a*e)^(3
/2) + (2*Sqrt[b]*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]]^2)/(b*d -
 a*e)^(3/2) + (2*Log[a + b*x])/((b*d - a*e)*Sqrt[d + e*x]) - (2*Sqrt[b]*Arc
Tanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]]*Log[a + b*x])/(b*d - a*e)^(3/
2) - (4*Sqrt[b]*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]]*Log[2/(1 -
 (Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e])])/(b*d - a*e)^(3/2) - (2*Sqrt[b]*
PolyLog[2, 1 - 2/(1 - (Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e])])/(b*d - a*e
)^(3/2)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 65

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - a*(d/b) +
```

```
d*(x^p/b))^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 214

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-a/b, 2]/a)*ArcTanh[x
/Rt[-a/b, 2]], x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 1601

```
Int[(Pp_)/(Qq_), x_Symbol] :> With[{p = Expon[Pp, x], q = Expon[Qq, x]}, Si
mp[Coeff[Pp, x, p]*(Log[RemoveContent[Qq, x]]/(q*Coeff[Qq, x, q])), x] /; E
qQ[p, q - 1] && EqQ[Pp, Simplify[(Coeff[Pp, x, p]/(q*Coeff[Qq, x, q]))*D[Qq
, x]]]] /; PolyQ[Pp, x] && PolyQ[Qq, x]
```

Rule 2352

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> Simp[(-e^(-1))*PolyLo
g[2, 1 - c*x], x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2356

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.),
x_Symbol] :> Simp[(d + e*x)^(q + 1)*((a + b*Log[c*x^n])^p/(e*(q + 1))), x]
- Dist[b*n*(p/(e*(q + 1))), Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^(p -
1))/x, x], x] /; FreeQ[{a, b, c, d, e, n, p, q}, x] && GtQ[p, 0] && NeQ[q,
-1] && (EqQ[p, 1] || (IntegersQ[2*p, 2*q] &&  !IGtQ[q, 0]) || (EqQ[p, 2] &&
 NeQ[q, 1]))
```

Rule 2389

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_))/
(x_), x_Symbol] :> Dist[1/d, Int[(d + e*x)^(q + 1)*((a + b*Log[c*x^n])^p/x)
, x], x] - Dist[e/d, Int[(d + e*x)^q*(a + b*Log[c*x^n])^p, x], x] /; FreeQ[
{a, b, c, d, e, n}, x] && IGtQ[p, 0] && LtQ[q, -1] && IntegerQ[2*q]
```

Rule 2390

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_) + (e_.)*(x_)^(r_.))^(q_.))
/(x_), x_Symbol] :> With[{u = IntHide[(d + e*x^r)^q/x, x]}, Simp[u*(a + b*L
og[c*x^n]), x] - Dist[b*n, Int[Dist[1/x, u, x], x], x]] /; FreeQ[{a, b, c,
d, e, n, r}, x] && IntegerQ[q - 1/2]
```

Rule 2449

```
Int[Log[(c_.)/((d_) + (e_.)*(x_))]/((f_) + (g_.)*(x_)^2), x_Symbol] :> Dist
[-e/g, Subst[Int[Log[2*d*x]/(1 - 2*d*x), x], x, 1/(d + e*x)], x] /; FreeQ[{
c, d, e, f, g}, x] && EqQ[c, 2*d] && EqQ[e^2*f + d^2*g, 0]
```

Rule 2458

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[(g*(x/e))^q*((e*h - d*i)/e + i*(x/e))^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 6055

```
Int[((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symbol
] :> Simp[(-(a + b*ArcTanh[c*x])^p)*(Log[2/(1 + e*(x/d))]/e), x] + Dist[b*c
*(p/e), Int[(a + b*ArcTanh[c*x])^(p - 1)*(Log[2/(1 + e*(x/d))]/(1 - c^2*x^2
)), x], x] /; FreeQ[{a, b, c, d, e}, x] && IGtQ[p, 0] && EqQ[c^2*d^2 - e^2,
 0]
```

Rule 6131

```
Int[(((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)*(x_))/((d_) + (e_.)*(x_)^2),
 x_Symbol] :> Simp[(a + b*ArcTanh[c*x])^(p + 1)/(b*e*(p + 1)), x] + Dist[1/
(c*d), Int[(a + b*ArcTanh[c*x])^p/(1 - c*x), x], x] /; FreeQ[{a, b, c, d, e
}, x] && EqQ[c^2*d + e, 0] && IGtQ[p, 0]
```

Rule 6873

```
Int[u_, x_Symbol] :> With[{v = NormalizeIntegrand[u, x]}, Int[v, x] /; v =!
= u]
```

Rubi steps

$$\int \frac{\log(a+bx)}{(a+bx)(d+ex)^{3/2}}\,dx = \frac{\text{Subst}\left(\int \frac{\log(x)}{x\left(\frac{bd-ae}{b}+\frac{ex}{b}\right)^{3/2}}\,dx, x, a+bx\right)}{b}$$

$$= \frac{\text{Subst}\left(\int \frac{\log(x)}{x\sqrt{\frac{bd-ae}{b}+\frac{ex}{b}}}\,dx, x, a+bx\right)}{bd-ae} - \frac{e\text{Subst}\left(\int \frac{\log(x)}{\left(\frac{bd-ae}{b}+\frac{ex}{b}\right)^{3/2}}\,dx, x, a$$

$$= \frac{2\log(a+bx)}{(bd-ae)\sqrt{d+ex}} - \frac{2\sqrt{b}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)\log(a+bx)}{(bd-ae)^{3/2}} - \frac{\text{Subst}\left(\int\right.}{}$$

$$\left(2\sqrt{b}\right)\text{Su}$$

$$= \frac{2\log(a+bx)}{(bd-ae)\sqrt{d+ex}} - \frac{2\sqrt{b}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)\log(a+bx)}{(bd-ae)^{3/2}} + $$

$$= \frac{4\sqrt{b}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{(bd-ae)^{3/2}} + \frac{2\log(a+bx)}{(bd-ae)\sqrt{d+ex}} - \frac{2\sqrt{b}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d}}{\sqrt{bd-}}\right.}{(bd-a}$$

$$= \frac{4\sqrt{b}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{(bd-ae)^{3/2}} + \frac{2\log(a+bx)}{(bd-ae)\sqrt{d+ex}} - \frac{2\sqrt{b}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d}}{\sqrt{bd-}}\right.}{(bd-a}$$

$$= \frac{4\sqrt{b}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{(bd-ae)^{3/2}} + \frac{2\sqrt{b}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)^2}{(bd-ae)^{3/2}} + \frac{2\log(a}{(bd-ae)}$$

Mathematica [C] Result contains higher order function than in optimal. Order 5 vs. order 4 in optimal.
time = 1.23, size = 183, normalized size = 0.58

$$\frac{2\left(-\frac{2\sqrt{\frac{b(d+ex)}{e(a+bx)}}\,{}_3F_2\left(\frac{3}{2},\frac{3}{2},\frac{3}{2};\frac{5}{2},\frac{5}{2};-\frac{bd-ae}{ae+bex}\right)}{ae+bex}+\frac{9\left(\sqrt{bd-ae}-\sqrt{e}\,\sqrt{a+bx}\,\sqrt{\frac{b(d+ex)}{e(a+bx)}}\,\sinh^{-1}\left(\frac{\sqrt{bd-ae}}{\sqrt{e}\,\sqrt{a+bx}}\right)\right)\log(a+bx)}{(bd-ae)^{3/2}}\right)}{9\sqrt{d+ex}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[a + b*x]/((a + b*x)*(d + e*x)^(3/2)),x]
```

```
[Out] (2*((-2*Sqrt[(b*(d + e*x))/(e*(a + b*x))]*HypergeometricPFQ[{3/2, 3/2, 3/2}
, {5/2, 5/2}, -((b*d - a*e)/(a*e + b*e*x))])/(a*e + b*e*x) + (9*(Sqrt[b*d -
 a*e] - Sqrt[e]*Sqrt[a + b*x]*Sqrt[(b*(d + e*x))/(e*(a + b*x))]*ArcSinh[Sqr
t[b*d - a*e]/(Sqrt[e]*Sqrt[a + b*x])])*Log[a + b*x])/(b*d - a*e)^(3/2)))/(9
*Sqrt[d + e*x])
```

Maple [F]
time = 0.26, size = 0, normalized size = 0.00

$$\int \frac{\ln(bx+a)}{(bx+a)(ex+d)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(b*x+a)/(b*x+a)/(e*x+d)^(3/2),x)
```

```
[Out] int(ln(b*x+a)/(b*x+a)/(e*x+d)^(3/2),x)
```

Maxima [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(b*x+a)/(b*x+a)/(e*x+d)^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*d-%e*a>0)', see `assume?` for mor
e detai
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(b*x+a)/(b*x+a)/(e*x+d)^(3/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(x*e + d)*log(b*x + a)/(b*d^2*x + a*d^2 + (b*x^3 + a*x^2)*e^2
+ 2*(b*d*x^2 + a*d*x)*e), x)
```

Sympy [**F(-1)**] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(b*x+a)/(b*x+a)/(e*x+d)**(3/2),x)
```

```
[Out] Timed out
```

Giac [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(b*x+a)/(b*x+a)/(e*x+d)^(3/2),x, algorithm="giac")
```

```
[Out] integrate(log(b*x + a)/((b*x + a)*(x*e + d)^(3/2)), x)
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\ln\left(a+b\,x\right)}{\left(a+b\,x\right)\,{\left(d+e\,x\right)}^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(log(a + b*x)/((a + b*x)*(d + e*x)^(3/2)),x)
```

```
[Out] int(log(a + b*x)/((a + b*x)*(d + e*x)^(3/2)), x)
```

3.208 $\int \frac{\log(a+bx)}{(a+bx)(d+ex)^{5/2}}\,dx$

Optimal. Leaf size=372

$$-\frac{4b}{3(bd-ae)^2\sqrt{d+ex}}+\frac{16b^{3/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{3(bd-ae)^{5/2}}+\frac{2b^{3/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)^2}{(bd-ae)^{5/2}}+\frac{2\log(a+bx}{3(bd-ae)(d+e}$$

```
[Out] 16/3*b^(3/2)*arctanh(b^(1/2)*(e*x+d)^(1/2)/(-a*e+b*d)^(1/2))/(-a*e+b*d)^(5/
2)+2*b^(3/2)*arctanh(b^(1/2)*(e*x+d)^(1/2)/(-a*e+b*d)^(1/2))^2/(-a*e+b*d)^(
5/2)+2/3*ln(b*x+a)/(-a*e+b*d)/(e*x+d)^(3/2)-2*b^(3/2)*arctanh(b^(1/2)*(e*x+
d)^(1/2)/(-a*e+b*d)^(1/2))*ln(b*x+a)/(-a*e+b*d)^(5/2)-4*b^(3/2)*arctanh(b^(
1/2)*(e*x+d)^(1/2)/(-a*e+b*d)^(1/2))*ln(2/(1-b^(1/2)*(e*x+d)^(1/2)/(-a*e+b*
d)^(1/2)))/(-a*e+b*d)^(5/2)-2*b^(3/2)*polylog(2,1-2/(1-b^(1/2)*(e*x+d)^(1/2
)/(-a*e+b*d)^(1/2)))/(-a*e+b*d)^(5/2)-4/3*b/(-a*e+b*d)^2/(e*x+d)^(1/2)+2*b*
ln(b*x+a)/(-a*e+b*d)^2/(e*x+d)^(1/2)
```

Rubi [A]
time = 0.88, antiderivative size = 372, normalized size of antiderivative = 1.00, number of steps used = 18, number of rules used = 14, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.609$, Rules used = {2458, 2389, 65, 214, 2390, 12, 1601, 6873, 6131, 6055, 2449, 2352, 2356, 53}

$$-\frac{2b^{3/2}\text{PolyLog}\left(2,1-\frac{2}{1-\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}}\right)}{(bd-ae)^{5/2}}+\frac{2b^{3/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)^2}{(bd-ae)^{5/2}}+\frac{16b^{3/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{3(bd-ae)^{5/2}}-\frac{2b^{3/2}\log(a+bx)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{(bd-ae)^{5/2}}-\frac{4b^{3/2}\log\left(\frac{2}{1-\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}}\right)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{(bd-ae)^{5/2}}-\frac{4b}{3\sqrt{d+ex}(bd-ae)^2}+\frac{2b\log(a+bx)}{\sqrt{d+ex}(bd-ae)^2}+\frac{2\log(a+bx)}{3(d+ex)^{3/2}(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Int[Log[a + b*x]/((a + b*x)*(d + e*x)^(5/2)),x]
```

```
[Out] (-4*b)/(3*(b*d - a*e)^2*Sqrt[d + e*x]) + (16*b^(3/2)*ArcTanh[(Sqrt[b]*Sqrt[
d + e*x])/Sqrt[b*d - a*e]])/(3*(b*d - a*e)^(5/2)) + (2*b^(3/2)*ArcTanh[(Sqr
t[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]]^2)/(b*d - a*e)^(5/2) + (2*Log[a + b*x]
)/(3*(b*d - a*e)*(d + e*x)^(3/2)) + (2*b*Log[a + b*x])/((b*d - a*e)^2*Sqrt[
d + e*x]) - (2*b^(3/2)*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]]*Log
[a + b*x])/(b*d - a*e)^(5/2) - (4*b^(3/2)*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/S
qrt[b*d - a*e]]*Log[2/(1 - (Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e])])/(b*d
- a*e)^(5/2) - (2*b^(3/2)*PolyLog[2, 1 - 2/(1 - (Sqrt[b]*Sqrt[d + e*x])/Sqr
t[b*d - a*e])])/(b*d - a*e)^(5/2)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 53

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
(a + b*x)^(m + 1)*((c + d*x)^(n + 1)/((b*c - a*d)*(m + 1))), x] - Dist[d*((
m + n + 2)/((b*c - a*d)*(m + 1))), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 65

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - a*(d/b) +
d*(x^p/b))^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 214

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-a/b, 2]/a)*ArcTanh[x
/Rt[-a/b, 2]], x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 1601

```
Int[(Pp_)/(Qq_), x_Symbol] :> With[{p = Expon[Pp, x], q = Expon[Qq, x]}, Si
mp[Coeff[Pp, x, p]*(Log[RemoveContent[Qq, x]]/(q*Coeff[Qq, x, q])), x] /; E
qQ[p, q - 1] && EqQ[Pp, Simplify[(Coeff[Pp, x, p]/(q*Coeff[Qq, x, q]))*D[Qq
, x]]]] /; PolyQ[Pp, x] && PolyQ[Qq, x]
```

Rule 2352

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> Simp[(-e^(-1))*PolyLo
g[2, 1 - c*x], x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2356

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.),
x_Symbol] :> Simp[(d + e*x)^(q + 1)*((a + b*Log[c*x^n])^p/(e*(q + 1))), x]
- Dist[b*n*(p/(e*(q + 1))), Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^(p -
1))/x, x], x] /; FreeQ[{a, b, c, d, e, n, p, q}, x] && GtQ[p, 0] && NeQ[q,
-1] && (EqQ[p, 1] || (IntegersQ[2*p, 2*q] &&  !IGtQ[q, 0]) || (EqQ[p, 2] &&
 NeQ[q, 1]))
```

Rule 2389

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_))/
(x_), x_Symbol] :> Dist[1/d, Int[(d + e*x)^(q + 1)*((a + b*Log[c*x^n])^p/x)
, x], x] - Dist[e/d, Int[(d + e*x)^q*(a + b*Log[c*x^n])^p, x], x] /; FreeQ[
```

```
{a, b, c, d, e, n}, x] && IGtQ[p, 0] && LtQ[q, -1] && IntegerQ[2*q]
```

Rule 2390

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_) + (e_.)*(x_)^(r_.))^(q_.))
/(x_), x_Symbol] :> With[{u = IntHide[(d + e*x^r)^q/x, x]}, Simp[u*(a + b*L
og[c*x^n]), x] - Dist[b*n, Int[Dist[1/x, u, x], x], x]] /; FreeQ[{a, b, c,
d, e, n, r}, x] && IntegerQ[q - 1/2]
```

Rule 2449

```
Int[Log[(c_.)/((d_) + (e_.)*(x_))]/((f_) + (g_.)*(x_)^2), x_Symbol] :> Dist
[-e/g, Subst[Int[Log[2*d*x]/(1 - 2*d*x), x], x, 1/(d + e*x)], x] /; FreeQ[{
c, d, e, f, g}, x] && EqQ[c, 2*d] && EqQ[e^2*f + d^2*g, 0]
```

Rule 2458

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[(g*(x/e))^q*((e*h - d*i)/e + i*(x/e))^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 6055

```
Int[((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symbol
] :> Simp[(-(a + b*ArcTanh[c*x])^p)*(Log[2/(1 + e*(x/d))]/e), x] + Dist[b*c
*(p/e), Int[(a + b*ArcTanh[c*x])^(p - 1)*(Log[2/(1 + e*(x/d))]/(1 - c^2*x^2
)), x], x] /; FreeQ[{a, b, c, d, e}, x] && IGtQ[p, 0] && EqQ[c^2*d^2 - e^2,
 0]
```

Rule 6131

```
Int[(((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)*(x_))/((d_) + (e_.)*(x_)^2),
 x_Symbol] :> Simp[(a + b*ArcTanh[c*x])^(p + 1)/(b*e*(p + 1)), x] + Dist[1/
(c*d), Int[(a + b*ArcTanh[c*x])^p/(1 - c*x), x], x] /; FreeQ[{a, b, c, d, e
}, x] && EqQ[c^2*d + e, 0] && IGtQ[p, 0]
```

Rule 6873

```
Int[u_, x_Symbol] :> With[{v = NormalizeIntegrand[u, x]}, Int[v, x] /; v =!
= u]
```

Rubi steps

$$\int \frac{\log(a+bx)}{(a+bx)(d+ex)^{5/2}}\,dx = \frac{\text{Subst}\left(\int \frac{\log(x)}{x\left(\frac{bd-ae}{b}+\frac{ex}{b}\right)^{5/2}}\,dx, x, a+bx\right)}{b}$$

$$= \frac{\text{Subst}\left(\int \frac{\log(x)}{x\left(\frac{bd-ae}{b}+\frac{ex}{b}\right)^{3/2}}\,dx, x, a+bx\right)}{bd-ae} - \frac{e\text{Subst}\left(\int \frac{\log(x)}{\left(\frac{bd-ae}{b}+\frac{ex}{b}\right)^{5/2}}\,dx, x, a+bx\right.}{b(bd-ae)}$$

$$= \frac{2\log(a+bx)}{3(bd-ae)(d+ex)^{3/2}} + \frac{b\text{Subst}\left(\int \frac{\log(x)}{x\sqrt{\frac{bd-ae}{b}+\frac{ex}{b}}}\,dx, x, a+bx\right)}{(bd-ae)^2} - \frac{e\text{Subs}}{}$$

$$= -\frac{4b}{3(bd-ae)^2\sqrt{d+ex}} + \frac{2\log(a+bx)}{3(bd-ae)(d+ex)^{3/2}} + \frac{2b\log(a+bx)}{(bd-ae)^2\sqrt{d+ex}} - \frac{2b^{3/}}{}$$

$$= -\frac{4b}{3(bd-ae)^2\sqrt{d+ex}} + \frac{2\log(a+bx)}{3(bd-ae)(d+ex)^{3/2}} + \frac{2b\log(a+bx)}{(bd-ae)^2\sqrt{d+ex}} - \frac{2b^{3/}}{}$$

$$= -\frac{4b}{3(bd-ae)^2\sqrt{d+ex}} + \frac{16b^{3/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{3(bd-ae)^{5/2}} + \frac{2\log(a+bx)}{3(bd-ae)(d+ex}$$

$$= -\frac{4b}{3(bd-ae)^2\sqrt{d+ex}} + \frac{16b^{3/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{3(bd-ae)^{5/2}} + \frac{2\log(a+bx)}{3(bd-ae)(d+ex}$$

$$= -\frac{4b}{3(bd-ae)^2\sqrt{d+ex}} + \frac{16b^{3/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{3(bd-ae)^{5/2}} + \frac{2b^{3/2}\tanh^{-1}\left(\frac{\sqrt{b}}{\sqrt{}}\right.}{(bd-ae}$$

Mathematica [C] Result contains higher order function than in optimal. Order 5 vs. order 4 in optimal.
time = 2.95, size = 197, normalized size = 0.53

$$\frac{2\left(-\frac{6\left(\frac{b(d+ex)}{e(a+bx)}\right)^{3/2}{}_3F_2\left(\frac{5}{2},\frac{5}{2},\frac{5}{2};\frac{7}{2},\frac{7}{2};\frac{-bd+ae}{e(a+bx)}\right)}{e(a+bx)}+\frac{25\left(\sqrt{bd-ae}\,(4bd-ae+3bex)-3e^{3/2}(a+bx)^{3/2}\left(\frac{b(d+ex)}{e(a+bx)}\right)^{3/2}\sinh^{-1}\left(\frac{\sqrt{bd-ae}}{\sqrt{e}\,\sqrt{a+bx}}\right)\right)\log(a+bx)}{(bd-ae)^{5/2}}\right)}{75(d+ex)^{3/2}}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[Log[a + b*x]/((a + b*x)*(d + e*x)^(5/2)),x]
```

```
[Out] (2*((-6*((b*(d + e*x))/(e*(a + b*x)))^(3/2)*HypergeometricPFQ[{5/2, 5/2, 5/
2}, {7/2, 7/2}, (-(b*d) + a*e)/(e*(a + b*x))])/(e*(a + b*x)) + (25*(Sqrt[b*
d - a*e]*(4*b*d - a*e + 3*b*e*x) - 3*e^(3/2)*(a + b*x)^(3/2)*((b*(d + e*x))
/(e*(a + b*x)))^(3/2)*ArcSinh[Sqrt[b*d - a*e]/(Sqrt[e]*Sqrt[a + b*x])])*Log
[a + b*x])/(b*d - a*e)^(5/2)))/(75*(d + e*x)^(3/2))
```

Maple [F]
time = 0.37, size = 0, normalized size = 0.00

$$\int \frac{\ln(bx+a)}{(bx+a)(ex+d)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(b*x+a)/(b*x+a)/(e*x+d)^(5/2),x)
```

```
[Out] int(ln(b*x+a)/(b*x+a)/(e*x+d)^(5/2),x)
```

Maxima [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(b*x+a)/(b*x+a)/(e*x+d)^(5/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*d-%e*a>0)', see `assume?` for mor
e detai
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(b*x+a)/(b*x+a)/(e*x+d)^(5/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(x*e + d)*log(b*x + a)/(b*d^3*x + a*d^3 + (b*x^4 + a*x^3)*e^3
+ 3*(b*d*x^3 + a*d*x^2)*e^2 + 3*(b*d^2*x^2 + a*d^2*x)*e), x)
```

Sympy [**F(-1)**] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(b*x+a)/(b*x+a)/(e*x+d)**(5/2),x)
```

```
[Out] Timed out
```

Giac [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(b*x+a)/(b*x+a)/(e*x+d)^(5/2),x, algorithm="giac")
```

```
[Out] integrate(log(b*x + a)/((b*x + a)*(x*e + d)^(5/2)), x)
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\ln(a+b\,x)}{(a+b\,x)\,\left(d+e\,x\right)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(log(a + b*x)/((a + b*x)*(d + e*x)^(5/2)),x)
```

```
[Out] int(log(a + b*x)/((a + b*x)*(d + e*x)^(5/2)), x)
```

3.209 $\int \frac{(h+ix)^q(a+b\log(c(e+fx)))^p}{de+dfx}\,dx$

Optimal. Leaf size=35

$$\text{Int}\left(\frac{(h+ix)^q(a+b\log(c(e+fx)))^p}{de+dfx},x\right)$$

```
[Out] Unintegrable((i*x+h)^q*(a+b*ln(c*(f*x+e)))^p/(d*f*x+d*e),x)
```

Rubi [A]
time = 0.08, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int \frac{(h+ix)^q(a+b\log(c(e+fx)))^p}{de+dfx}\,dx$$

Verification is not applicable to the result.

```
[In] Int[((h + i*x)^q*(a + b*Log[c*(e + f*x)])^p)/(d*e + d*f*x),x]
[Out] Defer[Int][((h + i*x)^q*(a + b*Log[c*(e + f*x)])^p)/(d*e + d*f*x), x]
```

Rubi steps

$$\int \frac{(h+209x)^q(a+b\log(c(e+fx)))^p}{de+dfx}\,dx = \int \frac{(h+209x)^q(a+b\log(c(e+fx)))^p}{de+dfx}\,dx$$

Mathematica [A]
time = 0.51, size = 0, normalized size = 0.00

$$\int \frac{(h+ix)^q(a+b\log(c(e+fx)))^p}{de+dfx}\,dx$$

Verification is not applicable to the result.

```
[In] Integrate[((h + i*x)^q*(a + b*Log[c*(e + f*x)])^p)/(d*e + d*f*x),x]
[Out] Integrate[((h + i*x)^q*(a + b*Log[c*(e + f*x)])^p)/(d*e + d*f*x), x]
```

Maple [A]
time = 0.26, size = 0, normalized size = 0.00

$$\int \frac{(ix+h)^q\,(a+b\ln(c(fx+e)))^p}{dfx+ed}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((i*x+h)^q*(a+b*ln(c*(f*x+e)))^p/(d*f*x+d*e),x)
```

```
[Out] int((i*x+h)^q*(a+b*ln(c*(f*x+e)))^p/(d*f*x+d*e),x)
```

Maxima [A]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^q*(a+b*log(c*(f*x+e)))^p/(d*f*x+d*e),x, algorithm="maxima
")
```

```
[Out] integrate((b*log((f*x + e)*c) + a)^p*(h + I*x)^q/(d*f*x + d*e), x)
```

Fricas [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^q*(a+b*log(c*(f*x+e)))^p/(d*f*x+d*e),x, algorithm="fricas
")
```

```
[Out] integral((b*log(c*f*x + c*e) + a)^p*(h + I*x)^q/(d*f*x + d*e), x)
```

Sympy [F(-1)] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)**q*(a+b*ln(c*(f*x+e)))**p/(d*f*x+d*e),x)
```

```
[Out] Timed out
```

Giac [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^q*(a+b*log(c*(f*x+e)))^p/(d*f*x+d*e),x, algorithm="giac")
```

```
[Out] Exception raised: RuntimeError >> An error occurred running a Giac command:
INPUT:sage2OUTPUT:Simplification assuming sageVARc near 0Simplification ass
```

```
uming sageVARf near 0Simplification assuming t_nostep near 0Simplification
assuming
```

Mupad [A]
time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{(h+i\,x)^q\,(a+b\,\ln\left(c\,(e+f\,x)\right))^p}{d\,e+d\,f\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((h + i*x)^q*(a + b*log(c*(e + f*x)))^p)/(d*e + d*f*x),x)
[Out] int(((h + i*x)^q*(a + b*log(c*(e + f*x)))^p)/(d*e + d*f*x), x)
```

3.210 $\int \frac{(h+ix)^3(a+b\log(c(e+fx)))^p}{de+dfx}\,dx$

Optimal. Leaf size=305

$$\frac{(fh-ei)^3(a+b\log(c(e+fx)))^{1+p}}{bdf^4(1+p)}+\frac{3^{-1-p}e^{-\frac{3a}{b}}i^3\Gamma\left(1+p,-\frac{3(a+b\log(c(e+fx)))}{b}\right)(a+b\log(c(e+fx)))^p\left(-\frac{a+}{}\right.}{c^3df^4}$$

```
[Out] (-e*i+f*h)^3*(a+b*ln(c*(f*x+e)))^(1+p)/b/d/f^4/(1+p)+3^(-1-p)*i^3*GAMMA(1+p
,-3*(a+b*ln(c*(f*x+e)))/b)*(a+b*ln(c*(f*x+e)))^p/c^3/d/exp(3*a/b)/f^4/(((-a
-b*ln(c*(f*x+e)))/b)^p)+3*2^(-1-p)*i^2*(-e*i+f*h)*GAMMA(1+p,-2*(a+b*ln(c*(f
*x+e)))/b)*(a+b*ln(c*(f*x+e)))^p/c^2/d/exp(2*a/b)/f^4/(((-a-b*ln(c*(f*x+e))
)/b)^p)+3*i*(-e*i+f*h)^2*GAMMA(1+p,(-a-b*ln(c*(f*x+e)))/b)*(a+b*ln(c*(f*x+e
)))^p/c/d/exp(a/b)/f^4/(((-a-b*ln(c*(f*x+e)))/b)^p)
```

Rubi [A]
time = 0.46, antiderivative size = 305, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 8, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}} = 0.250$, Rules used = {2458, 12, 2395, 2336, 2212, 2339, 30, 2346}

$$\frac{i^3 3^{-p-1}e^{-\frac{3a}{b}}(a+b\log(c(e+fx)))^p\left(-\frac{a+b\log(c(e+fx))}{b}\right)^{-p}\text{Gamma}\left(p+1,-\frac{3(a+b\log(c(e+fx)))}{b}\right)}{c^3df^4}+\frac{3i^2 2^{-p-1}e^{-\frac{2a}{b}}(fh-ei)(a+b\log(c(e+fx)))^p\left(-\frac{a+b\log(c(e+fx))}{b}\right)^{-p}\text{Gamma}\left(p+1,-\frac{2(a+b\log(c(e+fx)))}{b}\right)}{c^2df^4}+\frac{3ie^{-\frac{a}{b}}(fh-ei)^2(a+b\log(c(e+fx)))^p\left(-\frac{a+b\log(c(e+fx))}{b}\right)^{-p}\text{Gamma}\left(p+1,-\frac{a+b\log(c(e+fx))}{b}\right)}{cdf^4}+\frac{(fh-ei)^3(a+b\log(c(e+fx)))^{p+1}}{bdf^4(p+1)}$$

Antiderivative was successfully verified.

```
[In] Int[((h + i*x)^3*(a + b*Log[c*(e + f*x)])^p)/(d*e + d*f*x),x]
```

```
[Out] ((f*h - e*i)^3*(a + b*Log[c*(e + f*x)])^(1 + p))/(b*d*f^4*(1 + p)) + (3^(-1
 - p)*i^3*Gamma[1 + p, (-3*(a + b*Log[c*(e + f*x)]))/b]*(a + b*Log[c*(e + f
*x)])^p)/(c^3*d*E^((3*a)/b)*f^4*(-((a + b*Log[c*(e + f*x)])/b))^p) + (3*2^(
-1 - p)*i^2*(f*h - e*i)*Gamma[1 + p, (-2*(a + b*Log[c*(e + f*x)]))/b]*(a +
b*Log[c*(e + f*x)])^p)/(c^2*d*E^((2*a)/b)*f^4*(-((a + b*Log[c*(e + f*x)])/b
))^p) + (3*i*(f*h - e*i)^2*Gamma[1 + p, -((a + b*Log[c*(e + f*x)])/b)]*(a +
 b*Log[c*(e + f*x)])^p)/(c*d*E^(a/b)*f^4*(-((a + b*Log[c*(e + f*x)])/b))^p)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 2212

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))*((c_.) + (d_.)*(x_))^(m_), x_Symbol]
:> Simp[(-F^(g*(e - c*(f/d))))*((c + d*x)^FracPart[m]/(d*((-f)*g*(Log[F]/d)
```

```
)^(IntPart[m] + 1)*((-f)*g*Log[F]*((c + d*x)/d))^FracPart[m]))*Gamma[m + 1,
 ((-f)*g*(Log[F]/d))*(c + d*x)], x] /; FreeQ[{F, c, d, e, f, g, m}, x] &&
!IntegerQ[m]
```

Rule 2336

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[1/(n*c^(1
/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b,
 c, p}, x] && IntegerQ[1/n]
```

Rule 2339

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] :> Dist[1/(
b*n), Subst[Int[x^p, x], x, a + b*Log[c*x^n]], x] /; FreeQ[{a, b, c, n, p},
 x]
```

Rule 2346

```
Int[((a_.) + Log[(c_.)*(x_)]*(b_.))^(p_)*(x_)^(m_.), x_Symbol] :> Dist[1/c^
(m + 1), Subst[Int[E^((m + 1)*x)*(a + b*x)^p, x], x, Log[c*x]], x] /; FreeQ
[{a, b, c, p}, x] && IntegerQ[m]
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((f_.)*(x_))^(m_.)*((d_) +
(e_.)*(x_)^(r_.))^(q_.), x_Symbol] :> With[{u = ExpandIntegrand[(a + b*Log[
c*x^n])^p, (f*x)^m*(d + e*x^r)^q, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b
, c, d, e, f, m, n, p, q, r}, x] && IntegerQ[q] && (GtQ[q, 0] || (IGtQ[p, 0
] && IntegerQ[m] && IntegerQ[r]))
```

Rule 2458

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[(g*(x/e))^q*((e*h - d*i)/e + i*(x/e))^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(h+210x)^3(a+b\log(c(e+fx)))^p}{de+dfx}\,dx &= \frac{\text{Subst}\left(\int \frac{\left(\frac{-210e+fh}{f}+\frac{210x}{f}\right)^3(a+b\log(cx))^p}{dx}\,dx,x,e+fx\right)}{f} \\
&= \frac{\text{Subst}\left(\int \frac{\left(\frac{-210e+fh}{f}+\frac{210x}{f}\right)^3(a+b\log(cx))^p}{x}\,dx,x,e+fx\right)}{df} \\
&= \frac{\text{Subst}\left(\int \left(\frac{630(210e-fh)^2(a+b\log(cx))^p}{f^3}-\frac{(210e-fh)^3(a+b\log(cx))^p}{f^3x}-\frac{13230}{}\right.\right.}{df} \\
&= \frac{9261000\text{Subst}\left(\int x^2(a+b\log(cx))^p\,dx,x,e+fx\right)}{df^4}-\frac{(132300(2}{} \\
&= \frac{9261000\text{Subst}\left(\int e^{3x}(a+bx)^p\,dx,x,\log(c(e+fx))\right)}{c^3df^4}-\frac{(132300}{} \\
&= -\frac{(210e-fh)^3(a+b\log(c(e+fx)))^{1+p}}{bdf^4(1+p)}+\frac{343000\ 3^{2-p}e^{-\frac{3a}{b}}\Gamma\left(\right.}{}
\end{aligned}
$$

Mathematica [A]
time = 0.84, size = 247, normalized size = 0.81

$$
\frac{6^{-1-p}e^{-\frac{3a}{b}}(a+b\log(c(e+fx)))^p\left(-\frac{a+b\log(c(e+fx))}{b}\right)^{-p}\left(2^{1+p}bi^3(1+p)\Gamma\left(1+p,-\frac{3(a+b\log(c(e+fx)))}{b}\right)+3^{1+p}ce^{a/b}(fh-ei)\left(3bi^2(1+p)\Gamma\left(1+p,-\frac{2(a+b\log(c(e+fx)))}{b}\right)+2^{1+p}ce^{a/b}(fh-ei)\left(3bi(1+p)\Gamma\left(1+p,-\frac{a+b\log(c(e+fx))}{b}\right)-bce^{a/b}(fh-ei)\left(-\frac{a+b\log(c(e+fx))}{b}\right)^{1+p}\right)\right)\right)}{bc^3df^4(1+p)}
$$

Antiderivative was successfully verified.

```
[In] Integrate[((h + i*x)^3*(a + b*Log[c*(e + f*x)])^p)/(d*e + d*f*x),x]
```

```
[Out] (6^(-1 - p)*(a + b*Log[c*(e + f*x)])^p*(2^(1 + p)*b*i^3*(1 + p)*Gamma[1 + p
, (-3*(a + b*Log[c*(e + f*x)]))/b] + 3^(1 + p)*c*E^(a/b)*(f*h - e*i)*(3*b*i
^2*(1 + p)*Gamma[1 + p, (-2*(a + b*Log[c*(e + f*x)]))/b] + 2^(1 + p)*c*E^(a
/b)*(f*h - e*i)*(3*b*i*(1 + p)*Gamma[1 + p, -((a + b*Log[c*(e + f*x)])/b)]
- b*c*E^(a/b)*(f*h - e*i)*(-((a + b*Log[c*(e + f*x)])/b))^(1 + p)))))/(b*c^
3*d*E^((3*a)/b)*f^4*(1 + p)*(-((a + b*Log[c*(e + f*x)])/b))^p)
```

Maple [F]
time = 0.26, size = 0, normalized size = 0.00

$$
\int \frac{(ix+h)^3\,(a+b\ln(c(fx+e)))^p}{dfx+ed}\,dx
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((i*x+h)^3*(a+b*ln(c*(f*x+e)))^p/(d*f*x+d*e),x)
```

```
[Out] int((i*x+h)^3*(a+b*ln(c*(f*x+e)))^p/(d*f*x+d*e),x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^3*(a+b*log(c*(f*x+e)))^p/(d*f*x+d*e),x, algorithm="maxima
")
```

```
[Out] (b*c*log(c*f*x + c*e) + a*c)*(b*log(c*f*x + c*e) + a)^p*h^3/(b*c*d*f*(p + 1
)) - integrate((-3*I*h^2*x + 3*h*x^2 + I*x^3)*(b*log(f*x + e) + b*log(c) +
a)^p/(d*f*x + d*e), x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^3*(a+b*log(c*(f*x+e)))^p/(d*f*x+d*e),x, algorithm="fricas
")
```

```
[Out] integral((h^3 + 3*I*h^2*x - 3*h*x^2 - I*x^3)*(b*log(c*f*x + c*e) + a)^p/(d*
f*x + d*e), x)
```

Sympy [F(-1)] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)**3*(a+b*ln(c*(f*x+e)))**p/(d*f*x+d*e),x)
```

```
[Out] Timed out
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^3*(a+b*log(c*(f*x+e)))^p/(d*f*x+d*e),x, algorithm="giac")
```

```
[Out] integrate((b*log((f*x + e)*c) + a)^p*(h + I*x)^3/(d*f*x + d*e), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(h+i\,x)^3\,(a+b\,\ln(c\,(e+f\,x)))^p}{d\,e+d\,f\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((h + i*x)^3*(a + b*log(c*(e + f*x)))^p)/(d*e + d*f*x),x)
[Out] int(((h + i*x)^3*(a + b*log(c*(e + f*x)))^p)/(d*e + d*f*x), x)
```

3.211 $\int \frac{(h+ix)^2(a+b\log(c(e+fx)))^p}{de+dfx}\,dx$

Optimal. Leaf size=210

$$\frac{(fh-ei)^2(a+b\log(c(e+fx)))^{1+p}}{bdf^3(1+p)}+\frac{2^{-1-p}e^{-\frac{2a}{b}}i^2\Gamma\left(1+p,-\frac{2(a+b\log(c(e+fx)))}{b}\right)(a+b\log(c(e+fx)))^p\left(-\frac{a+b\log(c(e+fx))}{b}\right)^{-p}}{c^2df^3}$$

```
[Out] (-e*i+f*h)^2*(a+b*ln(c*(f*x+e)))^(1+p)/b/d/f^3/(1+p)+2^(-1-p)*i^2*GAMMA(1+p
,-2*(a+b*ln(c*(f*x+e)))/b)*(a+b*ln(c*(f*x+e)))^p/c^2/d/exp(2*a/b)/f^3/(((-a
-b*ln(c*(f*x+e)))/b)^p)+2*i*(-e*i+f*h)*GAMMA(1+p,(-a-b*ln(c*(f*x+e)))/b)*(a
+b*ln(c*(f*x+e)))^p/c/d/exp(a/b)/f^3/(((-a-b*ln(c*(f*x+e)))/b)^p)
```

Rubi [A]
time = 0.34, antiderivative size = 210, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 8, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {2458, 12, 2395, 2336, 2212, 2339, 30, 2346}

$$\frac{i^2 2^{-p-1}e^{-\frac{2a}{b}}(a+b\log(c(e+fx)))^p\left(-\frac{a+b\log(c(e+fx))}{b}\right)^{-p}\text{Gamma}\left(p+1,-\frac{2(a+b\log(c(e+fx)))}{b}\right)}{c^2df^3}+\frac{2ie^{-\frac{a}{b}}(fh-ei)(a+b\log(c(e+fx)))^p\left(-\frac{a+b\log(c(e+fx))}{b}\right)^{-p}\text{Gamma}\left(p+1,-\frac{a+b\log(c(e+fx))}{b}\right)}{cdf^3}+\frac{(fh-ei)^2(a+b\log(c(e+fx)))^{p+1}}{bdf^3(p+1)}$$

Antiderivative was successfully verified.

```
[In] Int[((h + i*x)^2*(a + b*Log[c*(e + f*x)])^p)/(d*e + d*f*x),x]
```

```
[Out] ((f*h - e*i)^2*(a + b*Log[c*(e + f*x)])^(1 + p))/(b*d*f^3*(1 + p)) + (2^(-1
 - p)*i^2*Gamma[1 + p, (-2*(a + b*Log[c*(e + f*x)]))/b]*(a + b*Log[c*(e + f
*x)])^p)/(c^2*d*E^((2*a)/b)*f^3*(-((a + b*Log[c*(e + f*x)])/b))^p) + (2*i*(
f*h - e*i)*Gamma[1 + p, -((a + b*Log[c*(e + f*x)])/b)]*(a + b*Log[c*(e + f*
x)])^p)/(c*d*E^(a/b)*f^3*(-((a + b*Log[c*(e + f*x)])/b))^p)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 2212

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))*((c_.) + (d_.)*(x_))^(m_), x_Symbol]
:> Simp[(-F^(g*(e - c*(f/d))))*((c + d*x)^FracPart[m]/(d*((-f)*g*(Log[F]/d)
)^(IntPart[m] + 1)*((-f)*g*Log[F]*((c + d*x)/d))^FracPart[m]))*Gamma[m + 1,
 ((-f)*g*(Log[F]/d))*(c + d*x)], x] /; FreeQ[{F, c, d, e, f, g, m}, x] &&
!IntegerQ[m]
```

Rule 2336

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[1/(n*c^(1
/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b,
 c, p}, x] && IntegerQ[1/n]
```

Rule 2339

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] :> Dist[1/(
b*n), Subst[Int[x^p, x], x, a + b*Log[c*x^n]], x] /; FreeQ[{a, b, c, n, p},
 x]
```

Rule 2346

```
Int[((a_.) + Log[(c_.)*(x_)]*(b_.))^(p_)*(x_)^(m_.), x_Symbol] :> Dist[1/c^
(m + 1), Subst[Int[E^((m + 1)*x)*(a + b*x)^p, x], x, Log[c*x]], x] /; FreeQ
[{a, b, c, p}, x] && IntegerQ[m]
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((f_.)*(x_))^(m_.)*((d_) +
(e_.)*(x_)^(r_.))^(q_.), x_Symbol] :> With[{u = ExpandIntegrand[(a + b*Log[
c*x^n])^p, (f*x)^m*(d + e*x^r)^q, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b
, c, d, e, f, m, n, p, q, r}, x] && IntegerQ[q] && (GtQ[q, 0] || (IGtQ[p, 0
] && IntegerQ[m] && IntegerQ[r]))
```

Rule 2458

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[(g*(x/e))^q*((e*h - d*i)/e + i*(x/e))^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rubi steps

$$\int \frac{(h+211x)^2(a+b\log(c(e+fx)))^p}{de+dfx}\,dx = \frac{\text{Subst}\left(\int \frac{\left(\frac{-211e+fh}{f}+\frac{211x}{f}\right)^2(a+b\log(cx))^p}{dx}\,dx, x, e+fx\right)}{f}$$

$$= \frac{\text{Subst}\left(\int \frac{\left(\frac{-211e+fh}{f}+\frac{211x}{f}\right)^2(a+b\log(cx))^p}{x}\,dx, x, e+fx\right)}{df}$$

$$= \frac{\text{Subst}\left(\int \left(-\frac{422(211e-fh)(a+b\log(cx))^p}{f^2}+\frac{(211e-fh)^2(a+b\log(cx))^p}{f^2x}+\frac{44521}{}\right.\right.}{df}$$

$$= \frac{44521\text{Subst}\left(\int x(a+b\log(cx))^p\,dx, x, e+fx\right)}{df^3} - \frac{(422(211e-f}{}$$

$$= \frac{44521\text{Subst}\left(\int e^{2x}(a+bx)^p\,dx, x, \log(c(e+fx))\right)}{c^2df^3} - \frac{(422(211e-}{}$$

$$= \frac{(211e-fh)^2(a+b\log(c(e+fx)))^{1+p}}{bdf^3(1+p)} + \frac{44521\ 2^{-1-p}e^{-\frac{2a}{b}}\Gamma\left(1+\right.}{}$$

Mathematica [A]
time = 0.27, size = 189, normalized size = 0.90

$$\frac{2^{-1-p}e^{-\frac{2a}{b}}(a+b\log(c(e+fx)))^p\left(-\frac{a+b\log(c(e+fx))}{b}\right)^{-p}\left(bi^2(1+p)\Gamma\left(1+p,-\frac{2(a+b\log(c(e+fx)))}{b}\right)+2^{1+p}ce^{a/b}(fh-ei)\left(2bi(1+p)\Gamma\left(1+p,-\frac{a+b\log(c(e+fx))}{b}\right)-bce^{a/b}(fh-ei)\left(-\frac{a+b\log(c(e+fx))}{b}\right)^{1+p}\right)\right)}{bc^2df^3(1+p)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((h + i*x)^2*(a + b*Log[c*(e + f*x)])^p)/(d*e + d*f*x),x]
```

```
[Out] (2^(-1 - p)*(a + b*Log[c*(e + f*x)])^p*(b*i^2*(1 + p)*Gamma[1 + p, (-2*(a +
 b*Log[c*(e + f*x)]))/b] + 2^(1 + p)*c*E^(a/b)*(f*h - e*i)*(2*b*i*(1 + p)*G
amma[1 + p, -((a + b*Log[c*(e + f*x)])/b)] - b*c*E^(a/b)*(f*h - e*i)*(-((a
+ b*Log[c*(e + f*x)])/b))^(1 + p))))/(b*c^2*d*E^((2*a)/b)*f^3*(1 + p)*(-((a
 + b*Log[c*(e + f*x)])/b))^p)
```

Maple [F]
time = 0.34, size = 0, normalized size = 0.00

$$\int \frac{(ix+h)^2\,(a+b\ln(c(fx+e)))^p}{dfx+ed}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((i*x+h)^2*(a+b*ln(c*(f*x+e)))^p/(d*f*x+d*e),x)
```

```
[Out] int((i*x+h)^2*(a+b*ln(c*(f*x+e)))^p/(d*f*x+d*e),x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^2*(a+b*log(c*(f*x+e)))^p/(d*f*x+d*e),x, algorithm="maxima
")
```

```
[Out] (b*c*log(c*f*x + c*e) + a*c)*(b*log(c*f*x + c*e) + a)^p*h^2/(b*c*d*f*(p + 1
)) - integrate((-2*I*h*x + x^2)*(b*log(f*x + e) + b*log(c) + a)^p/(d*f*x +
d*e), x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^2*(a+b*log(c*(f*x+e)))^p/(d*f*x+d*e),x, algorithm="fricas
")
```

```
[Out] integral((h^2 + 2*I*h*x - x^2)*(b*log(c*f*x + c*e) + a)^p/(d*f*x + d*e), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{h^2(a+b\log{(ce+cfx)})^p}{e+fx}\,dx + \int \frac{i^2x^2(a+b\log{(ce+cfx)})^p}{e+fx}\,dx + \int \frac{2hix(a+b\log{(ce+cfx)})^p}{e+fx}\,dx}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)**2*(a+b*ln(c*(f*x+e)))**p/(d*f*x+d*e),x)
```

```
[Out] (Integral(h**2*(a + b*log(c*e + c*f*x))**p/(e + f*x), x) + Integral(i**2*x*
*2*(a + b*log(c*e + c*f*x))**p/(e + f*x), x) + Integral(2*h*i*x*(a + b*log(
c*e + c*f*x))**p/(e + f*x), x))/d
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^2*(a+b*log(c*(f*x+e)))^p/(d*f*x+d*e),x, algorithm="giac")
```

```
[Out] integrate((b*log((f*x + e)*c) + a)^p*(h + I*x)^2/(d*f*x + d*e), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(h+i\,x)^2\,(a+b\,\ln(c\,(e+f\,x)))^p}{d\,e+d\,f\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((h + i*x)^2*(a + b*log(c*(e + f*x)))^p)/(d*e + d*f*x),x)
[Out] int(((h + i*x)^2*(a + b*log(c*(e + f*x)))^p)/(d*e + d*f*x), x)
```

3.212 $\int \frac{(h+ix)(a+b\log(c(e+fx)))^p}{de+dfx}\,dx$

Optimal. Leaf size=115

$$\frac{(fh-ei)(a+b\log(c(e+fx)))^{1+p}}{bdf^2(1+p)}+\frac{e^{-\frac{a}{b}}i\Gamma\left(1+p,-\frac{a+b\log(c(e+fx))}{b}\right)(a+b\log(c(e+fx)))^p\left(-\frac{a+b\log(c(e+fx))}{b}\right.}{cdf^2}$$

```
[Out] (-e*i+f*h)*(a+b*ln(c*(f*x+e)))^(1+p)/b/d/f^2/(1+p)+i*GAMMA(1+p,(-a-b*ln(c*(
f*x+e)))/b)*(a+b*ln(c*(f*x+e)))^p/c/d/exp(a/b)/f^2/(((-a-b*ln(c*(f*x+e)))/b
)^p)
```

Rubi [A]
time = 0.20, antiderivative size = 115, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 7, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}} = 0.233$, Rules used = {2458, 12, 2395, 2336, 2212, 2339, 30}

$$\frac{ie^{-\frac{a}{b}}(a+b\log(c(e+fx)))^p\left(-\frac{a+b\log(c(e+fx))}{b}\right)^{-p}\text{Gamma}\left(p+1,-\frac{a+b\log(c(e+fx))}{b}\right)}{cdf^2}+\frac{(fh-ei)(a+b\log(c(e+fx)))^{p+1}}{bdf^2(p+1)}$$

Antiderivative was successfully verified.

```
[In] Int[((h + i*x)*(a + b*Log[c*(e + f*x)])^p)/(d*e + d*f*x),x]
```

```
[Out] ((f*h - e*i)*(a + b*Log[c*(e + f*x)])^(1 + p))/(b*d*f^2*(1 + p)) + (i*Gamma
[1 + p, -((a + b*Log[c*(e + f*x)])/b)]*(a + b*Log[c*(e + f*x)])^p)/(c*d*E^(
a/b)*f^2*(-((a + b*Log[c*(e + f*x)])/b))^p)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 2212

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))*((c_.) + (d_.)*(x_))^(m_), x_Symbol]
:> Simp[(-F^(g*(e - c*(f/d))))*((c + d*x)^FracPart[m]/(d*((-f)*g*(Log[F]/d)
)^(IntPart[m] + 1)*((-f)*g*Log[F]*((c + d*x)/d))^FracPart[m]))*Gamma[m + 1,
 ((-f)*g*(Log[F]/d))*(c + d*x)], x] /; FreeQ[{F, c, d, e, f, g, m}, x] &&
!IntegerQ[m]
```

Rule 2336

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[1/(n*c^(1
/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b,
 c, p}, x] && IntegerQ[1/n]
```

Rule 2339

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] :> Dist[1/(
b*n), Subst[Int[x^p, x], x, a + b*Log[c*x^n]], x] /; FreeQ[{a, b, c, n, p},
 x]
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((f_.)*(x_))^(m_.)*((d_) +
(e_.)*(x_)^(r_.))^(q_.), x_Symbol] :> With[{u = ExpandIntegrand[(a + b*Log[
c*x^n])^p, (f*x)^m*(d + e*x^r)^q, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b
, c, d, e, f, m, n, p, q, r}, x] && IntegerQ[q] && (GtQ[q, 0] || (IGtQ[p, 0
] && IntegerQ[m] && IntegerQ[r]))
```

Rule 2458

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[(g*(x/e))^q*((e*h - d*i)/e + i*(x/e))^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rubi steps

$$\int \frac{(h+212x)(a+b\log(c(e+fx)))^p}{de+dfx}\,dx = \frac{\text{Subst}\left(\int \frac{\left(\frac{-212e+fh}{f}+\frac{212x}{f}\right)(a+b\log(cx))^p}{dx}\,dx, x, e+fx\right)}{f}$$

$$= \frac{\text{Subst}\left(\int \frac{\left(\frac{-212e+fh}{f}+\frac{212x}{f}\right)(a+b\log(cx))^p}{x}\,dx, x, e+fx\right)}{df}$$

$$= \frac{\text{Subst}\left(\int \left(\frac{212(a+b\log(cx))^p}{f}+\frac{(-212e+fh)(a+b\log(cx))^p}{fx}\right)\,dx, x, e+fx\right)}{df}$$

$$= \frac{212\text{Subst}\left(\int (a+b\log(cx))^p\,dx, x, e+fx\right)}{df^2} - \frac{(212e-fh)\text{Subst}\left(\right.}{}$$

$$= \frac{212\text{Subst}\left(\int e^x(a+bx)^p\,dx, x, \log(c(e+fx))\right)}{cdf^2} - \frac{(212e-fh)\text{Su}}{}$$

$$= -\frac{(212e-fh)(a+b\log(c(e+fx)))^{1+p}}{bdf^2(1+p)} + \frac{212e^{-\frac{a}{b}}\Gamma\left(1+p, -\frac{a+b}{}\right.}{}$$

Mathematica [A]
time = 0.16, size = 106, normalized size = 0.92

$$\frac{(a+b\log(c(e+fx)))^p\left(\frac{(fh-ei)(a+b\log(c(e+fx)))}{b(1+p)}+\frac{e^{-\frac{a}{b}}i\Gamma\left(1+p,-\frac{a+b\log(c(e+fx))}{b}\right)\left(-\frac{a+b\log(c(e+fx))}{b}\right)^{-p}}{c}\right)}{df^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((h + i*x)*(a + b*Log[c*(e + f*x)])^p)/(d*e + d*f*x),x]
[Out] ((a + b*Log[c*(e + f*x)])^p*(((f*h - e*i)*(a + b*Log[c*(e + f*x)]))/(b*(1 +
 p)) + (i*Gamma[1 + p, -((a + b*Log[c*(e + f*x)])/b)])/(c*E^(a/b)*(-((a + b
*Log[c*(e + f*x)])/b))^p)))/(d*f^2)
```

Maple [F]
time = 0.22, size = 0, normalized size = 0.00

$$\int \frac{(ix+h)\left(a+b\ln\left(c(fx+e)\right)\right)^p}{dfx+ed}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((i*x+h)*(a+b*ln(c*(f*x+e)))^p/(d*f*x+d*e),x)
[Out] int((i*x+h)*(a+b*ln(c*(f*x+e)))^p/(d*f*x+d*e),x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)*(a+b*log(c*(f*x+e)))^p/(d*f*x+d*e),x, algorithm="maxima")
```

```
[Out] (b*c*log(c*f*x + c*e) + a*c)*(b*log(c*f*x + c*e) + a)^p*h/(b*c*d*f*(p + 1))
 + I*integrate((b*log(f*x + e) + b*log(c) + a)^p*x/(d*f*x + d*e), x)
```

Fricas [A]
time = 0.10, size = 121, normalized size = 1.05

$$\frac{(i\,bp+i\,b)e^{\left(-\frac{bp\log\left(-\frac{1}{b}\right)+a}{b}\right)}\Gamma\left(p+1,-\frac{b\log(cfx+ce)+a}{b}\right)+(acfh-i\,ace+(bcfh-i\,bce)\log(cfx+ce))(b\log(cfx+ce)+a)^p}{bcdf^2p+bcdf^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)*(a+b*log(c*(f*x+e)))^p/(d*f*x+d*e),x, algorithm="fricas")
```

```
[Out] ((I*b*p + I*b)*e^(-(b*p*log(-1/b) + a)/b)*gamma(p + 1, -(b*log(c*f*x + c*e)
 + a)/b) + (a*c*f*h - I*a*c*e + (b*c*f*h - I*b*c*e)*log(c*f*x + c*e))*(b*lo
g(c*f*x + c*e) + a)^p)/(b*c*d*f^2*p + b*c*d*f^2)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{h(a+b\log(ce+cfx))^p}{e+fx}\,dx+\int \frac{ix(a+b\log(ce+cfx))^p}{e+fx}\,dx}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)*(a+b*ln(c*(f*x+e)))**p/(d*f*x+d*e),x)
```

```
[Out] (Integral(h*(a + b*log(c*e + c*f*x))**p/(e + f*x), x) + Integral(i*x*(a + b
*log(c*e + c*f*x))**p/(e + f*x), x))/d
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)*(a+b*log(c*(f*x+e)))^p/(d*f*x+d*e),x, algorithm="giac")
```

```
[Out] integrate((b*log((f*x + e)*c) + a)^p*(h + I*x)/(d*f*x + d*e), x)
```

Mupad [F]

time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(h+i\,x)\,\left(a+b\,\ln\left(c\,\left(e+f\,x\right)\right)\right)^p}{d\,e+d\,f\,x} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((h + i*x)*(a + b*log(c*(e + f*x)))^p)/(d*e + d*f*x),x)
[Out] int(((h + i*x)*(a + b*log(c*(e + f*x)))^p)/(d*e + d*f*x), x)
```

3.213 $\int \frac{(a+b\log(c(e+fx)))^p}{de+dfx}\,dx$

Optimal. Leaf size=31

$$\frac{(a+b\log(c(e+fx)))^{1+p}}{bdf(1+p)}$$

```
[Out] (a+b*ln(c*(f*x+e)))^(1+p)/b/d/f/(1+p)
```

Rubi [A]
time = 0.06, antiderivative size = 31, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.160$, Rules used = {2437, 12, 2339, 30}

$$\frac{(a+b\log(c(e+fx)))^{p+1}}{bdf(p+1)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(e + f*x)])^p/(d*e + d*f*x),x]
```

```
[Out] (a + b*Log[c*(e + f*x)])^(1 + p)/(b*d*f*(1 + p))
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 2339

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] :> Dist[1/(
b*n), Subst[Int[x^p, x], x, a + b*Log[c*x^n]], x] /; FreeQ[{a, b, c, n, p},
 x]
```

Rule 2437

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[(f*(x/d))^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rubi steps

$$\int \frac{(a+b\log(c(e+fx)))^p}{de+dfx}\,dx = \frac{\text{Subst}\left(\int \frac{(a+b\log(cx))^p}{dx}\,dx,x,e+fx\right)}{f}$$
$$= \frac{\text{Subst}\left(\int \frac{(a+b\log(cx))^p}{x}\,dx,x,e+fx\right)}{df}$$
$$= \frac{\text{Subst}\left(\int x^p\,dx,x,a+b\log(c(e+fx))\right)}{bdf}$$
$$= \frac{(a+b\log(c(e+fx)))^{1+p}}{bdf(1+p)}$$

Mathematica [A]
time = 0.01, size = 31, normalized size = 1.00

$$\frac{(a+b\log(c(e+fx)))^{1+p}}{bdf(1+p)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(e + f*x)])^p/(d*e + d*f*x),x]
[Out] (a + b*Log[c*(e + f*x)])^(1 + p)/(b*d*f*(1 + p))
```

Maple [A]
time = 0.21, size = 32, normalized size = 1.03

method	result	size
default	$\frac{(a+b\ln(c(fx+e)))^{1+p}}{bdf(1+p)}$	32
norman	$\frac{\ln(c(fx+e))\,e^{p\ln(a+b\ln(c(fx+e)))}}{df(1+p)}+\frac{a\,e^{p\ln(a+b\ln(c(fx+e)))}}{bdf(1+p)}$	70

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(f*x+e)))^p/(d*f*x+d*e),x,method=_RETURNVERBOSE)
[Out] (a+b*ln(c*(f*x+e)))^(1+p)/b/d/f/(1+p)
```

Maxima [A]
time = 0.27, size = 33, normalized size = 1.06

$$\frac{(b\log(cfx+ce)+a)^{p+1}}{bdf(p+1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(f*x+e)))^p/(d*f*x+d*e),x, algorithm="maxima")
[Out] (b*log(c*f*x + c*e) + a)^(p + 1)/(b*d*f*(p + 1))
```

Fricas [A]
time = 0.36, size = 43, normalized size = 1.39

$$\frac{(b\log(cfx+ce)+a)(b\log(cfx+ce)+a)^p}{bdfp+bdf}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(f*x+e)))^p/(d*f*x+d*e),x, algorithm="fricas")
[Out] (b*log(c*f*x + c*e) + a)*(b*log(c*f*x + c*e) + a)^p/(b*d*f*p + b*d*f)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{(a+b\log(ce+cfx))^p}{e+fx}\,dx}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(f*x+e)))**p/(d*f*x+d*e),x)
[Out] Integral((a + b*log(c*e + c*f*x))**p/(e + f*x), x)/d
```

Giac [A]
time = 4.00, size = 33, normalized size = 1.06

$$\frac{(b\log(cfx+ce)+a)^{p+1}}{bdf(p+1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(f*x+e)))^p/(d*f*x+d*e),x, algorithm="giac")
[Out] (b*log(c*f*x + c*e) + a)^(p + 1)/(b*d*f*(p + 1))
```

Mupad [B]
time = 0.35, size = 31, normalized size = 1.00

$$\frac{(a+b\,\ln(c\,(e+f\,x)))^{p+1}}{b\,d\,f\,(p+1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(e + f*x)))^p/(d*e + d*f*x),x)
[Out] (a + b*log(c*(e + f*x)))^(p + 1)/(b*d*f*(p + 1))
```

3.214 $\int \frac{(a+b\log(c(e+fx)))^p}{(de+dfx)(h+ix)} dx$

Optimal. Leaf size=35

$$\mathrm{Int}\left(\frac{(a+b\log(c(e+fx)))^p}{(de+dfx)(h+ix)},x\right)$$

```
[Out] Unintegrable((a+b*ln(c*(f*x+e)))^p/(d*f*x+d*e)/(i*x+h),x)
```

Rubi [A]
time = 0.09, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int \frac{(a+b\log(c(e+fx)))^p}{(de+dfx)(h+ix)} dx$$

Verification is not applicable to the result.

```
[In] Int[(a + b*Log[c*(e + f*x)])^p/((d*e + d*f*x)*(h + i*x)),x]
[Out] Defer[Int][(a + b*Log[c*(e + f*x)])^p/((d*e + d*f*x)*(h + i*x)), x]
```

Rubi steps

$$\int \frac{(a+b\log(c(e+fx)))^p}{(h+214x)(de+dfx)} dx = \int \frac{(a+b\log(c(e+fx)))^p}{(h+214x)(de+dfx)} dx$$

Mathematica [A]
time = 0.46, size = 0, normalized size = 0.00

$$\int \frac{(a+b\log(c(e+fx)))^p}{(de+dfx)(h+ix)} dx$$

Verification is not applicable to the result.

```
[In] Integrate[(a + b*Log[c*(e + f*x)])^p/((d*e + d*f*x)*(h + i*x)),x]
[Out] Integrate[(a + b*Log[c*(e + f*x)])^p/((d*e + d*f*x)*(h + i*x)), x]
```

Maple [A]
time = 0.35, size = 0, normalized size = 0.00

$$\int \frac{(a+b\ln(c(fx+e)))^p}{(dfx+ed)(ix+h)} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(f*x+e)))^p/(d*f*x+d*e)/(i*x+h),x)
```

```
[Out] int((a+b*ln(c*(f*x+e)))^p/(d*f*x+d*e)/(i*x+h),x)
```

Maxima [A]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(f*x+e)))^p/(d*f*x+d*e)/(i*x+h),x, algorithm="maxima")
```

```
[Out] integrate((b*log((f*x + e)*c) + a)^p/((d*f*x + d*e)*(h + I*x)), x)
```

Fricas [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(f*x+e)))^p/(d*f*x+d*e)/(i*x+h),x, algorithm="fricas")
```

```
[Out] integral(-I*(b*log(c*f*x + c*e) + a)^p/(-I*d*f*h*x + d*f*x^2 + (-I*d*h + d*
x)*e), x)
```

Sympy [A]
time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{(a+b\log{(ce+cfx)})^p}{eh+eix+fhx+fix^2}\,dx}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(f*x+e)))**p/(d*f*x+d*e)/(i*x+h),x)
```

```
[Out] Integral((a + b*log(c*e + c*f*x))**p/(e*h + e*i*x + f*h*x + f*i*x**2), x)/d
```

Giac [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(f*x+e)))^p/(d*f*x+d*e)/(i*x+h),x, algorithm="giac")
```

```
[Out] integrate((b*log((f*x + e)*c) + a)^p/((d*f*x + d*e)*(h + I*x)), x)
```

Mupad [A]
time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{(a+b\ln(c(e+fx)))^p}{(h+ix)(de+dfx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(e + f*x)))^p/((h + i*x)*(d*e + d*f*x)),x)
[Out] int((a + b*log(c*(e + f*x)))^p/((h + i*x)*(d*e + d*f*x)), x)
```

3.215 $\int \frac{(a+b\log(c(e+fx)))^p}{(de+dfx)(h+ix)^2}\,dx$

Optimal. Leaf size=35

$$\mathrm{Int}\left(\frac{(a+b\log(c(e+fx)))^p}{(de+dfx)(h+ix)^2},x\right)$$

```
[Out] Unintegrable((a+b*ln(c*(f*x+e)))^p/(d*f*x+d*e)/(i*x+h)^2,x)
```

Rubi [A]
time = 0.08, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int \frac{(a+b\log(c(e+fx)))^p}{(de+dfx)(h+ix)^2}\,dx$$

Verification is not applicable to the result.

```
[In] Int[(a + b*Log[c*(e + f*x)])^p/((d*e + d*f*x)*(h + i*x)^2),x]
[Out] Defer[Int][(a + b*Log[c*(e + f*x)])^p/((d*e + d*f*x)*(h + i*x)^2), x]
```

Rubi steps

$$\int \frac{(a+b\log(c(e+fx)))^p}{(h+215x)^2(de+dfx)}\,dx = \int \frac{(a+b\log(c(e+fx)))^p}{(h+215x)^2(de+dfx)}\,dx$$

Mathematica [A]
time = 1.04, size = 0, normalized size = 0.00

$$\int \frac{(a+b\log(c(e+fx)))^p}{(de+dfx)(h+ix)^2}\,dx$$

Verification is not applicable to the result.

```
[In] Integrate[(a + b*Log[c*(e + f*x)])^p/((d*e + d*f*x)*(h + i*x)^2),x]
[Out] Integrate[(a + b*Log[c*(e + f*x)])^p/((d*e + d*f*x)*(h + i*x)^2), x]
```

Maple [A]
time = 0.34, size = 0, normalized size = 0.00

$$\int \frac{(a+b\ln(c(fx+e)))^p}{(dfx+ed)\,(ix+h)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(f*x+e)))^p/(d*f*x+d*e)/(i*x+h)^2,x)
```

```
[Out] int((a+b*ln(c*(f*x+e)))^p/(d*f*x+d*e)/(i*x+h)^2,x)
```

Maxima [A]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(f*x+e)))^p/(d*f*x+d*e)/(i*x+h)^2,x, algorithm="maxima
")
```

```
[Out] integrate((b*log((f*x + e)*c) + a)^p/((d*f*x + d*e)*(h + I*x)^2), x)
```

Fricas [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(f*x+e)))^p/(d*f*x+d*e)/(i*x+h)^2,x, algorithm="fricas
")
```

```
[Out] integral((b*log(c*f*x + c*e) + a)^p/(d*f*h^2*x + 2*I*d*f*h*x^2 - d*f*x^3 +
(d*h^2 + 2*I*d*h*x - d*x^2)*e), x)
```

Sympy [F(-1)] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(f*x+e)))**p/(d*f*x+d*e)/(i*x+h)**2,x)
```

```
[Out] Timed out
```

Giac [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(f*x+e)))^p/(d*f*x+d*e)/(i*x+h)^2,x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,sageVARx):;OUTPUT:Unable to divide, perhaps due to roun
```

```
ding error%%%{1,[0,1,0,0,0,0]%%%} / %%%{1,[0,0,1,1,0,0]%%%}+%%%{i,[0,0,1,0,
1,1]%%
```

Mupad [A]
time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{(a+b\ln(c(e+fx)))^p}{(h+ix)^2(de+dfx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(e + f*x)))^p/((h + i*x)^2*(d*e + d*f*x)),x)
[Out] int((a + b*log(c*(e + f*x)))^p/((h + i*x)^2*(d*e + d*f*x)), x)
```

3.216 $\int \frac{(a+b\log(c(e+fx)))^p}{(de+dfx)(h+ix)^3}\,dx$

Optimal. Leaf size=35

$$\mathrm{Int}\left(\frac{(a+b\log(c(e+fx)))^p}{(de+dfx)(h+ix)^3},x\right)$$

```
[Out] Unintegrable((a+b*ln(c*(f*x+e)))^p/(d*f*x+d*e)/(i*x+h)^3,x)
```

Rubi [A]
time = 0.08, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int \frac{(a+b\log(c(e+fx)))^p}{(de+dfx)(h+ix)^3}\,dx$$

Verification is not applicable to the result.

```
[In] Int[(a + b*Log[c*(e + f*x)])^p/((d*e + d*f*x)*(h + i*x)^3),x]
[Out] Defer[Int][(a + b*Log[c*(e + f*x)])^p/((d*e + d*f*x)*(h + i*x)^3), x]
```

Rubi steps

$$\int \frac{(a+b\log(c(e+fx)))^p}{(h+216x)^3(de+dfx)}\,dx = \int \frac{(a+b\log(c(e+fx)))^p}{(h+216x)^3(de+dfx)}\,dx$$

Mathematica [A]
time = 2.30, size = 0, normalized size = 0.00

$$\int \frac{(a+b\log(c(e+fx)))^p}{(de+dfx)(h+ix)^3}\,dx$$

Verification is not applicable to the result.

```
[In] Integrate[(a + b*Log[c*(e + f*x)])^p/((d*e + d*f*x)*(h + i*x)^3),x]
[Out] Integrate[(a + b*Log[c*(e + f*x)])^p/((d*e + d*f*x)*(h + i*x)^3), x]
```

Maple [A]
time = 0.28, size = 0, normalized size = 0.00

$$\int \frac{(a+b\ln(c(fx+e)))^p}{(dfx+ed)(ix+h)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((a+b*ln(c*(f*x+e)))^p/(d*f*x+d*e)/(i*x+h)^3,x)

[Out] int((a+b*ln(c*(f*x+e)))^p/(d*f*x+d*e)/(i*x+h)^3,x)

Maxima [A]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((a+b*log(c*(f*x+e)))^p/(d*f*x+d*e)/(i*x+h)^3,x, algorithm="maxima
")

[Out] integrate((b*log((f*x + e)*c) + a)^p/((d*f*x + d*e)*(h + I*x)^3), x)

Fricas [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((a+b*log(c*(f*x+e)))^p/(d*f*x+d*e)/(i*x+h)^3,x, algorithm="fricas
")

[Out] integral(I*(b*log(c*f*x + c*e) + a)^p/(I*d*f*h^3*x - 3*d*f*h^2*x^2 - 3*I*d*
f*h*x^3 + d*f*x^4 + (I*d*h^3 - 3*d*h^2*x - 3*I*d*h*x^2 + d*x^3)*e), x)

Sympy [F(-1)] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((a+b*ln(c*(f*x+e)))**p/(d*f*x+d*e)/(i*x+h)**3,x)

[Out] Timed out

Giac [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((a+b*log(c*(f*x+e)))^p/(d*f*x+d*e)/(i*x+h)^3,x, algorithm="giac")

[Out] integrate((b*log((f*x + e)*c) + a)^p/((d*f*x + d*e)*(h + I*x)^3), x)

Mupad [A]
time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{(a+b\ln(c(e+fx)))^p}{(h+ix)^3\,(de+dfx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(e + f*x)))^p/((h + i*x)^3*(d*e + d*f*x)),x)
[Out] int((a + b*log(c*(e + f*x)))^p/((h + i*x)^3*(d*e + d*f*x)), x)
```

3.217 $\int \frac{(h+ix)^3(a+b\log(c(d+ex)^n))}{f+gx}\,dx$

Optimal. Leaf size=402

$$\frac{ai(gh-fi)^2x}{g^3}-\frac{bi(eh-di)^2nx}{3e^2g}-\frac{bi(eh-di)(gh-fi)nx}{2eg^2}-\frac{bi(gh-fi)^2nx}{g^3}-\frac{b(eh-di)n(h+ix)^2}{6eg}-\frac{b(gh-f}{}$$

```
[Out] a*i*(-f*i+g*h)^2*x/g^3-1/3*b*i*(-d*i+e*h)^2*n*x/e^2/g-1/2*b*i*(-d*i+e*h)*(-
f*i+g*h)*n*x/e/g^2-b*i*(-f*i+g*h)^2*n*x/g^3-1/6*b*(-d*i+e*h)*n*(i*x+h)^2/e/
g-1/4*b*(-f*i+g*h)*n*(i*x+h)^2/g^2-1/9*b*n*(i*x+h)^3/g-1/3*b*(-d*i+e*h)^3*n
*ln(e*x+d)/e^3/g-1/2*b*(-d*i+e*h)^2*(-f*i+g*h)*n*ln(e*x+d)/e^2/g^2+b*i*(-f*
i+g*h)^2*(e*x+d)*ln(c*(e*x+d)^n)/e/g^3+1/2*(-f*i+g*h)*(i*x+h)^2*(a+b*ln(c*(
e*x+d)^n))/g^2+1/3*(i*x+h)^3*(a+b*ln(c*(e*x+d)^n))/g+(-f*i+g*h)^3*(a+b*ln(c
*(e*x+d)^n))*ln(e*(g*x+f)/(-d*g+e*f))/g^4+b*(-f*i+g*h)^3*n*polylog(2,-g*(e*
x+d)/(-d*g+e*f))/g^4
```

Rubi [A]

time = 0.27, antiderivative size = 402, normalized size of antiderivative = 1.00, number of steps used = 14, number of rules used = 8, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.276$, Rules used = {2465, 2436, 2332, 2441, 2440, 2438, 2442, 45}

$$\frac{bn(gh-fi)^3\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)}{g^4}+\frac{(gh-fi)^3\log\left(\frac{e(f+gx)}{ef-dg}\right)(a+b\log(c(d+ex)^n))}{g^4}+\frac{(h+ix)^2(gh-fi)(a+b\log(c(d+ex)^n))}{2g^2}+\frac{(h+ix)^3(a+b\log(c(d+ex)^n))}{3g}+\frac{aix(gh-fi)^2}{g^3}+\frac{bi(d+ex)(gh-fi)^2\log(c(d+ex)^n)}{eg^3}-\frac{bn(eh-di)^3\log(d+ex)}{3e^3g}-\frac{bn(eh-di)^2\log(d+ex)(gh-fi)}{2e^2g^2}-\frac{binx(eh-di)^2}{3e^2g}-\frac{binx(eh-di)(gh-fi)}{2eg^2}-\frac{bn(h+ix)^2(eh-di)}{6eg}-\frac{binx(gh-fi)^2}{g^3}-\frac{bn(h+ix)^2(gh-fi)}{4g^2}-\frac{bn(h+ix)^3}{9g}$$

Antiderivative was successfully verified.

```
[In] Int[((h + i*x)^3*(a + b*Log[c*(d + e*x)^n]))/(f + g*x),x]
```

```
[Out] (a*i*(g*h - f*i)^2*x)/g^3 - (b*i*(e*h - d*i)^2*n*x)/(3*e^2*g) - (b*i*(e*h -
 d*i)*(g*h - f*i)*n*x)/(2*e*g^2) - (b*i*(g*h - f*i)^2*n*x)/g^3 - (b*(e*h -
d*i)*n*(h + i*x)^2)/(6*e*g) - (b*(g*h - f*i)*n*(h + i*x)^2)/(4*g^2) - (b*n*
(h + i*x)^3)/(9*g) - (b*(e*h - d*i)^3*n*Log[d + e*x])/(3*e^3*g) - (b*(e*h -
 d*i)^2*(g*h - f*i)*n*Log[d + e*x])/(2*e^2*g^2) + (b*i*(g*h - f*i)^2*(d + e
*x)*Log[c*(d + e*x)^n])/(e*g^3) + ((g*h - f*i)*(h + i*x)^2*(a + b*Log[c*(d
+ e*x)^n]))/(2*g^2) + ((h + i*x)^3*(a + b*Log[c*(d + e*x)^n]))/(3*g) + ((g*
h - f*i)^3*(a + b*Log[c*(d + e*x)^n])*Log[(e*(f + g*x))/(e*f - d*g)])/g^4 +
 (b*(g*h - f*i)^3*n*PolyLog[2, -((g*(d + e*x))/(e*f - d*g))])/g^4
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2332

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2436

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + c*e*(x/g)])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2441

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d + e*x
)^n])/g), x] - Dist[b*e*(n/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2442

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[(f + g*x)^(q + 1)*((a + b*Log[c*(d + e*x)^n])/(
g*(q + 1))), x] - Dist[b*e*(n/(g*(q + 1))), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 2465

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rubi steps

$$\int \frac{(h+217x)^3 \left(a+b\log \left(c(d+ex)^n\right)\right)}{f+gx} \, dx = \int \left(\frac{217(-217f+gh)^2 \left(a+b\log \left(c(d+ex)^n\right)\right)}{g^3} + \frac{217(-217f+\right.$$

$$= \frac{217 \int (h+217x)^2 \left(a+b\log \left(c(d+ex)^n\right)\right) dx}{g} - \frac{(217(217f-gh}{}$$

$$= \frac{217a(217f-gh)^2 x}{g^3} - \frac{(217f-gh)(h+217x)^2 \left(a+b\log (c(d+\right.}{2g^2}$$

$$= \frac{217a(217f-gh)^2 x}{g^3} - \frac{(217f-gh)(h+217x)^2 \left(a+b\log (c(d+\right.}{2g^2}$$

$$= \frac{217a(217f-gh)^2 x}{g^3} - \frac{217b(217d-eh)^2 nx}{3e^2 g} - \frac{217b(217d-eh)(}{2eg}$$

Mathematica [A]
time = 0.41, size = 379, normalized size = 0.94

$$\frac{6bd^2g^2i^2(-9egh+3efi+2dgi)n\log(d+ex)+e\left(gix(6ae^2(6f^2i^2-3fgi(6h+ix)+g^2(18h^2+9hix+2i^2x^2))-bn(12d^2g^2i^2-6degi(9gh-3fi+gix)+e^2(36f^2i^2-9fgi(12h+ix)+g^2(108h^2+27hix+4i^2x^2))))+36ae^2(gh-fi)^3\log\left(\frac{e(f+gx)}{ef-dg}\right)+6be\log\left(c(d+ex)^n\right)\left(gi(6d(3g^2h^2-3fghi+f^2i^2)+ex(6f^2i^2-3fgi(6h+ix)+g^2(18h^2+9hix+2i^2x^2)))+6e(gh-fi)^3\log\left(\frac{e(f+gx)}{ef-dg}\right)\right)\right)+36be^3(gh-fi)^3n\text{Li}_2\left(\frac{g(d+ex)}{-ef+dg}\right)}{36e^3g^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[((h + i*x)^3*(a + b*Log[c*(d + e*x)^n]))/(f + g*x),x]
```

```
[Out] (6*b*d^2*g^2*i^2*(-9*e*g*h + 3*e*f*i + 2*d*g*i)*n*Log[d + e*x] + e*(g*i*x*(
6*a*e^2*(6*f^2*i^2 - 3*f*g*i*(6*h + i*x) + g^2*(18*h^2 + 9*h*i*x + 2*i^2*x^
2)) - b*n*(12*d^2*g^2*i^2 - 6*d*e*g*i*(9*g*h - 3*f*i + g*i*x) + e^2*(36*f^2
*i^2 - 9*f*g*i*(12*h + i*x) + g^2*(108*h^2 + 27*h*i*x + 4*i^2*x^2)))) + 36*
a*e^2*(g*h - f*i)^3*Log[(e*(f + g*x))/(e*f - d*g)] + 6*b*e*Log[c*(d + e*x)^
n]*(g*i*(6*d*(3*g^2*h^2 - 3*f*g*h*i + f^2*i^2) + e*x*(6*f^2*i^2 - 3*f*g*i*(
6*h + i*x) + g^2*(18*h^2 + 9*h*i*x + 2*i^2*x^2))) + 6*e*(g*h - f*i)^3*Log[(
e*(f + g*x))/(e*f - d*g)])) + 36*b*e^3*(g*h - f*i)^3*n*PolyLog[2, (g*(d + e
*x))/(-(e*f) + d*g)])/(36*e^3*g^4)
```

Maple [C] Result contains higher order function than in optimal. Order 9 vs. order 4.
time = 0.51, size = 2801, normalized size = 6.97

method	result	size
risch	Expression too large to display	2801

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((i*x+h)^3*(a+b*ln(c*(e*x+d)^n))/(g*x+f),x,method=_RETURNVERBOSE)
```

```
[Out] -1/3*b/e^2*n/g*i^3*d^2*x+3/2*a*i^2/g*x^2*h+a*i^3/g^3*f^2*x+3*a*i/g*h^2*x-a/
g^4*ln(g*x+f)*f^3*i^3-1/2*I*b*Pi*csgn(I*c*(e*x+d)^n)^3*i^3/g^3*f^2*x+1/4*I*
b*Pi*csgn(I*c*(e*x+d)^n)^3*i^3/g^2*x^2*f-3/2*I*b*Pi*csgn(I*c*(e*x+d)^n)^3*i
/g*h^2*x+1/2*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/g*ln(g*x+f)*h^3+1/6*I*b
*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*i^3/g*x^3-3/4*I*b*Pi*csgn(I*c*(e*x+d)^n
)^3*i^2/g*x^2*h+1/6*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2*i^3/g*x^
3+1/6*b/e*n/g*i^3*d*x^2+3*b*n/g^2*dilog(((g*x+f)*e+d*g-e*f)/(d*g-e*f))*f*h^
2*i+b*n/g^4*ln(g*x+f)*ln(((g*x+f)*e+d*g-e*f)/(d*g-e*f))*f^3*i^3-49/36*b*n/g
^4*i^3*f^3+3/2*b/e*n/g^2*i^2*d*h*f+3*a/g^3*ln(g*x+f)*f^2*h*i^2-3*b/e*n/g^2*
i^2*d*ln((g*x+f)*e+d*g-e*f)*f*h-3*a*i^2/g^2*f*h*x+1/2*I*b*Pi*csgn(I*c*(e*x+
d)^n)^3/g^4*ln(g*x+f)*f^3*i^3-b*ln((e*x+d)^n)/g^4*ln(g*x+f)*f^3*i^3-1/2*a*i
^3/g^2*x^2*f+1/2*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/g*ln(g*x+f)
*h^3-1/2*b/e*n/g^2*i^3*d*x*f+3/2*b/e*n/g*i^2*d*h*x-3*b*n/g^3*ln(g*x+f)*ln((
(g*x+f)*e+d*g-e*f)/(d*g-e*f))*f^2*h*i^2+3*b*n/g^2*ln(g*x+f)*ln(((g*x+f)*e+d
*g-e*f)/(d*g-e*f))*f*h^2*i-3/2*b/e^2*n/g*i^2*d^2*ln((g*x+f)*e+d*g-e*f)*h+3*
b/e*n/g*i*d*ln((g*x+f)*e+d*g-e*f)*h^2+b/e*n/g^3*i^3*d*ln((g*x+f)*e+d*g-e*f)
*f^2+1/2*b/e^2*n/g^2*i^3*d^2*ln((g*x+f)*e+d*g-e*f)*f+b*ln(c)*i^3/g^3*f^2*x+
3*b*ln(c)*i/g*h^2*x-b*ln(c)/g^4*ln(g*x+f)*f^3*i^3-1/2*b*ln(c)*i^3/g^2*x^2*f
+1/3*a*i^3/g*x^3+a/g*ln(g*x+f)*h^3-3*a/g^2*ln(g*x+f)*f*h^2*i+1/3*b/e^3*n/g*
i^3*d^3*ln((g*x+f)*e+d*g-e*f)+1/3*b*ln(c)*i^3/g*x^3+b*ln(c)/g*ln(g*x+f)*h^3
-3*b*n/g^2*i*h^2*f-1/9*b*n/g*i^3*x^3+3*b*ln((e*x+d)^n)*i/g*h^2*x+3*b*ln(c)/
g^3*ln(g*x+f)*f^2*h*i^2-3*b*n/g^3*dilog(((g*x+f)*e+d*g-e*f)/(d*g-e*f))*f^2*
h*i^2-3*b*ln((e*x+d)^n)/g^2*ln(g*x+f)*f*h^2*i-3*b*ln(c)/g^2*ln(g*x+f)*f*h^2
*i-3*b*ln(c)*i^2/g^2*f*h*x+1/4*b*n/g^2*i^3*x^2*f-b*n/g^3*i^3*x*f^2-b*n/g*ln
(g*x+f)*ln(((g*x+f)*e+d*g-e*f)/(d*g-e*f))*h^3+b*n/g^4*dilog(((g*x+f)*e+d*g-
e*f)/(d*g-e*f))*f^3*i^3-3/4*b*n/g*i^2*h*x^2+b*ln((e*x+d)^n)/g*ln(g*x+f)*h^3
+15/4*b*n/g^3*i^2*h*f^2+3/2*b*ln(c)*i^2/g*x^2*h+3*b*n/g^2*i^2*h*x*f-1/6*I*b
*Pi*csgn(I*c*(e*x+d)^n)^3*i^3/g*x^3-1/2*I*b*Pi*csgn(I*c*(e*x+d)^n)^3/g*ln(g
*x+f)*h^3+3/2*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)*i^2/g^
2*f*h*x+b*ln((e*x+d)^n)*i^3/g^3*f^2*x-b*n/g*dilog(((g*x+f)*e+d*g-e*f)/(d*g-
e*f))*h^3+3/2*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2*i/g*h^2*x+3/4*
I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2*i^2/g*x^2*h-3/2*I*b*Pi*csgn(
I*c*(e*x+d)^n)^3/g^3*ln(g*x+f)*f^2*h*i^2-3/2*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(
I*c*(e*x+d)^n)^2/g^2*ln(g*x+f)*f*h^2*i+1/4*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^
n)*csgn(I*c*(e*x+d)^n)*i^3/g^2*x^2*f-1/2*b*ln((e*x+d)^n)*i^3/g^2*x^2*f+3/2*
b*ln((e*x+d)^n)*i^2/g*x^2*h+1/3*b*ln((e*x+d)^n)*i^3/g*x^3-1/3*b/e^2*n/g^2*i
^3*d^2*f-2/3*b/e*n/g^3*i^3*d*f^2+3*b*ln((e*x+d)^n)/g^3*ln(g*x+f)*f^2*h*i^2-
3*b*ln((e*x+d)^n)*i^2/g^2*f*h*x-3*b*n/g*i*h^2*x-3/2*I*b*Pi*csgn(I*c)*csgn(I
*c*(e*x+d)^n)^2*i^2/g^2*f*h*x+3/2*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/g^
3*ln(g*x+f)*f^2*h*i^2-3/2*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/g^2*ln(g*x
+f)*f*h^2*i-1/2*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)*i^3/
g^3*f^2*x+1/2*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/g^4*ln
(g*x+f)*f^3*i^3-3/2*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/
g^3*ln(g*x+f)*f^2*h*i^2+3/2*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*
x+d)^n)/g^2*ln(g*x+f)*f*h^2*i-1/2*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)
```

```
^n)^2/g^4*ln(g*x+f)*f^3*i^3-1/2*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c
*(e*x+d)^n)/g*ln(g*x+f)*h^3+3/4*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*i^2/
g*x^2*h-3/2*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)*i/g*h^2*
x-3/4*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)*i^2/g*x^2*h-3/
2*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2*i^2/g^2*f*h*x+3/2*I*b*Pi*c
sgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/g^3*ln(g*x+f)*f^2*h*i^2+1/2*I*b*Pi*c
sgn(I*c)*csgn(I*c*(e*x+d)^n)^2*i^3/g^3*f^2*x+3/2*I*b*Pi*csgn(I*c)*csgn(I*c*
(e*x+d)^n)^2*i/g*h^2*x-1/2*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/g^4*ln(g*
x+f)*f^3*i^3-1/6*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)*i^3
/g*x^3+1/2*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2*i^3/g^3*f^2*x+3/2
*I*b*Pi*csgn(I*c*(e*x+d)^n)^3/g^2*ln(g*x+f)*f*h^2*i-1/4*I*b*Pi*csgn(I*(e*x+
d)^n)*csgn(I*c*(e*x+d)^n)^2*i^3/g^2*x^2*f-1/4*I*b*Pi*csgn(I*c)*csgn(I*c*(e*
x+d)^n)^2*i^3/g^2*x^2*f+3/2*I*b*Pi*csgn(I*c*(e*x+d)^n)^3*i^2/g^2*f*h*x
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^3*(a+b*log(c*(e*x+d)^n))/(g*x+f),x, algorithm="maxima")
```

```
[Out] 3*I*a*h^2*(x/g - f*log(g*x + f)/g^2) + a*h^3*log(g*x + f)/g - 3/2*a*h*(2*f^
2*log(g*x + f)/g^3 + (g*x^2 - 2*f*x)/g^2) + 1/6*I*a*(6*f^3*log(g*x + f)/g^4
 - (2*g^2*x^3 - 3*f*g*x^2 + 6*f^2*x)/g^3) - integrate(-(b*h^3*log(c) + 3*I*
b*h^2*x*log(c) - 3*b*h*x^2*log(c) - I*b*x^3*log(c) + (b*h^3 + 3*I*b*h^2*x -
 3*b*h*x^2 - I*b*x^3)*log((x*e + d)^n))/(g*x + f), x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^3*(a+b*log(c*(e*x+d)^n))/(g*x+f),x, algorithm="fricas")
```

```
[Out] integral((a*h^3 + 3*I*a*h^2*x - 3*a*h*x^2 - I*a*x^3 + (b*h^3*n + 3*I*b*h^2*
n*x - 3*b*h*n*x^2 - I*b*n*x^3)*log(x*e + d) + (b*h^3 + 3*I*b*h^2*x - 3*b*h*
x^2 - I*b*x^3)*log(c))/(g*x + f), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a + b\log{(c(d + ex)^n)})\,(h + ix)^3}{f + gx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)**3*(a+b*ln(c*(e*x+d)**n))/(g*x+f),x)
[Out] Integral((a + b*log(c*(d + e*x)**n))*(h + i*x)**3/(f + g*x), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^3*(a+b*log(c*(e*x+d)^n))/(g*x+f),x, algorithm="giac")
[Out] integrate((b*log((x*e + d)^n*c) + a)*(h + I*x)^3/(g*x + f), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{{\left(h+i\,x\right)}^3\,\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)}{f+g\,x} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((h + i*x)^3*(a + b*log(c*(d + e*x)^n)))/(f + g*x),x)
[Out] int(((h + i*x)^3*(a + b*log(c*(d + e*x)^n)))/(f + g*x), x)
```

3.218 $\int \frac{(h+ix)^2(a+b\log(c(d+ex)^n))}{f+gx}\,dx$

Optimal. Leaf size=241

$$\frac{ai(gh-fi)x}{g^2}-\frac{bi(eh-di)nx}{2eg}-\frac{bi(gh-fi)nx}{g^2}-\frac{bn(h+ix)^2}{4g}-\frac{b(eh-di)^2n\log(d+ex)}{2e^2g}+\frac{bi(gh-fi)(d+ex)}{eg^2}$$

```
[Out] a*i*(-f*i+g*h)*x/g^2-1/2*b*i*(-d*i+e*h)*n*x/e/g-b*i*(-f*i+g*h)*n*x/g^2-1/4*
b*n*(i*x+h)^2/g-1/2*b*(-d*i+e*h)^2*n*ln(e*x+d)/e^2/g+b*i*(-f*i+g*h)*(e*x+d)
*ln(c*(e*x+d)^n)/e/g^2+1/2*(i*x+h)^2*(a+b*ln(c*(e*x+d)^n))/g+(-f*i+g*h)^2*(
a+b*ln(c*(e*x+d)^n))*ln(e*(g*x+f)/(-d*g+e*f))/g^3+b*(-f*i+g*h)^2*n*polylog(
2,-g*(e*x+d)/(-d*g+e*f))/g^3
```

Rubi [A]
time = 0.16, antiderivative size = 241, normalized size of antiderivative = 1.00, number of steps used = 11, number of rules used = 8, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.276$, Rules used = {2465, 2436, 2332, 2441, 2440, 2438, 2442, 45}

$$\frac{bn(gh-fi)^2\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)}{g^3}+\frac{(gh-fi)^2\log\left(\frac{e(f+gx)}{ef-dg}\right)(a+b\log(c(d+ex)^n))}{g^3}+\frac{(h+ix)^2(a+b\log(c(d+ex)^n))}{2g}+\frac{aix(gh-fi)}{g^2}+\frac{bi(d+ex)(gh-fi)\log(c(d+ex)^n)}{eg^2}-\frac{bn(eh-di)^2\log(d+ex)}{2e^2g}-\frac{binx(eh-di)}{2eg}-\frac{binx(gh-fi)}{g^2}-\frac{bn(h+ix)^2}{4g}$$

Antiderivative was successfully verified.

```
[In] Int[((h + i*x)^2*(a + b*Log[c*(d + e*x)^n]))/(f + g*x),x]
```

```
[Out] (a*i*(g*h - f*i)*x)/g^2 - (b*i*(e*h - d*i)*n*x)/(2*e*g) - (b*i*(g*h - f*i)*
n*x)/g^2 - (b*n*(h + i*x)^2)/(4*g) - (b*(e*h - d*i)^2*n*Log[d + e*x])/(2*e^
2*g) + (b*i*(g*h - f*i)*(d + e*x)*Log[c*(d + e*x)^n])/(e*g^2) + ((h + i*x)^
2*(a + b*Log[c*(d + e*x)^n]))/(2*g) + ((g*h - f*i)^2*(a + b*Log[c*(d + e*x)
^n])*Log[(e*(f + g*x))/(e*f - d*g)])/g^3 + (b*(g*h - f*i)^2*n*PolyLog[2, -(
(g*(d + e*x))/(e*f - d*g))])/g^3
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2332

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2436

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
```

```
, b, c, d, e, n, p}, x]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + c*e*(x/g)])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2441

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d + e*x
)^n])/g), x] - Dist[b*e*(n/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2442

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[(f + g*x)^(q + 1)*((a + b*Log[c*(d + e*x)^n])/(
g*(q + 1))), x] - Dist[b*e*(n/(g*(q + 1))), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 2465

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rubi steps

$$\int \frac{(h+218x)^2\left(a+b\log\left(c(d+ex)^n\right)\right)}{f+gx}\,dx = \int \left(\frac{218(-218f+gh)\left(a+b\log\left(c(d+ex)^n\right)\right)}{g^2} + \frac{218(h+218x)}{}\right.$$

$$= \frac{218\int (h+218x)\left(a+b\log\left(c(d+ex)^n\right)\right)\,dx}{g} - \frac{(218(218f-gh)}{}$$

$$= -\frac{218a(218f-gh)x}{g^2} + \frac{(h+218x)^2\left(a+b\log\left(c(d+ex)^n\right)\right)}{2g} + \frac{(}{}$$

$$= -\frac{218a(218f-gh)x}{g^2} + \frac{(h+218x)^2\left(a+b\log\left(c(d+ex)^n\right)\right)}{2g} + \frac{(}{}$$

$$= -\frac{218a(218f-gh)x}{g^2} + \frac{109b(218d-eh)nx}{eg} + \frac{218b(218f-gh)}{g^2}$$

Mathematica [A]
time = 0.19, size = 224, normalized size = 0.93

$$\frac{-2bd^2g^2i^2n\log(d+ex)+e\left(gix(2ae(4gh-2fi+gix)+bn(2dgi-e(8gh-4fi+gix)))+4ae(gh-fi)^2\log\left(\frac{e(f+gx)}{ef-dg}\right)+2b\log\left(c(d+ex)^n\right)\left(gi(d(4gh-2fi)+ex(4gh-2fi+gix))+2e(gh-fi)^2\log\left(\frac{e(f+gx)}{ef-dg}\right)\right)\right)+4be^2(gh-fi)^2n\operatorname{Li}_2\left(\frac{g(d+ex)}{-ef+dg}\right)}{4e^2g^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[((h + i*x)^2*(a + b*Log[c*(d + e*x)^n]))/(f + g*x),x]
```

```
[Out] (-2*b*d^2*g^2*i^2*n*Log[d + e*x] + e*(g*i*x*(2*a*e*(4*g*h - 2*f*i + g*i*x)
+ b*n*(2*d*g*i - e*(8*g*h - 4*f*i + g*i*x))) + 4*a*e*(g*h - f*i)^2*Log[(e*(
f + g*x))/(e*f - d*g)] + 2*b*Log[c*(d + e*x)^n]*(g*i*(d*(4*g*h - 2*f*i) + e
*x*(4*g*h - 2*f*i + g*i*x)) + 2*e*(g*h - f*i)^2*Log[(e*(f + g*x))/(e*f - d*
g)])) + 4*b*e^2*(g*h - f*i)^2*n*PolyLog[2, (g*(d + e*x))/(-(e*f) + d*g)])/(
4*e^2*g^3)
```

Maple [C] Result contains higher order function than in optimal. Order 9 vs. order 4.
time = 0.50, size = 1605, normalized size = 6.66

method	result	size
risch	Expression too large to display	1605

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((i*x+h)^2*(a+b*ln(c*(e*x+d)^n))/(g*x+f),x,method=_RETURNVERBOSE)
```

```
[Out] 1/2*b*ln(c)*i^2/g*x^2+b*ln(c)/g*ln(g*x+f)*h^2-b*n/g*dilog(((g*x+f)*e+d*g-e*
f)/(d*g-e*f))*h^2-1/4*b*n/g*i^2*x^2-a*i^2/g^2*f*x+2*b*ln((e*x+d)^n)*i/g*h*x
+1/2*I*b*Pi*csgn(I*c*(e*x+d)^n)^3*i^2/g^2*f*x+1/2*b/e*n/g^2*i^2*d*f+1/2*I*b
```

```
*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/g*ln(g*x+f)*h^2-I*b*Pi*csgn(I*c
*(e*x+d)^n)^3*i/g*h*x+1/4*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*i^2/g*x^2-
2*a/g^2*ln(g*x+f)*f*h*i+I*b*Pi*csgn(I*c*(e*x+d)^n)^3/g^2*ln(g*x+f)*f*h*i+5/
4*b*n/g^3*f^2*i^2+2*b*n/g^2*ln(g*x+f)*ln(((g*x+f)*e+d*g-e*f)/(d*g-e*f))*f*h
*i-b/e*n/g^2*i^2*d*ln((g*x+f)*e+d*g-e*f)*f+2*b/e*n/g*i*d*ln((g*x+f)*e+d*g-e
*f)*h+2*a*i/g*h*x+a/g^3*ln(g*x+f)*f^2*i^2+1/4*I*b*Pi*csgn(I*(e*x+d)^n)*csgn
(I*c*(e*x+d)^n)^2*i^2/g*x^2+1/2*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/g*ln
(g*x+f)*h^2-1/2*I*b*Pi*csgn(I*c*(e*x+d)^n)^3/g^3*ln(g*x+f)*f^2*i^2-2*b*ln((
e*x+d)^n)/g^2*ln(g*x+f)*f*h*i-1/4*I*b*Pi*csgn(I*c*(e*x+d)^n)^3*i^2/g*x^2+1/
2*a*i^2/g*x^2+a/g*ln(g*x+f)*h^2+I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c
*(e*x+d)^n)/g^2*ln(g*x+f)*f*h*i-2*b*n/g*i*h*x+b*ln(c)/g^3*ln(g*x+f)*f^2*i^2
-b*ln(c)*i^2/g^2*f*x+2*b*ln(c)*i/g*h*x+1/2*b*ln((e*x+d)^n)*i^2/g*x^2+b*ln((
e*x+d)^n)/g*ln(g*x+f)*h^2-1/2*I*b*Pi*csgn(I*c*(e*x+d)^n)^3/g*ln(g*x+f)*h^2-
2*b*n/g^2*f*h*i+1/2*b/e*n/g*i^2*d*x-1/2*b/e^2*n/g*i^2*d^2*ln((g*x+f)*e+d*g-
e*f)+b*ln((e*x+d)^n)/g^3*ln(g*x+f)*f^2*i^2+I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d
)^n)^2*i/g*h*x-1/4*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)*i
^2/g*x^2-b*ln((e*x+d)^n)*i^2/g^2*f*x-b*n/g^3*ln(g*x+f)*ln(((g*x+f)*e+d*g-e*
f)/(d*g-e*f))*f^2*i^2+I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2*i/g*h*
x+2*b*n/g^2*dilog(((g*x+f)*e+d*g-e*f)/(d*g-e*f))*f*h*i-2*b*ln(c)/g^2*ln(g*x
+f)*f*h*i-b*n/g^3*dilog(((g*x+f)*e+d*g-e*f)/(d*g-e*f))*f^2*i^2-b*n/g*ln(g*x
+f)*ln(((g*x+f)*e+d*g-e*f)/(d*g-e*f))*h^2+b*n/g^2*i^2*x*f+1/2*I*b*Pi*csgn(I
*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)*i^2/g^2*f*x-I*b*Pi*csgn(I*c)*csgn
(I*c*(e*x+d)^n)^2/g^2*ln(g*x+f)*f*h*i-I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*
x+d)^n)^2/g^2*ln(g*x+f)*f*h*i-1/2*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I
*c*(e*x+d)^n)/g^3*ln(g*x+f)*f^2*i^2+1/2*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n
)^2/g^3*ln(g*x+f)*f^2*i^2-1/2*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(
e*x+d)^n)/g*ln(g*x+f)*h^2-1/2*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*i^2/g^
2*f*x-1/2*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2*i^2/g^2*f*x-I*b*Pi
*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)*i/g*h*x+1/2*I*b*Pi*csgn(I*
(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/g^3*ln(g*x+f)*f^2*i^2
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^2*(a+b*log(c*(e*x+d)^n))/(g*x+f),x, algorithm="maxima")
```

```
[Out] 2*I*a*h*(x/g - f*log(g*x + f)/g^2) + a*h^2*log(g*x + f)/g - 1/2*a*(2*f^2*lo
g(g*x + f)/g^3 + (g*x^2 - 2*f*x)/g^2) - integrate(-(b*h^2*log(c) + 2*I*b*h*
x*log(c) - b*x^2*log(c) + (b*h^2 + 2*I*b*h*x - b*x^2)*log((x*e + d)^n))/(g*
x + f), x)
```

Fricas [F]

time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^2*(a+b*log(c*(e*x+d)^n))/(g*x+f),x, algorithm="fricas")
```

```
[Out] integral((a*h^2 + 2*I*a*h*x - a*x^2 + (b*h^2*n + 2*I*b*h*n*x - b*n*x^2)*log
(x*e + d) + (b*h^2 + 2*I*b*h*x - b*x^2)*log(c))/(g*x + f), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a + b\log(c(d + ex)^n))(h + ix)^2}{f + gx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)**2*(a+b*ln(c*(e*x+d)**n))/(g*x+f),x)
```

```
[Out] Integral((a + b*log(c*(d + e*x)**n))*(h + i*x)**2/(f + g*x), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^2*(a+b*log(c*(e*x+d)^n))/(g*x+f),x, algorithm="giac")
```

```
[Out] integrate((b*log((x*e + d)^n*c) + a)*(h + I*x)^2/(g*x + f), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(h + i\,x)^2\,(a + b\,\ln(c\,(d + e\,x)^n))}{f + g\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((h + i*x)^2*(a + b*log(c*(d + e*x)^n)))/(f + g*x),x)
```

```
[Out] int(((h + i*x)^2*(a + b*log(c*(d + e*x)^n)))/(f + g*x), x)
```

3.219 $\int \frac{(h+ix)(a+b\log(c(d+ex)^n))}{f+gx}\,dx$

Optimal. Leaf size=119

$$\frac{aix}{g}-\frac{binx}{g}+\frac{bi(d+ex)\log\left(c(d+ex)^n\right)}{eg}+\frac{(gh-fi)\left(a+b\log\left(c(d+ex)^n\right)\right)\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g^2}+\frac{b(gh-fi)n\mathrm{Li}_2\left(\cdot\right.}{g^2}$$

[Out] a*i*x/g-b*i*n*x/g+b*i*(e*x+d)*ln(c*(e*x+d)^n)/e/g+(-f*i+g*h)*(a+b*ln(c*(e*x+d)^n))*ln(e*(g*x+f)/(-d*g+e*f))/g^2+b*(-f*i+g*h)*n*polylog(2,-g*(e*x+d)/(-d*g+e*f))/g^2

Rubi [A]

time = 0.10, antiderivative size = 119, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.222$, Rules used = {2465, 2436, 2332, 2441, 2440, 2438}

$$\frac{bn(gh-fi)\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)}{g^2}+\frac{(gh-fi)\log\left(\frac{e(f+gx)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{g^2}+\frac{aix}{g}+\frac{bi(d+ex)\log\left(c(d+ex)^n\right)}{eg}-\frac{binx}{g}$$

Antiderivative was successfully verified.

[In] Int[((h + i*x)*(a + b*Log[c*(d + e*x)^n]))/(f + g*x),x]

[Out] (a*i*x)/g - (b*i*n*x)/g + (b*i*(d + e*x)*Log[c*(d + e*x)^n])/(e*g) + ((g*h - f*i)*(a + b*Log[c*(d + e*x)^n])*Log[(e*(f + g*x))/(e*f - d*g)])/g^2 + (b*(g*h - f*i)*n*PolyLog[2, -((g*(d + e*x))/(e*f - d*g))])/g^2

Rule 2332

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2436

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + c*e*(x/g)])/x, x], x, f + g*x
```

```
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2441

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d + e*x
)^n])/g), x] - Dist[b*e*(n/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2465

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rubi steps

$$\int \frac{(h+219x)\left(a+b\log\left(c(d+ex)^n\right)\right)}{f+gx}\,dx = \int \left(\frac{219\left(a+b\log\left(c(d+ex)^n\right)\right)}{g}+\frac{(-219f+gh)\left(a+b\log\left(c(d-\right.\right.}{g(f+gx)}\right.$$

$$= \frac{219\int\left(a+b\log\left(c(d+ex)^n\right)\right)\,dx}{g}+\frac{(-219f+gh)\int\frac{a+b\log(c(d+ex)}{f+gx}}{g}$$

$$= \frac{219ax}{g}-\frac{(219f-gh)\left(a+b\log\left(c(d+ex)^n\right)\right)\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g^2}+\frac{(2}{}$$

$$= \frac{219ax}{g}-\frac{(219f-gh)\left(a+b\log\left(c(d+ex)^n\right)\right)\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g^2}+\frac{(2}{}$$

$$= \frac{219ax}{g}-\frac{219bnx}{g}+\frac{219b(d+ex)\log\left(c(d+ex)^n\right)}{eg}-\frac{(219f-gh)}{}$$

Mathematica [A]
time = 0.08, size = 110, normalized size = 0.92

$$\frac{agix-bginx+\frac{bgi(d+ex)\log(c(d+ex)^n)}{e}+(gh-fi)\left(a+b\log\left(c(d+ex)^n\right)\right)\log\left(\frac{e(f+gx)}{ef-dg}\right)+b(gh-fi)n\text{Li}_2\left(\frac{g(d+ex)}{-ef+dg}\right)}{g^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((h + i*x)*(a + b*Log[c*(d + e*x)^n]))/(f + g*x),x]
```

[Out] (a*g*i*x - b*g*i*n*x + (b*g*i*(d + e*x)*Log[c*(d + e*x)^n])/e + (g*h - f*i)
*(a + b*Log[c*(d + e*x)^n])*Log[(e*(f + g*x))/(e*f - d*g)] + b*(g*h - f*i)*
n*PolyLog[2, (g*(d + e*x))/(-(e*f) + d*g)])/g^2

Maple [C] Result contains higher order function than in optimal. Order 9 vs. order 4.
time = 0.43, size = 750, normalized size = 6.30

method	result
risch	$\frac{b\ln((ex+d)^n)ix}{g} - \frac{bnif}{g^2} + \frac{a\ln(gx+f)h}{g} - \frac{a\ln(gx+f)fi}{g^2} + \frac{ib\pi\mathrm{csgn}(ic(ex+d)^n)^3\ln(gx+f)fi}{2g^2} + \frac{ib\pi\,\mathrm{csgn}(i(ex+d)^n)\mathrm{csgn}(ic(e}{2g}$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((i*x+h)*(a+b*ln(c*(e*x+d)^n))/(g*x+f),x,method=_RETURNVERBOSE)

[Out] b*ln((e*x+d)^n)*i/g*x-b*n/g^2*i*f-b*n/g*dilog(((g*x+f)*e+d*g-e*f)/(d*g-e*f)
)*h+a/g*ln(g*x+f)*h-a/g^2*ln(g*x+f)*f*i+1/2*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I
c(e*x+d)^n)^2*i/g*x+1/2*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*i/g*x+1/2*
I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/g*ln(g*x+f)*h+1/2*I*b*Pi*csg
n(I*c)*csgn(I*c*(e*x+d)^n)^2/g*ln(g*x+f)*h+1/2*I*b*Pi*csgn(I*c*(e*x+d)^n)^3
/g^2*ln(g*x+f)*f*i-1/2*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^
n)/g*ln(g*x+f)*h-1/2*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/g^2*ln(g*x+f)*f
*i-1/2*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/g^2*ln(g*x+f)*f*i+1/2
*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/g^2*ln(g*x+f)*f*i-b
*ln((e*x+d)^n)/g^2*ln(g*x+f)*f*i-1/2*I*b*Pi*csgn(I*c*(e*x+d)^n)^3/g*ln(g*x+
f)*h+b*n/g^2*dilog(((g*x+f)*e+d*g-e*f)/(d*g-e*f))*f*i-b*n/g*ln(g*x+f)*ln(((
g*x+f)*e+d*g-e*f)/(d*g-e*f))*h+b*ln((e*x+d)^n)/g*ln(g*x+f)*h-1/2*I*b*Pi*csg
n(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)*i/g*x+b*ln(c)*i/g*x+b*ln(c)/g*
ln(g*x+f)*h+b/e*n/g*i*d*ln((g*x+f)*e+d*g-e*f)+b*n/g^2*ln(g*x+f)*ln(((g*x+f)
*e+d*g-e*f)/(d*g-e*f))*f*i-b*ln(c)/g^2*ln(g*x+f)*f*i+a*i*x/g-1/2*I*b*Pi*csg
n(I*c*(e*x+d)^n)^3*i/g*x-b*i*n*x/g

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((i*x+h)*(a+b*log(c*(e*x+d)^n))/(g*x+f),x, algorithm="maxima")

[Out] I*a*(x/g - f*log(g*x + f)/g^2) + a*h*log(g*x + f)/g + integrate((b*h*log(c)
 + I*b*x*log(c) + (b*h + I*b*x)*log((x*e + d)^n))/(g*x + f), x)

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)*(a+b*log(c*(e*x+d)^n))/(g*x+f),x, algorithm="fricas")
```

```
[Out] integral((a*h + I*a*x + (b*h*n + I*b*n*x)*log(x*e + d) + (b*h + I*b*x)*log(
c))/(g*x + f), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a + b\log(c(d+ex)^n))(h+ix)}{f+gx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)*(a+b*ln(c*(e*x+d)**n))/(g*x+f),x)
```

```
[Out] Integral((a + b*log(c*(d + e*x)**n))*(h + i*x)/(f + g*x), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)*(a+b*log(c*(e*x+d)^n))/(g*x+f),x, algorithm="giac")
```

```
[Out] integrate((b*log((x*e + d)^n*c) + a)*(h + I*x)/(g*x + f), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(h+i\,x)\,\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)}{f+g\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((h + i*x)*(a + b*log(c*(d + e*x)^n)))/(f + g*x),x)
```

```
[Out] int(((h + i*x)*(a + b*log(c*(d + e*x)^n)))/(f + g*x), x)
```

3.220 $\int \frac{a+b\log(c(d+ex)^n)}{f+gx}\,dx$

Optimal. Leaf size=63

$$\frac{(a+b\log(c(d+ex)^n))\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g}+\frac{bn\text{Li}_2\left(-\frac{g(d+ex)}{ef-dg}\right)}{g}$$

```
[Out] (a+b*ln(c*(e*x+d)^n))*ln(e*(g*x+f)/(-d*g+e*f))/g+b*n*polylog(2,-g*(e*x+d)/(
-d*g+e*f))/g
```

Rubi [A]
time = 0.03, antiderivative size = 63, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.136, Rules used = {2441, 2440, 2438}

$$\frac{bn\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)}{g}+\frac{\log\left(\frac{e(f+gx)}{ef-dg}\right)(a+b\log(c(d+ex)^n))}{g}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])/(f + g*x),x]
```

```
[Out] ((a + b*Log[c*(d + e*x)^n])*Log[(e*(f + g*x))/(e*f - d*g)])/g + (b*n*PolyLo
g[2, -((g*(d + e*x))/(e*f - d*g))])/g
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + c*e*(x/g)])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2441

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d + e*x
)^n])/g), x] - Dist[b*e*(n/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rubi steps

$$\int \frac{a+b\log(c(d+ex)^n)}{f+gx}\,dx = \frac{(a+b\log(c(d+ex)^n))\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g} - \frac{(ben)\int \frac{\log\left(\frac{e(f+gx)}{ef-dg}\right)}{d+ex}dx}{g}$$
$$= \frac{(a+b\log(c(d+ex)^n))\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g} - \frac{(bn)\text{Subst}\left(\int \frac{\log\left(1+\frac{gx}{ef-dg}\right)}{x}dx, x, d+ex\right)}{g}$$
$$= \frac{(a+b\log(c(d+ex)^n))\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g} + \frac{bn\text{Li}_2\left(-\frac{g(d+ex)}{ef-dg}\right)}{g}$$

Mathematica [A]
time = 0.01, size = 62, normalized size = 0.98

$$\frac{(a+b\log(c(d+ex)^n))\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g} + \frac{bn\text{Li}_2\left(\frac{g(d+ex)}{-ef+dg}\right)}{g}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])/(f + g*x),x]
```

```
[Out] ((a + b*Log[c*(d + e*x)^n])*Log[(e*(f + g*x))/(e*f - d*g)])/g + (b*n*PolyLo
g[2, (g*(d + e*x))/(-(e*f) + d*g)])/g
```

Maple [C] Result contains higher order function than in optimal. Order 9 vs. order 4.
time = 0.22, size = 261, normalized size = 4.14

method	result
risch	$\frac{b\ln(gx+f)\ln((ex+d)^n)}{g} - \frac{bn\,\text{dilog}\left(\frac{(gx+f)e+dg-ef}{dg-ef}\right)}{g} - \frac{bn\ln(gx+f)\ln\left(\frac{(gx+f)e+dg-ef}{dg-ef}\right)}{g} - \frac{i\ln(gx+f)b\pi\,\text{csgn}(ic)\text{csgn}(i(ex+d)^n}{2g}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))/(g*x+f),x,method=_RETURNVERBOSE)
```

```
[Out] b*ln(g*x+f)/g*ln((e*x+d)^n)-b/g*n*dilog(((g*x+f)*e+d*g-e*f)/(d*g-e*f))-b/g*
n*ln(g*x+f)*ln(((g*x+f)*e+d*g-e*f)/(d*g-e*f))-1/2*I*ln(g*x+f)/g*b*Pi*csgn(I
*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+1/2*I*ln(g*x+f)/g*b*Pi*csgn(I*c)*
csgn(I*c*(e*x+d)^n)^2+1/2*I*ln(g*x+f)/g*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*
x+d)^n)^2-1/2*I*ln(g*x+f)/g*b*Pi*csgn(I*c*(e*x+d)^n)^3+ln(g*x+f)/g*b*ln(c)+
a*ln(g*x+f)/g
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x+f),x, algorithm="maxima")
```

```
[Out] b*integrate((log((x*e + d)^n) + log(c))/(g*x + f), x) + a*log(g*x + f)/g
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x+f),x, algorithm="fricas")
```

```
[Out] integral((b*log((x*e + d)^n*c) + a)/(g*x + f), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{a + b\log\left(c(d+ex)^n\right)}{f+gx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))/(g*x+f),x)
```

```
[Out] Integral((a + b*log(c*(d + e*x)**n))/(f + g*x), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x+f),x, algorithm="giac")
```

```
[Out] integrate((b*log((x*e + d)^n*c) + a)/(g*x + f), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{a + b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)}{f+g\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))/(f + g*x),x)
```

```
[Out] int((a + b*log(c*(d + e*x)^n))/(f + g*x), x)
```

3.221 $\int \frac{a+b\log(c(d+ex)^n)}{(f+gx)(h+ix)}\,dx$

Optimal. Leaf size=155

$$\frac{(a+b\log(c(d+ex)^n))\log\left(\frac{e(f+gx)}{ef-dg}\right)}{gh-fi}-\frac{(a+b\log(c(d+ex)^n))\log\left(\frac{e(h+ix)}{eh-di}\right)}{gh-fi}+\frac{bn\text{Li}_2\left(-\frac{g(d+ex)}{ef-dg}\right)}{gh-fi}-\frac{bn\text{Li}_2\left(-\frac{i(d+ex)}{eh-di}\right)}{gh-fi}$$

```
[Out] (a+b*ln(c*(e*x+d)^n))*ln(e*(g*x+f)/(-d*g+e*f))/(-f*i+g*h)-(a+b*ln(c*(e*x+d)
^n))*ln(e*(i*x+h)/(-d*i+e*h))/(-f*i+g*h)+b*n*polylog(2,-g*(e*x+d)/(-d*g+e*f
))/(-f*i+g*h)-b*n*polylog(2,-i*(e*x+d)/(-d*i+e*h))/(-f*i+g*h)
```

Rubi [A]
time = 0.14, antiderivative size = 155, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 4, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.138$, Rules used = {2465, 2441, 2440, 2438}

$$\frac{bn\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)}{gh-fi}-\frac{bn\text{PolyLog}\left(2,-\frac{i(d+ex)}{eh-di}\right)}{gh-fi}+\frac{\log\left(\frac{e(f+gx)}{ef-dg}\right)(a+b\log(c(d+ex)^n))}{gh-fi}-\frac{\log\left(\frac{e(h+ix)}{eh-di}\right)(a+b\log(c(d+ex)^n))}{gh-fi}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])/((f + g*x)*(h + i*x)),x]
```

```
[Out] ((a + b*Log[c*(d + e*x)^n])*Log[(e*(f + g*x))/(e*f - d*g)])/(g*h - f*i) - (
(a + b*Log[c*(d + e*x)^n])*Log[(e*(h + i*x))/(e*h - d*i)])/(g*h - f*i) + (b
*n*PolyLog[2, -((g*(d + e*x))/(e*f - d*g))])/(g*h - f*i) - (b*n*PolyLog[2,
-((i*(d + e*x))/(e*h - d*i))])/(g*h - f*i)
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + c*e*(x/g)])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2441

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d + e*x
)^n])/g), x] - Dist[b*e*(n/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2465

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rubi steps

$$\int \frac{a+b\log\left(c(d+ex)^n\right)}{(h+221x)(f+gx)}\,dx = \int \left(\frac{221(a+b\log\left(c(d+ex)^n\right))}{(221f-gh)(h+221x)} - \frac{g(a+b\log\left(c(d+ex)^n\right))}{(221f-gh)(f+gx)}\right)dx$$

$$= \frac{221\int \frac{a+b\log(c(d+ex)^n)}{h+221x}\,dx}{221f-gh} - \frac{g\int \frac{a+b\log(c(d+ex)^n)}{f+gx}\,dx}{221f-gh}$$

$$= \frac{\log\left(-\frac{e(h+221x)}{221d-eh}\right)(a+b\log\left(c(d+ex)^n\right))}{221f-gh} - \frac{(a+b\log\left(c(d+ex)^n\right))\log\left(\frac{e(f+}{ef-}\right.}{221f-gh}$$

$$= \frac{\log\left(-\frac{e(h+221x)}{221d-eh}\right)(a+b\log\left(c(d+ex)^n\right))}{221f-gh} - \frac{(a+b\log\left(c(d+ex)^n\right))\log\left(\frac{e(f+}{ef-}\right.}{221f-gh}$$

$$= \frac{\log\left(-\frac{e(h+221x)}{221d-eh}\right)(a+b\log\left(c(d+ex)^n\right))}{221f-gh} - \frac{(a+b\log\left(c(d+ex)^n\right))\log\left(\frac{e(f+}{ef-}\right.}{221f-gh}$$

Mathematica [A]
time = 0.05, size = 111, normalized size = 0.72

$$\frac{(a+b\log\left(c(d+ex)^n\right))\left(\log\left(\frac{e(f+gx)}{ef-dg}\right)-\log\left(\frac{e(h+ix)}{eh-di}\right)\right)+bn\text{Li}_2\left(\frac{g(d+ex)}{-ef+dg}\right)-bn\text{Li}_2\left(\frac{i(d+ex)}{-eh+di}\right)}{gh-fi}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])/((f + g*x)*(h + i*x)),x]
```

```
[Out] ((a + b*Log[c*(d + e*x)^n])*(Log[(e*(f + g*x))/(e*f - d*g)] - Log[(e*(h + i
*x))/(e*h - d*i)]) + b*n*PolyLog[2, (g*(d + e*x))/(-(e*f) + d*g)] - b*n*Pol
yLog[2, (i*(d + e*x))/(-(e*h) + d*i)])/(g*h - f*i)
```

Maple [C] Result contains higher order function than in optimal. Order 9 vs. order 4.
time = 0.53, size = 647, normalized size = 4.17

method	result

risch	$-\frac{b\ln((ex+d)^n)\ln(gx+f)}{fi-gh}+\frac{b\ln((ex+d)^n)\ln(ix+h)}{fi-gh}-\frac{bn\,\mathrm{dilog}\left(\frac{(ix+h)e+di-eh}{di-eh}\right)}{fi-gh}-\frac{bn\ln(ix+h)\ln\left(\frac{(ix+h)e+di-eh}{di-eh}\right)}{fi-gh}+\frac{bn\,\mathrm{dilog}$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((a+b*ln(c*(e*x+d)^n))/(g*x+f)/(i*x+h),x,method=_RETURNVERBOSE)

[Out] -b*ln((e*x+d)^n)/(f*i-g*h)*ln(g*x+f)+b*ln((e*x+d)^n)/(f*i-g*h)*ln(i*x+h)-b*n/(f*i-g*h)*dilog(((i*x+h)*e+d*i-e*h)/(d*i-e*h))-b*n/(f*i-g*h)*ln(i*x+h)*ln(((i*x+h)*e+d*i-e*h)/(d*i-e*h))+b*n/(f*i-g*h)*dilog(((g*x+f)*e+d*g-e*f)/(d*g-e*f))+b*n/(f*i-g*h)*ln(g*x+f)*ln(((g*x+f)*e+d*g-e*f)/(d*g-e*f))+1/2*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/(f*i-g*h)*ln(i*x+h)+1/2*I*b*Pi*csgn(I*c*(e*x+d)^n)^3/(f*i-g*h)*ln(g*x+f)-1/2*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/(f*i-g*h)*ln(i*x+h)-1/2*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/(f*i-g*h)*ln(g*x+f)-1/2*I*b*Pi*csgn(I*c*(e*x+d)^n)^3/(f*i-g*h)*ln(i*x+h)+1/2*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/(f*i-g*h)*ln(g*x+f)-1/2*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/(f*i-g*h)*ln(g*x+f)+1/2*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/(f*i-g*h)*ln(i*x+h)-b*ln(c)/(f*i-g*h)*ln(g*x+f)+b*ln(c)/(f*i-g*h)*ln(i*x+h)-a/(f*i-g*h)*ln(g*x+f)+a/(f*i-g*h)*ln(i*x+h)

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x+f)/(i*x+h),x, algorithm="maxima")

[Out] a*(log(g*x + f)/(g*h - I*f) - log(h + I*x)/(g*h - I*f)) - b*integrate((I*log((x*e + d)^n) + I*log(c))/(g*x^2 - I*f*h + (-I*g*h + f)*x), x)

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x+f)/(i*x+h),x, algorithm="fricas")

[Out] integral((-I*b*n*log(x*e + d) - I*b*log(c) - I*a)/(g*x^2 - I*f*h + (-I*g*h + f)*x), x)

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{a + b \log \left(c(d+ex)^n\right)}{(f+gx)\,(h+ix)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))/(g*x+f)/(i*x+h),x)
[Out] Integral((a + b*log(c*(d + e*x)**n))/((f + g*x)*(h + i*x)), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x+f)/(i*x+h),x, algorithm="giac")
[Out] integrate((b*log((x*e + d)^n*c) + a)/((g*x + f)*(h + I*x)), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)}{\left(f+g\,x\right)\,\left(h+i\,x\right)} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))/((f + g*x)*(h + i*x)),x)
[Out] int((a + b*log(c*(d + e*x)^n))/((f + g*x)*(h + i*x)), x)
```

3.222 $\int \frac{a+b\log(c(d+ex)^n)}{(f+gx)(h+ix)^2}\,dx$

Optimal. Leaf size=252

$$-\frac{ben\log(d+ex)}{(eh-di)(gh-fi)}+\frac{a+b\log\left(c(d+ex)^n\right)}{(gh-fi)(h+ix)}+\frac{g(a+b\log\left(c(d+ex)^n\right))\log\left(\frac{e(f+gx)}{ef-dg}\right)}{(gh-fi)^2}+\frac{ben\log(h+ix)}{(eh-di)(gh-fi)}-$$

```
[Out] -b*e*n*ln(e*x+d)/(-d*i+e*h)/(-f*i+g*h)+(a+b*ln(c*(e*x+d)^n))/(-f*i+g*h)/(i*
x+h)+g*(a+b*ln(c*(e*x+d)^n))*ln(e*(g*x+f)/(-d*g+e*f))/(-f*i+g*h)^2+b*e*n*ln
(i*x+h)/(-d*i+e*h)/(-f*i+g*h)-g*(a+b*ln(c*(e*x+d)^n))*ln(e*(i*x+h)/(-d*i+e*
h))/(-f*i+g*h)^2+b*g*n*polylog(2,-g*(e*x+d)/(-d*g+e*f))/(-f*i+g*h)^2-b*g*n*
polylog(2,-i*(e*x+d)/(-d*i+e*h))/(-f*i+g*h)^2
```

Rubi [A]
time = 0.19, antiderivative size = 252, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 7, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.241$, Rules used = {2465, 2441, 2440, 2438, 2442, 36, 31}

$$\frac{bgn\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)}{(gh-fi)^2}-\frac{bgn\text{PolyLog}\left(2,-\frac{i(d+ex)}{eh-di}\right)}{(gh-fi)^2}+\frac{a+b\log\left(c(d+ex)^n\right)}{(h+ix)(gh-fi)}+\frac{g\log\left(\frac{e(f+gx)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{(gh-fi)^2}-\frac{g\log\left(\frac{e(h+ix)}{eh-di}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{(gh-fi)^2}-\frac{ben\log(d+ex)}{(eh-di)(gh-fi)}+\frac{ben\log(h+ix)}{(eh-di)(gh-fi)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])/((f + g*x)*(h + i*x)^2),x]
```

```
[Out] -((b*e*n*Log[d + e*x])/((e*h - d*i)*(g*h - f*i))) + (a + b*Log[c*(d + e*x)^
n])/((g*h - f*i)*(h + i*x)) + (g*(a + b*Log[c*(d + e*x)^n])*Log[(e*(f + g*x
))/(e*f - d*g)])/(g*h - f*i)^2 + (b*e*n*Log[h + i*x])/((e*h - d*i)*(g*h - f
*i)) - (g*(a + b*Log[c*(d + e*x)^n])*Log[(e*(h + i*x))/(e*h - d*i)])/(g*h -
 f*i)^2 + (b*g*n*PolyLog[2, -((g*(d + e*x))/(e*f - d*g))])/(g*h - f*i)^2 -
(b*g*n*PolyLog[2, -((i*(d + e*x))/(e*h - d*i))])/(g*h - f*i)^2
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 36

```
Int[1/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))), x_Symbol] :> Dist[b/(b*c
 - a*d), Int[1/(a + b*x), x], x] - Dist[d/(b*c - a*d), Int[1/(c + d*x), x],
 x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + c*e*(x/g)])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2441

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d + e*x
)^n])/g), x] - Dist[b*e*(n/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2442

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[(f + g*x)^(q + 1)*((a + b*Log[c*(d + e*x)^n])/(
g*(q + 1))), x] - Dist[b*e*(n/(g*(q + 1))), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 2465

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rubi steps

$$\int \frac{a+b\log\left(c(d+ex)^n\right)}{(h+222x)^2(f+gx)}\,dx = \int \left(\frac{222(a+b\log\left(c(d+ex)^n\right))}{(222f-gh)(h+222x)^2} - \frac{222g(a+b\log\left(c(d+ex)^n\right))}{(222f-gh)^2(h+222x)} + \frac{g^2(a+b\log}{(222f-}\right.$$

$$= -\frac{(222g)\int \frac{a+b\log(c(d+ex)^n)}{h+222x}\,dx}{(222f-gh)^2} + \frac{g^2\int \frac{a+b\log(c(d+ex)^n)}{f+gx}\,dx}{(222f-gh)^2} + \frac{222\int \frac{a+b\log(c(d+ex)^n)}{(h+222x)^2}}{222f-gh}$$

$$= -\frac{a+b\log\left(c(d+ex)^n\right)}{(222f-gh)(h+222x)} - \frac{g\log\left(-\frac{e(h+222x)}{222d-eh}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{(222f-gh)^2} + \frac{g(}{}$$

$$= -\frac{a+b\log\left(c(d+ex)^n\right)}{(222f-gh)(h+222x)} - \frac{g\log\left(-\frac{e(h+222x)}{222d-eh}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{(222f-gh)^2} + \frac{g(}{}$$

$$= \frac{ben\log(h+222x)}{(222d-eh)(222f-gh)} - \frac{ben\log(d+ex)}{(222d-eh)(222f-gh)} - \frac{a+b\log\left(c(d+ex)^n\right.}{(222f-gh)(h+222}$$

Mathematica [A]
time = 0.13, size = 196, normalized size = 0.78

$$\frac{\frac{(gh-fi)(a+b\log(c(d+ex)^n))}{h+ix}+g(a+b\log\left(c(d+ex)^n\right))\log\left(\frac{e(f+gx)}{ef-dg}\right)-\frac{be(gh-fi)n(\log(d+ex)-\log(h+ix))}{eh-di}-g(a+b\log\left(c(d+ex)^n\right))\log\left(\frac{e(h+ix)}{eh-di}\right)+bgn\text{Li}_2\left(\frac{g(d+ex)}{-ef+dg}\right)-bgn\text{Li}_2\left(\frac{i(d+ex)}{-eh+di}\right)}{(gh-fi)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])/((f + g*x)*(h + i*x)^2),x]
```

```
[Out] (((g*h - f*i)*(a + b*Log[c*(d + e*x)^n]))/(h + i*x) + g*(a + b*Log[c*(d + e
*x)^n])*Log[(e*(f + g*x))/(e*f - d*g)] - (b*e*(g*h - f*i)*n*(Log[d + e*x] -
 Log[h + i*x]))/(e*h - d*i) - g*(a + b*Log[c*(d + e*x)^n])*Log[(e*(h + i*x)
)/(e*h - d*i)] + b*g*n*PolyLog[2, (g*(d + e*x))/(-(e*f) + d*g)] - b*g*n*Pol
yLog[2, (i*(d + e*x))/(-(e*h) + d*i)])/(g*h - f*i)^2
```

Maple [C] Result contains higher order function than in optimal. Order 9 vs. order 4.
time = 0.55, size = 970, normalized size = 3.85

method	result
risch	$\frac{ag\ln(gx+f)}{(fi-gh)^2}-\frac{ag\ln(ix+h)}{(fi-gh)^2}-\frac{a}{(fi-gh)(ix+h)}-\frac{b\ln((ex+d)^n)g\ln(ix+h)}{(fi-gh)^2}-\frac{ib\pi\,\text{csgn}(i(ex+d)^n)\text{csgn}(ic(ex+d)^n)^2g\ln(ix+h)}{2(fi-gh)^2}+$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))/(g*x+f)/(i*x+h)^2,x,method=_RETURNVERBOSE)
```

```
[Out] 1/2*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*g/(f*i-g*h)^2*ln(g*x+f)-1/2*I*b*
Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*g/(f*i-g*h)^2*ln(i*x+h)+a*g/(f*i-g*h)^2*
ln(g*x+f)-a*g/(f*i-g*h)^2*ln(i*x+h)-a/(f*i-g*h)/(i*x+h)-b*ln((e*x+d)^n)*g/(
f*i-g*h)^2*ln(i*x+h)-b*ln(c)/(f*i-g*h)/(i*x+h)+1/2*I*b*Pi*csgn(I*c)*csgn(I*
(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/(f*i-g*h)/(i*x+h)+1/2*I*b*Pi*csgn(I*(e*x+d)^
n)*csgn(I*c*(e*x+d)^n)^2*g/(f*i-g*h)^2*ln(g*x+f)-1/2*I*b*Pi*csgn(I*(e*x+d)^
n)*csgn(I*c*(e*x+d)^n)^2*g/(f*i-g*h)^2*ln(i*x+h)-b*e*n/(f*i-g*h)/(d*i-e*h)*
ln(e*x+d)+b*ln((e*x+d)^n)*g/(f*i-g*h)^2*ln(g*x+f)-b*ln((e*x+d)^n)/(f*i-g*h)
/(i*x+h)+1/2*I*b*Pi*csgn(I*c*(e*x+d)^n)^3/(f*i-g*h)/(i*x+h)-1/2*I*b*Pi*csgn
(I*c)*csgn(I*c*(e*x+d)^n)^2/(f*i-g*h)/(i*x+h)+1/2*I*b*Pi*csgn(I*c*(e*x+d)^n
)^3*g/(f*i-g*h)^2*ln(i*x+h)-b*n*g/(f*i-g*h)^2*ln(g*x+f)*ln(((g*x+f)*e+d*g-e
*f)/(d*g-e*f))-b*ln(c)*g/(f*i-g*h)^2*ln(i*x+h)+b*ln(c)*g/(f*i-g*h)^2*ln(g*x
+f)-1/2*I*b*Pi*csgn(I*c*(e*x+d)^n)^3*g/(f*i-g*h)^2*ln(g*x+f)-1/2*I*b*Pi*csg
n(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/(f*i-g*h)/(i*x+h)-b*n*g/(f*i-g*h)^2*di
log(((g*x+f)*e+d*g-e*f)/(d*g-e*f))+b*n*g/(f*i-g*h)^2*dilog(((i*x+h)*e+d*i-e
*h)/(d*i-e*h))+b*e*n/(f*i-g*h)/(d*i-e*h)*ln(i*x+h)+b*n*g/(f*i-g*h)^2*ln(i*x
+h)*ln(((i*x+h)*e+d*i-e*h)/(d*i-e*h))+1/2*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n
)*csgn(I*c*(e*x+d)^n)*g/(f*i-g*h)^2*ln(i*x+h)-1/2*I*b*Pi*csgn(I*c)*csgn(I*(
e*x+d)^n)*csgn(I*c*(e*x+d)^n)*g/(f*i-g*h)^2*ln(g*x+f)
```

Maxima [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x+f)/(i*x+h)^2,x, algorithm="maxima")
[Out] Exception raised: RuntimeError >> ECL says: THROW: The catch RAT-ERR is und
efined.
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x+f)/(i*x+h)^2,x, algorithm="fricas")
[Out] integral(-(b*n*log(x*e + d) + b*log(c) + a)/(g*x^3 - f*h^2 + (-2*I*g*h + f)
*x^2 - (g*h^2 + 2*I*f*h)*x), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{a + b \log \left(c(d + ex)^n\right)}{(f + gx)\,(h + ix)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))/(g*x+f)/(i*x+h)**2,x)
[Out] Integral((a + b*log(c*(d + e*x)**n))/((f + g*x)*(h + i*x)**2), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x+f)/(i*x+h)^2,x, algorithm="giac")
[Out] integrate((b*log((x*e + d)^n*c) + a)/((g*x + f)*(h + I*x)^2), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{a + b\,\ln \left(c\,(d + e\,x)^n\right)}{(f + g\,x)\,(h + i\,x)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))/((f + g*x)*(h + i*x)^2),x)
[Out] int((a + b*log(c*(d + e*x)^n))/((f + g*x)*(h + i*x)^2), x)
```

3.223 $\int \frac{a+b\log(c(d+ex)^n)}{(f+gx)(h+ix)^3} \, dx$

Optimal. Leaf size=402

$$-\frac{ben}{2(eh-di)(gh-fi)(h+ix)}-\frac{begn\log(d+ex)}{(eh-di)(gh-fi)^2}-\frac{be^2n\log(d+ex)}{2(eh-di)^2(gh-fi)}+\frac{a+b\log\left(c(d+ex)^n\right)}{2(gh-fi)(h+ix)^2}+\frac{g(a+b}{(gh}$$

```
[Out] -1/2*b*e*n/(-d*i+e*h)/(-f*i+g*h)/(i*x+h)-b*e*g*n*ln(e*x+d)/(-d*i+e*h)/(-f*i
+g*h)^2-1/2*b*e^2*n*ln(e*x+d)/(-d*i+e*h)^2/(-f*i+g*h)+1/2*(a+b*ln(c*(e*x+d)
^n))/(-f*i+g*h)/(i*x+h)^2+g*(a+b*ln(c*(e*x+d)^n))/(-f*i+g*h)^2/(i*x+h)+g^2*
(a+b*ln(c*(e*x+d)^n))*ln(e*(g*x+f)/(-d*g+e*f))/(-f*i+g*h)^3+b*e*g*n*ln(i*x+
h)/(-d*i+e*h)/(-f*i+g*h)^2+1/2*b*e^2*n*ln(i*x+h)/(-d*i+e*h)^2/(-f*i+g*h)-g^
2*(a+b*ln(c*(e*x+d)^n))*ln(e*(i*x+h)/(-d*i+e*h))/(-f*i+g*h)^3+b*g^2*n*polyl
og(2,-g*(e*x+d)/(-d*g+e*f))/(-f*i+g*h)^3-b*g^2*n*polylog(2,-i*(e*x+d)/(-d*i
+e*h))/(-f*i+g*h)^3
```

Rubi [A]
time = 0.27, antiderivative size = 402, normalized size of antiderivative = 1.00, number of steps used = 15, number of rules used = 8, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.276$, Rules used = {2465, 2441, 2440, 2438, 2442, 46, 36, 31}

$$\frac{bg^2n\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)}{(gh-fi)^3}-\frac{bg^2n\text{PolyLog}\left(2,-\frac{i(d+ex)}{eh-di}\right)}{(gh-fi)^3}+\frac{g^2\log\left(\frac{e(f+gx)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{(gh-fi)^3}-\frac{g^2\log\left(\frac{e(h+ix)}{eh-di}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{(gh-fi)^3}+\frac{g\left(a+b\log\left(c(d+ex)^n\right)\right)}{(h+ix)(gh-fi)^2}+\frac{a+b\log\left(c(d+ex)^n\right)}{2(h+ix)^2(gh-fi)}-\frac{be^2n\log(d+ex)}{2(eh-di)^2(gh-fi)}+\frac{be^2n\log(h+ix)}{2(eh-di)^2(gh-fi)}-\frac{ben}{2(h+ix)(eh-di)(gh-fi)}-\frac{begn\log(d+ex)}{(eh-di)(gh-fi)^2}+\frac{begn\log(h+ix)}{(eh-di)(gh-fi)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])/((f + g*x)*(h + i*x)^3),x]
```

```
[Out] -1/2*(b*e*n)/((e*h - d*i)*(g*h - f*i)*(h + i*x)) - (b*e*g*n*Log[d + e*x])/(
(e*h - d*i)*(g*h - f*i)^2) - (b*e^2*n*Log[d + e*x])/(2*(e*h - d*i)^2*(g*h -
 f*i)) + (a + b*Log[c*(d + e*x)^n])/(2*(g*h - f*i)*(h + i*x)^2) + (g*(a + b
*Log[c*(d + e*x)^n]))/((g*h - f*i)^2*(h + i*x)) + (g^2*(a + b*Log[c*(d + e*
x)^n])*Log[(e*(f + g*x))/(e*f - d*g)])/(g*h - f*i)^3 + (b*e*g*n*Log[h + i*x
])/((e*h - d*i)*(g*h - f*i)^2) + (b*e^2*n*Log[h + i*x])/(2*(e*h - d*i)^2*(g
*h - f*i)) - (g^2*(a + b*Log[c*(d + e*x)^n])*Log[(e*(h + i*x))/(e*h - d*i)]
)/(g*h - f*i)^3 + (b*g^2*n*PolyLog[2, -((g*(d + e*x))/(e*f - d*g))])/(g*h -
 f*i)^3 - (b*g^2*n*PolyLog[2, -((i*(d + e*x))/(e*h - d*i))])/(g*h - f*i)^3
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 36

```
Int[1/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))), x_Symbol] :> Dist[b/(b*c
 - a*d), Int[1/(a + b*x), x], x] - Dist[d/(b*c - a*d), Int[1/(c + d*x), x],
```

```
x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0]
```

Rule 46

```
Int[((a_) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[E
xpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m +
 n + 2, 0])
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + c*e*(x/g)])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2441

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d + e*x
)^n])/g), x] - Dist[b*e*(n/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2442

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[(f + g*x)^(q + 1)*((a + b*Log[c*(d + e*x)^n])/(
g*(q + 1))), x] - Dist[b*e*(n/(g*(q + 1))), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 2465

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rubi steps

$$\int \frac{a+b\log\left(c(d+ex)^n\right)}{(h+223x)^3(f+gx)}\,dx = \int \left(\frac{223(a+b\log\left(c(d+ex)^n\right))}{(223f-gh)(h+223x)^3} - \frac{223g(a+b\log\left(c(d+ex)^n\right))}{(223f-gh)^2(h+223x)^2} + \frac{223g^2(a+b}{(223f-g}\right.$$

$$= \frac{(223g^2)\int \frac{a+b\log(c(d+ex)^n)}{h+223x}\,dx}{(223f-gh)^3} - \frac{g^3\int \frac{a+b\log(c(d+ex)^n)}{f+gx}\,dx}{(223f-gh)^3} - \frac{(223g)\int \frac{a+b\log(c(d+ex)^n}{(h+223x)^2}}{(223f-gh)^2}$$

$$= -\frac{a+b\log\left(c(d+ex)^n\right)}{2(223f-gh)(h+223x)^2} + \frac{g(a+b\log\left(c(d+ex)^n\right))}{(223f-gh)^2(h+223x)} + \frac{g^2\log\left(-\frac{e(h+223x)}{223d-eh}\right)}{(223}$$

$$= -\frac{a+b\log\left(c(d+ex)^n\right)}{2(223f-gh)(h+223x)^2} + \frac{g(a+b\log\left(c(d+ex)^n\right))}{(223f-gh)^2(h+223x)} + \frac{g^2\log\left(-\frac{e(h+223x)}{223d-eh}\right)}{(223}$$

$$= -\frac{ben}{2(223d-eh)(223f-gh)(h+223x)} - \frac{begn\log(h+223x)}{(223d-eh)(223f-gh)^2} - \frac{be^2n}{2(223d}$$

Mathematica [A]
time = 0.24, size = 311, normalized size = 0.77

$$\frac{\frac{(gh-fi)^2(a+b\log(c(d+ex)^n))}{(h+ix)^2} + \frac{2g(gh-fi)(a+b\log(c(d+ex)^n))}{h+ix} + 2g^2(a+b\log\left(c(d+ex)^n\right))\log\left(\frac{e(f+gx)}{ef-dg}\right) - \frac{2beg(gh-fi)n(\log(d+ex)-\log(h+ix))}{eh-di} - \frac{be(gh-fi)^2n(eh-di+e(h+ix)\log(d+ex)-e(h+ix)\log(h+ix))}{(eh-di)^2(h+ix)} - 2g^2(a+b\log\left(c(d+ex)^n\right))\log\left(\frac{e(h+ix)}{eh-di}\right) + 2bg^2n\mathrm{Li}_2\left(\frac{g(d+ex)}{-ef+dg}\right) - 2bg^2n\mathrm{Li}_2\left(\frac{i(d+ex)}{-eh+di}\right)}{2(gh-fi)^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])/((f + g*x)*(h + i*x)^3),x]
```

```
[Out] (((g*h - f*i)^2*(a + b*Log[c*(d + e*x)^n]))/(h + i*x)^2 + (2*g*(g*h - f*i)*
(a + b*Log[c*(d + e*x)^n]))/(h + i*x) + 2*g^2*(a + b*Log[c*(d + e*x)^n])*Lo
g[(e*(f + g*x))/(e*f - d*g)] - (2*b*e*g*(g*h - f*i)*n*(Log[d + e*x] - Log[h
 + i*x]))/(e*h - d*i) - (b*e*(g*h - f*i)^2*n*(e*h - d*i + e*(h + i*x)*Log[d
 + e*x] - e*(h + i*x)*Log[h + i*x]))/((e*h - d*i)^2*(h + i*x)) - 2*g^2*(a +
 b*Log[c*(d + e*x)^n])*Log[(e*(h + i*x))/(e*h - d*i)] + 2*b*g^2*n*PolyLog[2
, (g*(d + e*x))/(-(e*f) + d*g)] - 2*b*g^2*n*PolyLog[2, (i*(d + e*x))/(-(e*h
) + d*i)])/(2*(g*h - f*i)^3)
```

Maple [C] Result contains higher order function than in optimal. Order 9 vs. order 4.
time = 0.50, size = 1468, normalized size = 3.65

method	result	size
risch	Expression too large to display	1468

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))/(g*x+f)/(i*x+h)^3,x,method=_RETURNVERBOSE)
```

```
[Out] 1/4*I*b*Pi*csgn(I*c*(e*x+d)^n)^3/(f*i-g*h)/(i*x+h)^2+3/2*b*e^2*n/(f*i-g*h)^
2/(d*i-e*h)^2*ln(i*x+h)*g*h-1/2*b*e*n/(f*i-g*h)^2/(d*i-e*h)/(i*x+h)*f*i+1/2
```

```
*b*e*n/(f*i-g*h)^2/(d*i-e*h)/(i*x+h)*g*h+1/2*b*e^2*n/(f*i-g*h)^2/(d*i-e*h)^
2*ln(e*x+d)*f*i-3/2*b*e^2*n/(f*i-g*h)^2/(d*i-e*h)^2*ln(e*x+d)*g*h-1/2*b*e^2
*n/(f*i-g*h)^2/(d*i-e*h)^2*ln(i*x+h)*f*i+b*ln((e*x+d)^n)*g/(f*i-g*h)^2/(i*x
+h)-1/2*b*ln(c)/(f*i-g*h)/(i*x+h)^2+1/2*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(
e*x+d)^n)^2*g^2/(f*i-g*h)^3*ln(i*x+h)-a*g^2/(f*i-g*h)^3*ln(g*x+f)+a*g^2/(f*
i-g*h)^3*ln(i*x+h)+a*g/(f*i-g*h)^2/(i*x+h)+1/4*I*b*Pi*csgn(I*c)*csgn(I*(e*x
+d)^n)*csgn(I*c*(e*x+d)^n)/(f*i-g*h)/(i*x+h)^2+1/2*I*b*Pi*csgn(I*c)*csgn(I*
c*(e*x+d)^n)^2*g^2/(f*i-g*h)^3*ln(i*x+h)-1/2*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(
I*c*(e*x+d)^n)^2*g^2/(f*i-g*h)^3*ln(g*x+f)+1/2*I*b*Pi*csgn(I*(e*x+d)^n)*csg
n(I*c*(e*x+d)^n)^2*g/(f*i-g*h)^2/(i*x+h)-1/2*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x
+d)^n)^2*g^2/(f*i-g*h)^3*ln(g*x+f)-b*ln((e*x+d)^n)*g^2/(f*i-g*h)^3*ln(g*x+f
)+1/2*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*g/(f*i-g*h)^2/(i*x+h)-1/2*a/(f
*i-g*h)/(i*x+h)^2+b*n*g^2/(f*i-g*h)^3*dilog(((g*x+f)*e+d*g-e*f)/(d*g-e*f))-
b*n*g^2/(f*i-g*h)^3*dilog(((i*x+h)*e+d*i-e*h)/(d*i-e*h))-1/2*b*ln((e*x+d)^n
)/(f*i-g*h)/(i*x+h)^2+b*ln(c)*g^2/(f*i-g*h)^3*ln(i*x+h)+b*ln(c)*g/(f*i-g*h)
^2/(i*x+h)-b*ln(c)*g^2/(f*i-g*h)^3*ln(g*x+f)-1/4*I*b*Pi*csgn(I*(e*x+d)^n)*c
sgn(I*c*(e*x+d)^n)^2/(f*i-g*h)/(i*x+h)^2-1/4*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x
+d)^n)^2/(f*i-g*h)/(i*x+h)^2+b*n*g^2/(f*i-g*h)^3*ln(g*x+f)*ln(((g*x+f)*e+d*
g-e*f)/(d*g-e*f))-b*n*g^2/(f*i-g*h)^3*ln(i*x+h)*ln(((i*x+h)*e+d*i-e*h)/(d*i
-e*h))+b*ln((e*x+d)^n)*g^2/(f*i-g*h)^3*ln(i*x+h)+1/2*I*b*Pi*csgn(I*c*(e*x+d
)^n)^3*g^2/(f*i-g*h)^3*ln(g*x+f)-1/2*I*b*Pi*csgn(I*c*(e*x+d)^n)^3*g^2/(f*i-
g*h)^3*ln(i*x+h)-1/2*I*b*Pi*csgn(I*c*(e*x+d)^n)^3*g/(f*i-g*h)^2/(i*x+h)-1/2
*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)*g/(f*i-g*h)^2/(i*x+
h)+1/2*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)*g^2/(f*i-g*h)
^3*ln(g*x+f)-1/2*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)*g^2
/(f*i-g*h)^3*ln(i*x+h)+b*e*n/(f*i-g*h)^2/(d*i-e*h)^2*ln(e*x+d)*d*g*i-b*e*n/
(f*i-g*h)^2/(d*i-e*h)^2*ln(i*x+h)*d*g*i
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x+f)/(i*x+h)^3,x, algorithm="maxima")
[Out] integrate((b*log((x*e + d)^n*c) + a)/((g*x + f)*(h + I*x)^3), x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x+f)/(i*x+h)^3,x, algorithm="fricas")
```

```
[Out] integral((I*b*n*log(x*e + d) + I*b*log(c) + I*a)/(g*x^4 + I*f*h^3 + (-3*I*g
*h + f)*x^3 - 3*(g*h^2 + I*f*h)*x^2 + (I*g*h^3 - 3*f*h^2)*x), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{a + b \log \left(c(d + ex)^n\right)}{(f + gx)\,(h + ix)^3}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))/(g*x+f)/(i*x+h)**3,x)
[Out] Integral((a + b*log(c*(d + e*x)**n))/((f + g*x)*(h + i*x)**3), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x+f)/(i*x+h)^3,x, algorithm="giac")
[Out] integrate((b*log((x*e + d)^n*c) + a)/((g*x + f)*(h + I*x)^3), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{a + b\,\ln\left(c\,{\left(d + e\,x\right)}^n\right)}{\left(f + g\,x\right)\,{\left(h + i\,x\right)}^3}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))/((f + g*x)*(h + i*x)^3),x)
[Out] int((a + b*log(c*(d + e*x)^n))/((f + g*x)*(h + i*x)^3), x)
```

3.224 $\int \frac{(h+ix)^2(a+b\log(c(d+ex)^n))^2}{f+gx}\,dx$

Optimal. Leaf size=469

$$-\frac{2abi(eh-di)nx}{eg}-\frac{2abi(gh-fi)nx}{g^2}+\frac{2b^2i(eh-di)n^2x}{eg}+\frac{2b^2i(gh-fi)n^2x}{g^2}+\frac{b^2i^2n^2(d+ex)^2}{4e^2g}-\frac{2b^2i(eh-d}{}$$

```
[Out] -2*a*b*i*(-d*i+e*h)*n*x/e/g-2*a*b*i*(-f*i+g*h)*n*x/g^2+2*b^2*i*(-d*i+e*h)*n
^2*x/e/g+2*b^2*i*(-f*i+g*h)*n^2*x/g^2+1/4*b^2*i^2*n^2*(e*x+d)^2/e^2/g-2*b^2
*i*(-d*i+e*h)*n*(e*x+d)*ln(c*(e*x+d)^n)/e^2/g-2*b^2*i*(-f*i+g*h)*n*(e*x+d)*
ln(c*(e*x+d)^n)/e/g^2-1/2*b*i^2*n*(e*x+d)^2*(a+b*ln(c*(e*x+d)^n))/e^2/g+i*(
-d*i+e*h)*(e*x+d)*(a+b*ln(c*(e*x+d)^n))^2/e^2/g+i*(-f*i+g*h)*(e*x+d)*(a+b*l
n(c*(e*x+d)^n))^2/e/g^2+1/2*i^2*(e*x+d)^2*(a+b*ln(c*(e*x+d)^n))^2/e^2/g+(-f
*i+g*h)^2*(a+b*ln(c*(e*x+d)^n))^2*ln(e*(g*x+f)/(-d*g+e*f))/g^3+2*b*(-f*i+g*
h)^2*n*(a+b*ln(c*(e*x+d)^n))*polylog(2,-g*(e*x+d)/(-d*g+e*f))/g^3-2*b^2*(-f
*i+g*h)^2*n^2*polylog(3,-g*(e*x+d)/(-d*g+e*f))/g^3
```

Rubi [A]
time = 0.38, antiderivative size = 469, normalized size of antiderivative = 1.00, number of steps used = 19, number of rules used = 12, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.387$, Rules used = {2465, 2436, 2333, 2332, 2443, 2481, 2421, 6724, 2448, 2437, 2342, 2341}

$$\frac{2bn(gh-fi)^2\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)(a+b\log(c(d+ex)^n))}{g^3}-\frac{2b^2n^2(gh-fi)^2\text{PolyLog}\left(3,-\frac{g(d+ex)}{ef-dg}\right)}{g^3}+\frac{i(d+ex)(eh-di)(a+b\log(c(d+ex)^n))^2}{e^2g}-\frac{bi^2n(d+ex)^2(a+b\log(c(d+ex)^n))}{2e^2g}+\frac{i^2(d+ex)^2(a+b\log(c(d+ex)^n))^2}{2e^2g}+\frac{(gh-fi)^2\log\left(\frac{e(f+gx)}{ef-dg}\right)(a+b\log(c(d+ex)^n))^2}{g^3}+\frac{i(d+ex)(gh-fi)(a+b\log(c(d+ex)^n))^2}{eg^2}-\frac{2abinx(eh-di)}{eg}-\frac{2abinx(gh-fi)}{g^2}-\frac{2b^2in(d+ex)(eh-di)\log(c(d+ex)^n)}{e^2g}-\frac{2b^2in(d+ex)(gh-fi)\log(c(d+ex)^n)}{eg^2}+\frac{b^2i^2n^2(d+ex)^2}{4e^2g}+\frac{2b^2in^2x(eh-di)}{eg}+\frac{2b^2in^2x(gh-fi)}{g^2}$$

Antiderivative was successfully verified.

```
[In] Int[((h + i*x)^2*(a + b*Log[c*(d + e*x)^n])^2)/(f + g*x),x]
```

```
[Out] (-2*a*b*i*(e*h - d*i)*n*x)/(e*g) - (2*a*b*i*(g*h - f*i)*n*x)/g^2 + (2*b^2*i
*(e*h - d*i)*n^2*x)/(e*g) + (2*b^2*i*(g*h - f*i)*n^2*x)/g^2 + (b^2*i^2*n^2*
(d + e*x)^2)/(4*e^2*g) - (2*b^2*i*(e*h - d*i)*n*(d + e*x)*Log[c*(d + e*x)^n
])/(e^2*g) - (2*b^2*i*(g*h - f*i)*n*(d + e*x)*Log[c*(d + e*x)^n])/(e*g^2) -
 (b*i^2*n*(d + e*x)^2*(a + b*Log[c*(d + e*x)^n]))/(2*e^2*g) + (i*(e*h - d*i
)*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^2)/(e^2*g) + (i*(g*h - f*i)*(d + e*x
)*(a + b*Log[c*(d + e*x)^n])^2)/(e*g^2) + (i^2*(d + e*x)^2*(a + b*Log[c*(d
+ e*x)^n])^2)/(2*e^2*g) + ((g*h - f*i)^2*(a + b*Log[c*(d + e*x)^n])^2*Log[(
e*(f + g*x))/(e*f - d*g)])/g^3 + (2*b*(g*h - f*i)^2*n*(a + b*Log[c*(d + e*x
)^n])*PolyLog[2, -((g*(d + e*x))/(e*f - d*g))])/g^3 - (2*b^2*(g*h - f*i)^2*
n^2*PolyLog[3, -((g*(d + e*x))/(e*f - d*g))])/g^3
```

Rule 2332

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2333

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2341

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_.)*(x_))^(m_.), x_Symbol] :>
Simp[(d*x)^(m + 1)*((a + b*Log[c*x^n])/(d*(m + 1))), x] - Simp[b*n*((d*x)^(
m + 1)/(d*(m + 1)^2)), x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[m, -1]
```

Rule 2342

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_.)*(x_))^(m_.), x_Symbo
l] :> Simp[(d*x)^(m + 1)*((a + b*Log[c*x^n])^p/(d*(m + 1))), x] - Dist[b*n*
(p/(m + 1)), Int[(d*x)^m*(a + b*Log[c*x^n])^(p - 1), x], x] /; FreeQ[{a, b,
 c, d, m, n}, x] && NeQ[m, -1] && GtQ[p, 0]
```

Rule 2421

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> Simp[(-PolyLog[2, (-d)*f*x^m])*((a + b*Log[c
*x^n])^p/m), x] + Dist[b*n*(p/m), Int[PolyLog[2, (-d)*f*x^m]*((a + b*Log[c*
x^n])^(p - 1)/x), x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0
] && EqQ[d*e, 1]
```

Rule 2436

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2437

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[(f*(x/d))^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2443

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d
+ e*x)^n])^p/g), x] - Dist[b*e*n*(p/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]*
((a + b*Log[c*(d + e*x)^n])^(p - 1)/(d + e*x)), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2448

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q*(a + b*Log[c*(d
 + e*x)^n])^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f -
 d*g, 0] && IGtQ[q, 0]
```

Rule 2465

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2481

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[(k*(x/d))^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + j*(x/e))^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 6724

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(h+224x)^2 (a+b\log(c(d+ex)^n))^2}{f+gx}\,dx = \int \left(\frac{224(-224f+gh)(a+b\log(c(d+ex)^n))^2}{g^2} + \frac{224(h+224}{}\right.$$

$$= \frac{224\int (h+224x)(a+b\log(c(d+ex)^n))^2\,dx}{g} - \frac{(224(224f-g}{}$$

$$= \frac{(224f-gh)^2 (a+b\log(c(d+ex)^n))^2 \log\left(\frac{e(f+gx)}{ef-dg}\right)}{g^3} + \frac{224\int \Big(}{}$$

$$= -\frac{224(224f-gh)(d+ex)(a+b\log(c(d+ex)^n))^2}{eg^2} + \frac{(224f-}{}$$

$$= \frac{448ab(224f-gh)nx}{g^2} - \frac{224(224f-gh)(d+ex)(a+b\log(c(d}{eg^2}$$

$$= \frac{448ab(224f-gh)nx}{g^2} - \frac{448b^2(224f-gh)n^2x}{g^2} + \frac{448b^2(224f-}{}$$

$$= \frac{448ab(224d-eh)nx}{eg} + \frac{448ab(224f-gh)nx}{g^2} - \frac{448b^2(224f-}{g^2}$$

$$= \frac{448ab(224d-eh)nx}{eg} + \frac{448ab(224f-gh)nx}{g^2} - \frac{448b^2(224d-}{eg}$$

Mathematica [A]
time = 0.35, size = 876, normalized size = 1.87

Antiderivative was successfully verified.

```
[In] Integrate[((h + i*x)^2*(a + b*Log[c*(d + e*x)^n])^2)/(f + g*x),x]
```

```
[Out] (4*e^2*g*i*(2*g*h - f*i)*x*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2
+ 2*e^2*g^2*i^2*x^2*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2 + 4*e^2
*(g*h - f*i)^2*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2*Log[f + g*x]
 + 8*b*e^2*g^2*h^2*n*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])*(Log[d +
 e*x]*Log[(e*(f + g*x))/(e*f - d*g)] + PolyLog[2, (g*(d + e*x))/(-(e*f) + d
*g)]) + 2*b*i^2*n*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])*(e*g*(e*x*(
4*f - g*x) + 2*d*(2*f + g*x)) - 2*Log[d + e*x]*(g*(d + e*x)*(2*e*f + d*g -
e*g*x) - 2*e^2*f^2*Log[(e*(f + g*x))/(e*f - d*g)]) + 4*e^2*f^2*PolyLog[2, (
```

```
g*(d + e*x))/(-(e*f) + d*g)]) - 16*b*e*g*h*i*n*(a - b*n*Log[d + e*x] + b*Lo
g[c*(d + e*x)^n])*(-(g*(d + e*x)*(-1 + Log[d + e*x])) + e*f*(Log[d + e*x]*L
og[(e*(f + g*x))/(e*f - d*g)] + PolyLog[2, (g*(d + e*x))/(-(e*f) + d*g)]))
+ 8*b^2*e*g*h*i*n^2*(g*(2*e*x - 2*(d + e*x)*Log[d + e*x] + (d + e*x)*Log[d
+ e*x]^2) - e*f*(Log[d + e*x]^2*Log[(e*(f + g*x))/(e*f - d*g)] + 2*Log[d +
e*x]*PolyLog[2, (g*(d + e*x))/(-(e*f) + d*g)] - 2*PolyLog[3, (g*(d + e*x))/
(-(e*f) + d*g)])) - b^2*i^2*n^2*(4*e*f*g*(2*e*x - 2*(d + e*x)*Log[d + e*x]
+ (d + e*x)*Log[d + e*x]^2) + g^2*(e*x*(6*d - e*x) + (-6*d^2 - 4*d*e*x + 2*
e^2*x^2)*Log[d + e*x] + 2*(d^2 - e^2*x^2)*Log[d + e*x]^2) - 4*e^2*f^2*(Log[
d + e*x]^2*Log[(e*(f + g*x))/(e*f - d*g)] + 2*Log[d + e*x]*PolyLog[2, (g*(d
 + e*x))/(-(e*f) + d*g)] - 2*PolyLog[3, (g*(d + e*x))/(-(e*f) + d*g)])) + 4
*b^2*e^2*g^2*h^2*n^2*(Log[d + e*x]^2*Log[(e*(f + g*x))/(e*f - d*g)] + 2*Log
[d + e*x]*PolyLog[2, (g*(d + e*x))/(-(e*f) + d*g)] - 2*PolyLog[3, (g*(d + e
*x))/(-(e*f) + d*g)]))/(4*e^2*g^3)
```

Maple [**F**]
time = 0.33, size = 0, normalized size = 0.00

$$\int \frac{\left(ix+h\right)^{2} \left(a+b\ln\left(c\left(ex+d\right)^{n}\right)\right)^{2}}{gx+f}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((i*x+h)^2*(a+b*ln(c*(e*x+d)^n))^2/(g*x+f),x)
```

```
[Out] int((i*x+h)^2*(a+b*ln(c*(e*x+d)^n))^2/(g*x+f),x)
```

Maxima [**F**]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^2*(a+b*log(c*(e*x+d)^n))^2/(g*x+f),x, algorithm="maxima")
```

```
[Out] 2*I*a^2*h*(x/g - f*log(g*x + f)/g^2) + a^2*h^2*log(g*x + f)/g - 1/2*a^2*(2*
f^2*log(g*x + f)/g^3 + (g*x^2 - 2*f*x)/g^2) - integrate(-(b^2*h^2*log(c)^2
+ 2*a*b*h^2*log(c) - (b^2*log(c)^2 + 2*a*b*log(c))*x^2 + (b^2*h^2 + 2*I*b^2
*h*x - b^2*x^2)*log((x*e + d)^n)^2 + 2*(I*b^2*h*log(c)^2 + 2*I*a*b*h*log(c)
)*x + 2*(b^2*h^2*log(c) + a*b*h^2 - (b^2*log(c) + a*b)*x^2 + 2*(I*b^2*h*log
(c) + I*a*b*h)*x)*log((x*e + d)^n))/(g*x + f), x)
```

Fricas [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^2*(a+b*log(c*(e*x+d)^n))^2/(g*x+f),x, algorithm="fricas")
```

```
[Out] integral((a^2*h^2 + 2*I*a^2*h*x - a^2*x^2 + (b^2*h^2*n^2 + 2*I*b^2*h*n^2*x
- b^2*n^2*x^2)*log(x*e + d)^2 + (b^2*h^2 + 2*I*b^2*h*x - b^2*x^2)*log(c)^2
+ 2*(a*b*h^2*n + 2*I*a*b*h*n*x - a*b*n*x^2 + (b^2*h^2*n + 2*I*b^2*h*n*x - b
^2*n*x^2)*log(c))*log(x*e + d) + 2*(a*b*h^2 + 2*I*a*b*h*x - a*b*x^2)*log(c)
)/(g*x + f), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(a+b\log\left(c(d+ex)^{n}\right)\right)^{2}(h+ix)^{2}}{f+gx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)**2*(a+b*ln(c*(e*x+d)**n))**2/(g*x+f),x)
```

```
[Out] Integral((a + b*log(c*(d + e*x)**n))**2*(h + i*x)**2/(f + g*x), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^2*(a+b*log(c*(e*x+d)^n))^2/(g*x+f),x, algorithm="giac")
```

```
[Out] integrate((b*log((x*e + d)^n*c) + a)^2*(h + I*x)^2/(g*x + f), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(h+i\,x)^{2}\,\left(a+b\,\ln\left(c\,(d+e\,x)^{n}\right)\right)^{2}}{f+g\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((h + i*x)^2*(a + b*log(c*(d + e*x)^n))^2)/(f + g*x),x)
```

```
[Out] int(((h + i*x)^2*(a + b*log(c*(d + e*x)^n))^2)/(f + g*x), x)
```

3.225 $\int \frac{(h+ix)(a+b\log(c(d+ex)^n))^2}{f+gx}\,dx$

Optimal. Leaf size=215

$$-\frac{2abinx}{g}+\frac{2b^2in^2x}{g}-\frac{2b^2in(d+ex)\log\left(c(d+ex)^n\right)}{eg}+\frac{i(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{eg}+\frac{(gh-fi)\left(a+b\log\right.}{}$$

```
[Out] -2*a*b*i*n*x/g+2*b^2*i*n^2*x/g-2*b^2*i*n*(e*x+d)*ln(c*(e*x+d)^n)/e/g+i*(e*x
+d)*(a+b*ln(c*(e*x+d)^n))^2/e/g+(-f*i+g*h)*(a+b*ln(c*(e*x+d)^n))^2*ln(e*(g*
x+f)/(-d*g+e*f))/g^2+2*b*(-f*i+g*h)*n*(a+b*ln(c*(e*x+d)^n))*polylog(2,-g*(e
*x+d)/(-d*g+e*f))/g^2-2*b^2*(-f*i+g*h)*n^2*polylog(3,-g*(e*x+d)/(-d*g+e*f))
/g^2
```

Rubi [A]

time = 0.19, antiderivative size = 215, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 8, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.276$, Rules used = {2465, 2436, 2333, 2332, 2443, 2481, 2421, 6724}

$$\frac{2bn(gh-fi)\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{g^2}-\frac{2b^2n^2(gh-fi)\text{PolyLog}\left(3,-\frac{g(d+ex)}{ef-dg}\right)}{g^2}+\frac{(gh-fi)\log\left(\frac{e(f+gx)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{g^2}+\frac{i(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{eg}-\frac{2abinx}{g}-\frac{2b^2in(d+ex)\log\left(c(d+ex)^n\right)}{eg}+\frac{2b^2in^2x}{g}$$

Antiderivative was successfully verified.

```
[In] Int[((h + i*x)*(a + b*Log[c*(d + e*x)^n])^2)/(f + g*x),x]
```

```
[Out] (-2*a*b*i*n*x)/g + (2*b^2*i*n^2*x)/g - (2*b^2*i*n*(d + e*x)*Log[c*(d + e*x)
^n])/(e*g) + (i*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^2)/(e*g) + ((g*h - f*i
)*(a + b*Log[c*(d + e*x)^n])^2*Log[(e*(f + g*x))/(e*f - d*g)])/g^2 + (2*b*(
g*h - f*i)*n*(a + b*Log[c*(d + e*x)^n])*PolyLog[2, -((g*(d + e*x))/(e*f - d
*g))])/g^2 - (2*b^2*(g*h - f*i)*n^2*PolyLog[3, -((g*(d + e*x))/(e*f - d*g))
])/g^2
```

Rule 2332

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2333

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2421

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> Simp[(-PolyLog[2, (-d)*f*x^m])*((a + b*Log[c
```

```
*x^n])^p/m), x] + Dist[b*n*(p/m), Int[PolyLog[2, (-d)*f*x^m]*((a + b*Log[c*
x^n])^(p - 1)/x), x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0
] && EqQ[d*e, 1]
```

Rule 2436

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2443

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d
+ e*x)^n])^p/g), x] - Dist[b*e*n*(p/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]*
((a + b*Log[c*(d + e*x)^n])^(p - 1)/(d + e*x)), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2465

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2481

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[(k*(x/d))^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + j*(x/e))^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 6724

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(h+225x)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{f+gx}\,dx = \int \left(\frac{225\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{g} + \frac{(-225f+gh)\left(a+b\log\left(c\right.\right.}{g(f+gx)}\right.$$

$$= \frac{225\int \left(a+b\log\left(c(d+ex)^n\right)\right)^2\,dx}{g} + \frac{(-225f+gh)\int \frac{(a+b\log(c(}{f+}}{g}$$

$$= -\frac{(225f-gh)\left(a+b\log\left(c(d+ex)^n\right)\right)^2\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g^2} + \frac{225\mathrm{Sul}}{}$$

$$= \frac{225(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{eg} - \frac{(225f-gh)\left(a+b\log\right.}{}$$

$$= -\frac{450abnx}{g} + \frac{225(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{eg} - \frac{(225f-}{}$$

$$= -\frac{450abnx}{g} + \frac{450b^2n^2x}{g} - \frac{450b^2n(d+ex)\log\left(c(d+ex)^n\right)}{eg} + \frac{2}{}$$

Mathematica [B] Leaf count is larger than twice the leaf count of optimal. 460 vs. 2(215) = 430.
time = 0.19, size = 460, normalized size = 2.14

$$\frac{egix\left(a-bn\log(d+ex)+b\log\left(c(d+ex)^n\right)\right)^2+e(gh-fi)\left(a-bn\log(d+ex)+b\log\left(c(d+ex)^n\right)\right)^2\log(f+gx)+2beghn\left(a-bn\log(d+ex)+b\log\left(c(d+ex)^n\right)\right)\left(\log(d+ex)\log\left(\frac{e(f+gx)}{ef-dg}\right)+\mathrm{Li}_2\left(\frac{g(d+ex)}{-ef+dg}\right)\right)-2bin\left(a-bn\log(d+ex)+b\log\left(c(d+ex)^n\right)\right)\left(-g(d+ex)(-1+\log(d+ex))+ef\left(\log(d+ex)\log\left(\frac{e(f+gx)}{ef-dg}\right)+\mathrm{Li}_2\left(\frac{g(d+ex)}{-ef+dg}\right)\right)\right)+b^2in^2\left(g\left(2ex-2(d+ex)\log(d+ex)+(d+ex)\log^2(d+ex)\right)-ef\left(\log^2(d+ex)\log\left(\frac{e(f+gx)}{ef-dg}\right)+2\log(d+ex)\mathrm{Li}_2\left(\frac{g(d+ex)}{-ef+dg}\right)-2\mathrm{Li}_3\left(\frac{g(d+ex)}{-ef+dg}\right)\right)\right)+b^2eghn^2\left(\log^2(d+ex)\log\left(\frac{e(f+gx)}{ef-dg}\right)+2\log(d+ex)\mathrm{Li}_2\left(\frac{g(d+ex)}{-ef+dg}\right)-2\mathrm{Li}_3\left(\frac{g(d+ex)}{-ef+dg}\right)\right)}{eg^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((h + i*x)*(a + b*Log[c*(d + e*x)^n])^2)/(f + g*x),x]
```

```
[Out] (e*g*i*x*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2 + e*(g*h - f*i)*(a
 - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2*Log[f + g*x] + 2*b*e*g*h*n*(a
 - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])*(Log[d + e*x]*Log[(e*(f + g*x))
/(e*f - d*g)] + PolyLog[2, (g*(d + e*x))/(-(e*f) + d*g)]) - 2*b*i*n*(a - b*
n*Log[d + e*x] + b*Log[c*(d + e*x)^n])*(-(g*(d + e*x)*(-1 + Log[d + e*x]))
+ e*f*(Log[d + e*x]*Log[(e*(f + g*x))/(e*f - d*g)] + PolyLog[2, (g*(d + e*x
))/(-(e*f) + d*g)])) + b^2*i*n^2*(g*(2*e*x - 2*(d + e*x)*Log[d + e*x] + (d
+ e*x)*Log[d + e*x]^2) - e*f*(Log[d + e*x]^2*Log[(e*(f + g*x))/(e*f - d*g)]
 + 2*Log[d + e*x]*PolyLog[2, (g*(d + e*x))/(-(e*f) + d*g)] - 2*PolyLog[3, (
g*(d + e*x))/(-(e*f) + d*g)])) + b^2*e*g*h*n^2*(Log[d + e*x]^2*Log[(e*(f +
g*x))/(e*f - d*g)] + 2*Log[d + e*x]*PolyLog[2, (g*(d + e*x))/(-(e*f) + d*g)
] - 2*PolyLog[3, (g*(d + e*x))/(-(e*f) + d*g)]))/(e*g^2)
```

Maple [F]
time = 0.15, size = 0, normalized size = 0.00

$$\int \frac{(ix+h)\left(a+b\ln\left(c(ex+d)^{n}\right)\right)^{2}}{gx+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((i*x+h)*(a+b*ln(c*(e*x+d)^n))^2/(g*x+f),x)
```

```
[Out] int((i*x+h)*(a+b*ln(c*(e*x+d)^n))^2/(g*x+f),x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)*(a+b*log(c*(e*x+d)^n))^2/(g*x+f),x, algorithm="maxima")
```

```
[Out] I*a^2*(x/g - f*log(g*x + f)/g^2) + a^2*h*log(g*x + f)/g + integrate((b^2*h*
log(c)^2 + 2*a*b*h*log(c) + (b^2*h + I*b^2*x)*log((x*e + d)^n)^2 + (I*b^2*l
og(c)^2 + 2*I*a*b*log(c))*x + 2*(b^2*h*log(c) + a*b*h - (-I*b^2*log(c) - I*
a*b)*x)*log((x*e + d)^n))/(g*x + f), x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)*(a+b*log(c*(e*x+d)^n))^2/(g*x+f),x, algorithm="fricas")
```

```
[Out] integral((a^2*h + I*a^2*x + (b^2*h*n^2 + I*b^2*n^2*x)*log(x*e + d)^2 + (b^2
*h + I*b^2*x)*log(c)^2 + 2*(a*b*h*n + I*a*b*n*x + (b^2*h*n + I*b^2*n*x)*log
(c))*log(x*e + d) + 2*(a*b*h + I*a*b*x)*log(c))/(g*x + f), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(a+b\log\left(c(d+ex)^{n}\right)\right)^{2}(h+ix)}{f+gx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)*(a+b*ln(c*(e*x+d)**n))**2/(g*x+f),x)
```

```
[Out] Integral((a + b*log(c*(d + e*x)**n))**2*(h + i*x)/(f + g*x), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)*(a+b*log(c*(e*x+d)^n))^2/(g*x+f),x, algorithm="giac")
[Out] integrate((b*log((x*e + d)^n*c) + a)^2*(h + I*x)/(g*x + f), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(h+i\,x)\,\left(a+b\,\ln\left(c\,{(d+e\,x)}^n\right)\right)^2}{f+g\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((h + i*x)*(a + b*log(c*(d + e*x)^n))^2)/(f + g*x),x)
[Out] int(((h + i*x)*(a + b*log(c*(d + e*x)^n))^2)/(f + g*x), x)
```

3.226 $\int \frac{(a+b\log(c(d+ex)^n))^2}{f+gx}\,dx$

Optimal. Leaf size=111

$$\frac{(a+b\log\left(c(d+ex)^n\right))^2\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g}+\frac{2bn(a+b\log\left(c(d+ex)^n\right))\,\mathrm{Li}_2\left(-\frac{g(d+ex)}{ef-dg}\right)}{g}-\frac{2b^2n^2\mathrm{Li}_3\left(-\frac{g(d+ex)}{ef-dg}\right)}{g}$$

```
[Out] (a+b*ln(c*(e*x+d)^n))^2*ln(e*(g*x+f)/(-d*g+e*f))/g+2*b*n*(a+b*ln(c*(e*x+d)^
n))*polylog(2,-g*(e*x+d)/(-d*g+e*f))/g-2*b^2*n^2*polylog(3,-g*(e*x+d)/(-d*g
+e*f))/g
```

Rubi [A]
time = 0.08, antiderivative size = 111, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.167$, Rules used = {2443, 2481, 2421, 6724}

$$\frac{2bn\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)(a+b\log\left(c(d+ex)^n\right))}{g}-\frac{2b^2n^2\text{PolyLog}\left(3,-\frac{g(d+ex)}{ef-dg}\right)}{g}+\frac{\log\left(\frac{e(f+gx)}{ef-dg}\right)(a+b\log\left(c(d+ex)^n\right))^2}{g}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^2/(f + g*x),x]
```

```
[Out] ((a + b*Log[c*(d + e*x)^n])^2*Log[(e*(f + g*x))/(e*f - d*g)])/g + (2*b*n*(a
 + b*Log[c*(d + e*x)^n])*PolyLog[2, -((g*(d + e*x))/(e*f - d*g))])/g - (2*b
^2*n^2*PolyLog[3, -((g*(d + e*x))/(e*f - d*g))])/g
```

Rule 2421

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> Simp[(-PolyLog[2, (-d)*f*x^m])*((a + b*Log[c
*x^n])^p/m), x] + Dist[b*n*(p/m), Int[PolyLog[2, (-d)*f*x^m]*((a + b*Log[c*
x^n])^(p - 1)/x), x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0
] && EqQ[d*e, 1]
```

Rule 2443

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d
+ e*x)^n])^p/g), x] - Dist[b*e*n*(p/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]*
((a + b*Log[c*(d + e*x)^n])^(p - 1)/(d + e*x)), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2481

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
```

```
bol] :> Dist[1/e, Subst[Int[(k*(x/d))^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + j*(x/e))^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 6724

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(a+b\log(c(d+ex)^n))^2}{f+gx}\,dx = \frac{(a+b\log(c(d+ex)^n))^2\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g} - \frac{(2ben)\int \frac{(a+b\log(c(d+ex)^n))\log\left(\frac{e(f+g}{ef-d}\right.}{d+ex}}{g}$$

$$= \frac{(a+b\log(c(d+ex)^n))^2\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g} - \frac{(2bn)\text{Subst}\left(\int \frac{(a+b\log(cx^n))\log\left(\frac{e(}{}\right.}{x}\right.}{g}$$

$$= \frac{(a+b\log(c(d+ex)^n))^2\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g} + \frac{2bn(a+b\log(c(d+ex)^n))\,\text{Li}_2\left(-\right.}{g}$$

$$= \frac{(a+b\log(c(d+ex)^n))^2\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g} + \frac{2bn(a+b\log(c(d+ex)^n))\,\text{Li}_2\left(-\right.}{g}$$

Mathematica [B] Leaf count is larger than twice the leaf count of optimal. 226 vs. 2(111) = 222.
time = 0.13, size = 226, normalized size = 2.04

$$\frac{a^2\log(f+gx)}{g}+\frac{b\Big((-n\log(d+ex)+\log(c(d+ex)^n))(2a-bn\log(d+ex)+b\log(c(d+ex)^n))\log(f+gx)+2n(a-bn\log(d+ex)+b\log(c(d+ex)^n))\left(\log(d+ex)\log\left(\frac{e(f+gx)}{ef-dg}\right)+\text{Li}_2\left(\frac{g(d+ex)}{-ef+dg}\right)\right)+bn^2\left(\log^2(d+ex)\log\left(\frac{e(f+gx)}{ef-dg}\right)+2\log(d+ex)\text{Li}_2\left(\frac{g(d+ex)}{-ef+dg}\right)-2\text{Li}_3\left(\frac{g(d+ex)}{-ef+dg}\right)\right)\Big)}{g}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^2/(f + g*x),x]
```

```
[Out] (a^2*Log[f + g*x])/g + (b*((-(n*Log[d + e*x]) + Log[c*(d + e*x)^n])*(2*a -
b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])*Log[f + g*x] + 2*n*(a - b*n*Log[d
+ e*x] + b*Log[c*(d + e*x)^n])*(Log[d + e*x]*Log[(e*(f + g*x))/(e*f - d*g)]
 + PolyLog[2, (g*(d + e*x))/(-(e*f) + d*g)]) + b*n^2*(Log[d + e*x]^2*Log[(e
*(f + g*x))/(e*f - d*g)] + 2*Log[d + e*x]*PolyLog[2, (g*(d + e*x))/(-(e*f)
+ d*g)] - 2*PolyLog[3, (g*(d + e*x))/(-(e*f) + d*g)])))/g
```

Maple [C] Result contains higher order function than in optimal. Order 9 vs. order 4.
time = 0.28, size = 2018, normalized size = 18.18

method	result	size
risch	Expression too large to display	2018

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))^2/(g*x+f),x,method=_RETURNVERBOSE)
```

```
[Out] I/g*n*ln(g*x+f)*ln(((g*x+f)*e+d*g-e*f)/(d*g-e*f))*b^2*Pi*csgn(I*c*(e*x+d)^n
)^3+I*ln(g*x+f)/g*ln((e*x+d)^n)*b^2*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n
)^2+I*ln(g*x+f)/g*ln((e*x+d)^n)*b^2*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-1/4*
ln(g*x+f)/g*Pi^2*b^2*csgn(I*c*(e*x+d)^n)^6-I/g*n*dilog(((g*x+f)*e+d*g-e*f)/
(d*g-e*f))*b^2*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-I/g*n*dilog(((g*x
+f)*e+d*g-e*f)/(d*g-e*f))*b^2*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I*ln(g*x+f
)/g*Pi*a*b*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+I*ln(g*x+f)/g*Pi*a*b*csg
n(I*c)*csgn(I*c*(e*x+d)^n)^2+I*ln(g*x+f)/g*ln(c)*Pi*b^2*csgn(I*(e*x+d)^n)*c
sgn(I*c*(e*x+d)^n)^2+I*ln(g*x+f)/g*ln(c)*Pi*b^2*csgn(I*c)*csgn(I*c*(e*x+d)^
n)^2-ln(g*x+f)/g*Pi^2*b^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^4
+a^2*ln(g*x+f)/g-I*ln(g*x+f)/g*ln((e*x+d)^n)*b^2*Pi*csgn(I*c)*csgn(I*(e*x+d
)^n)*csgn(I*c*(e*x+d)^n)+I/g*n*ln(g*x+f)*ln(((g*x+f)*e+d*g-e*f)/(d*g-e*f))*
b^2*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+1/2*ln(g*x+f)/g*Pi^2
*b^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^5+2*b*ln(g*x+f)/g*ln((e*x+d)^n)*a-2*b/g*
n*ln(g*x+f)*ln(((g*x+f)*e+d*g-e*f)/(d*g-e*f))*a+b^2*ln(g*(e*x+d)-d*g+e*f)/g
*ln((e*x+d)^n)^2-1/4*ln(g*x+f)/g*Pi^2*b^2*csgn(I*(e*x+d)^n)^2*csgn(I*c*(e*x
+d)^n)^4+1/2*ln(g*x+f)/g*Pi^2*b^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^5-I
*ln(g*x+f)/g*Pi*a*b*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+2*ln(g*
x+f)/g*ln((e*x+d)^n)*b^2*ln(c)+2*b^2*n*dilog((g*(e*x+d)-d*g+e*f)/(-d*g+e*f)
)/g*ln((e*x+d)^n)-2*b^2*ln(g*(e*x+d)-d*g+e*f)/g*ln(e*x+d)*ln((e*x+d)^n)*n-I
*ln(g*x+f)/g*ln(c)*Pi*b^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-1
/4*ln(g*x+f)/g*Pi^2*b^2*csgn(I*c)^2*csgn(I*c*(e*x+d)^n)^4+2*b^2*n*ln(e*x+d)
*ln((g*(e*x+d)-d*g+e*f)/(-d*g+e*f))/g*ln((e*x+d)^n)+I/g*n*dilog(((g*x+f)*e+
d*g-e*f)/(d*g-e*f))*b^2*Pi*csgn(I*c*(e*x+d)^n)^3+1/2*ln(g*x+f)/g*Pi^2*b^2*c
sgn(I*c)^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^3-1/4*ln(g*x+f)/g*Pi^2*b^2
*csgn(I*c)^2*csgn(I*(e*x+d)^n)^2*csgn(I*c*(e*x+d)^n)^2-I/g*n*ln(g*x+f)*ln((
(g*x+f)*e+d*g-e*f)/(d*g-e*f))*b^2*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I/g*n*
dilog(((g*x+f)*e+d*g-e*f)/(d*g-e*f))*b^2*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csg
n(I*c*(e*x+d)^n)+1/2*ln(g*x+f)/g*Pi^2*b^2*csgn(I*c)*csgn(I*(e*x+d)^n)^2*csg
n(I*c*(e*x+d)^n)^3-I/g*n*ln(g*x+f)*ln(((g*x+f)*e+d*g-e*f)/(d*g-e*f))*b^2*Pi
*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+b^2*n^2/g*ln(e*x+d)^2*ln(1-g/(d*g-
e*f)*(e*x+d))+2*b^2*n^2/g*ln(e*x+d)*polylog(2,g/(d*g-e*f)*(e*x+d))-2*b^2*n^
2*dilog((g*(e*x+d)-d*g+e*f)/(-d*g+e*f))/g*ln(e*x+d)-2*b^2*n^2*ln(e*x+d)^2*l
n((g*(e*x+d)-d*g+e*f)/(-d*g+e*f))/g-I*ln(g*x+f)/g*Pi*a*b*csgn(I*c*(e*x+d)^n
)^3-I*ln(g*x+f)/g*ln(c)*Pi*b^2*csgn(I*c*(e*x+d)^n)^3-2/g*n*ln(g*x+f)*ln(((g
```

```
*x+f)*e+d*g-e*f)/(d*g-e*f))*b^2*ln(c)+b^2*ln(g*(e*x+d)-d*g+e*f)/g*ln(e*x+d)
^2*n^2-I*ln(g*x+f)/g*ln((e*x+d)^n)*b^2*Pi*csgn(I*c*(e*x+d)^n)^3+2*ln(g*x+f)
/g*ln(c)*a*b-2/g*n*dilog(((g*x+f)*e+d*g-e*f)/(d*g-e*f))*b^2*ln(c)-2*b/g*n*d
ilog(((g*x+f)*e+d*g-e*f)/(d*g-e*f))*a+ln(g*x+f)/g*ln(c)^2*b^2-2*b^2*n^2/g*p
olylog(3,g/(d*g-e*f)*(e*x+d))
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/(g*x+f),x, algorithm="maxima")
[Out] a^2*log(g*x + f)/g + integrate((b^2*log((x*e + d)^n)^2 + b^2*log(c)^2 + 2*a
*b*log(c) + 2*(b^2*log(c) + a*b)*log((x*e + d)^n))/(g*x + f), x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/(g*x+f),x, algorithm="fricas")
[Out] integral((b^2*log((x*e + d)^n*c)^2 + 2*a*b*log((x*e + d)^n*c) + a^2)/(g*x +
 f), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{\left(a+b\log\left(c(d+ex)^{n}\right)\right)^{2}}{f+gx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**2/(g*x+f),x)
[Out] Integral((a + b*log(c*(d + e*x)**n))**2/(f + g*x), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/(g*x+f),x, algorithm="giac")
```

```
[Out] integrate((b*log((x*e + d)^n*c) + a)^2/(g*x + f), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)^2}{f+g\,x} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))^2/(f + g*x),x)
[Out] int((a + b*log(c*(d + e*x)^n))^2/(f + g*x), x)
```

3.227 $\int \frac{(a+b\log(c(d+ex)^n))^2}{(f+gx)(h+ix)}\,dx$

Optimal. Leaf size=264

$$\frac{(a+b\log\left(c(d+ex)^n\right))^2\log\left(\frac{e(f+gx)}{ef-dg}\right)}{gh-fi}-\frac{(a+b\log\left(c(d+ex)^n\right))^2\log\left(\frac{e(h+ix)}{eh-di}\right)}{gh-fi}+\frac{2bn(a+b\log\left(c(d+ex)^n\right))}{gh-fi}$$

```
[Out] (a+b*ln(c*(e*x+d)^n))^2*ln(e*(g*x+f)/(-d*g+e*f))/(-f*i+g*h)-(a+b*ln(c*(e*x+
d)^n))^2*ln(e*(i*x+h)/(-d*i+e*h))/(-f*i+g*h)+2*b*n*(a+b*ln(c*(e*x+d)^n))*po
lylog(2,-g*(e*x+d)/(-d*g+e*f))/(-f*i+g*h)-2*b*n*(a+b*ln(c*(e*x+d)^n))*polyl
og(2,-i*(e*x+d)/(-d*i+e*h))/(-f*i+g*h)-2*b^2*n^2*polylog(3,-g*(e*x+d)/(-d*g
+e*f))/(-f*i+g*h)+2*b^2*n^2*polylog(3,-i*(e*x+d)/(-d*i+e*h))/(-f*i+g*h)
```

Rubi [A]

time = 0.26, antiderivative size = 264, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 5, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.161$, Rules used = {2465, 2443, 2481, 2421, 6724}

$$\frac{2bn\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)(a+b\log\left(c(d+ex)^n\right))}{gh-fi}-\frac{2bn\text{PolyLog}\left(2,-\frac{i(d+ex)}{eh-di}\right)(a+b\log\left(c(d+ex)^n\right))}{gh-fi}-\frac{2b^2n^2\text{PolyLog}\left(3,-\frac{g(d+ex)}{ef-dg}\right)}{gh-fi}+\frac{2b^2n^2\text{PolyLog}\left(3,-\frac{i(d+ex)}{eh-di}\right)}{gh-fi}+\frac{\log\left(\frac{e(f+gx)}{ef-dg}\right)(a+b\log\left(c(d+ex)^n\right))^2}{gh-fi}-\frac{\log\left(\frac{e(h+ix)}{eh-di}\right)(a+b\log\left(c(d+ex)^n\right))^2}{gh-fi}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^2/((f + g*x)*(h + i*x)),x]
```

```
[Out] ((a + b*Log[c*(d + e*x)^n])^2*Log[(e*(f + g*x))/(e*f - d*g)])/(g*h - f*i) -
 ((a + b*Log[c*(d + e*x)^n])^2*Log[(e*(h + i*x))/(e*h - d*i)])/(g*h - f*i)
+ (2*b*n*(a + b*Log[c*(d + e*x)^n])*PolyLog[2, -((g*(d + e*x))/(e*f - d*g))
])/(g*h - f*i) - (2*b*n*(a + b*Log[c*(d + e*x)^n])*PolyLog[2, -((i*(d + e*x
))/(e*h - d*i))])/(g*h - f*i) - (2*b^2*n^2*PolyLog[3, -((g*(d + e*x))/(e*f
- d*g))])/(g*h - f*i) + (2*b^2*n^2*PolyLog[3, -((i*(d + e*x))/(e*h - d*i))]
)/(g*h - f*i)
```

Rule 2421

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> Simp[(-PolyLog[2, (-d)*f*x^m])*((a + b*Log[c
*x^n])^p/m), x] + Dist[b*n*(p/m), Int[PolyLog[2, (-d)*f*x^m]*((a + b*Log[c*
x^n])^(p - 1)/x), x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0
] && EqQ[d*e, 1]
```

Rule 2443

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d
+ e*x)^n])^p/g), x] - Dist[b*e*n*(p/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]*
((a + b*Log[c*(d + e*x)^n])^(p - 1)/(d + e*x)), x], x] /; FreeQ[{a, b, c, d
```

```
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2465

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2481

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[(k*(x/d))^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + j*(x/e))^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 6724

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(a+b\log(c(d+ex)^n))^2}{(h+227x)(f+gx)}\,dx = \int \left(\frac{227(a+b\log(c(d+ex)^n))^2}{(227f-gh)(h+227x)} - \frac{g(a+b\log(c(d+ex)^n))^2}{(227f-gh)(f+gx)}\right)dx$$

$$= \frac{227\int \frac{(a+b\log(c(d+ex)^n))^2}{h+227x}\,dx}{227f-gh} - \frac{g\int \frac{(a+b\log(c(d+ex)^n))^2}{f+gx}\,dx}{227f-gh}$$

$$= \frac{\log\left(-\frac{e(h+227x)}{227d-eh}\right)(a+b\log(c(d+ex)^n))^2}{227f-gh} - \frac{(a+b\log(c(d+ex)^n))^2\log\left(\frac{e}{}\right.}{227f-gh}$$

$$= \frac{\log\left(-\frac{e(h+227x)}{227d-eh}\right)(a+b\log(c(d+ex)^n))^2}{227f-gh} - \frac{(a+b\log(c(d+ex)^n))^2\log\left(\frac{e}{}\right.}{227f-gh}$$

$$= \frac{\log\left(-\frac{e(h+227x)}{227d-eh}\right)(a+b\log(c(d+ex)^n))^2}{227f-gh} - \frac{(a+b\log(c(d+ex)^n))^2\log\left(\frac{e}{}\right.}{227f-gh}$$

$$= \frac{\log\left(-\frac{e(h+227x)}{227d-eh}\right)(a+b\log(c(d+ex)^n))^2}{227f-gh} - \frac{(a+b\log(c(d+ex)^n))^2\log\left(\frac{e}{}\right.}{227f-gh}$$

Mathematica [A]
time = 0.16, size = 353, normalized size = 1.34

$$\frac{(a-bn\log(d+ex)+b\log(c(d+ex)^n))^2\log(f+gx)-(a-bn\log(d+ex)+b\log(c(d+ex)^n))^2\log(h+ix)+2bn(a-bn\log(d+ex)+b\log(c(d+ex)^n))\left(\log(d+ex)\left(\log\left(\frac{e(f+gx)}{ef-dg}\right)-\log\left(\frac{e(h+ix)}{eh-di}\right)\right)+\mathrm{Li}_2\left(\frac{g(d+ex)}{-ef+dg}\right)-\mathrm{Li}_2\left(\frac{i(d+ex)}{-eh+di}\right)\right)+b^2n^2\left(\log^2(d+ex)\log\left(\frac{e(f+gx)}{ef-dg}\right)-\log^2(d+ex)\log\left(\frac{e(h+ix)}{eh-di}\right)+2\log(d+ex)\mathrm{Li}_2\left(\frac{g(d+ex)}{-ef+dg}\right)-2\log(d+ex)\mathrm{Li}_2\left(\frac{i(d+ex)}{-eh+di}\right)-2\mathrm{Li}_3\left(\frac{g(d+ex)}{-ef+dg}\right)+2\mathrm{Li}_3\left(\frac{i(d+ex)}{-eh+di}\right)\right)}{gh-fi}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^2/((f + g*x)*(h + i*x)),x]
```

```
[Out] ((a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2*Log[f + g*x] - (a - b*n*Lo
g[d + e*x] + b*Log[c*(d + e*x)^n])^2*Log[h + i*x] + 2*b*n*(a - b*n*Log[d +
e*x] + b*Log[c*(d + e*x)^n])*(Log[d + e*x]*(Log[(e*(f + g*x))/(e*f - d*g)]
- Log[(e*(h + i*x))/(e*h - d*i)]) + PolyLog[2, (g*(d + e*x))/(-(e*f) + d*g)
] - PolyLog[2, (i*(d + e*x))/(-(e*h) + d*i)]) + b^2*n^2*(Log[d + e*x]^2*Log
[(e*(f + g*x))/(e*f - d*g)] - Log[d + e*x]^2*Log[(e*(h + i*x))/(e*h - d*i)]
 + 2*Log[d + e*x]*PolyLog[2, (g*(d + e*x))/(-(e*f) + d*g)] - 2*Log[d + e*x]
*PolyLog[2, (i*(d + e*x))/(-(e*h) + d*i)] - 2*PolyLog[3, (g*(d + e*x))/(-(e
*f) + d*g)] + 2*PolyLog[3, (i*(d + e*x))/(-(e*h) + d*i)]))/(g*h - f*i)
```

Maple [C] Result contains higher order function than in optimal. Order 9 vs. order 4.
time = 2.61, size = 4712, normalized size = 17.85

method	result	size
risch	Expression too large to display	4712

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))^2/(g*x+f)/(i*x+h),x,method=_RETURNVERBOSE)
```

```
[Out] -2*n/(f*i-g*h)*ln(i*x+h)*ln(((i*x+h)*e+d*i-e*h)/(d*i-e*h))*b^2*ln(c)+2*n/(f
*i-g*h)*ln(g*x+f)*ln(((g*x+f)*e+d*g-e*f)/(d*g-e*f))*b^2*ln(c)-I/(f*i-g*h)*l
n(i*x+h)*ln((e*x+d)^n)*b^2*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^
n)-I*n/(f*i-g*h)*ln(i*x+h)*ln(((i*x+h)*e+d*i-e*h)/(d*i-e*h))*b^2*Pi*csgn(I*
c)*csgn(I*c*(e*x+d)^n)^2-I*n/(f*i-g*h)*ln(i*x+h)*ln(((i*x+h)*e+d*i-e*h)/(d*
i-e*h))*b^2*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-I*n/(f*i-g*h)*dilog(
((g*x+f)*e+d*g-e*f)/(d*g-e*f))*b^2*Pi*csgn(I*c*(e*x+d)^n)^3-I/(f*i-g*h)*ln(
i*x+h)*ln(c)*Pi*b^2*csgn(I*c*(e*x+d)^n)^3+I*n/(f*i-g*h)*dilog(((i*x+h)*e+d*
i-e*h)/(d*i-e*h))*b^2*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+I/
(f*i-g*h)*ln(i*x+h)*ln(c)*Pi*b^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+I/
(f*i-g*h)*ln(i*x+h)*Pi*a*b*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I/(f*i-g*h)*ln(i
*x+h)*ln((e*x+d)^n)*b^2*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I/(f*i-g*h)*ln(i
*x+h)*ln((e*x+d)^n)*b^2*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+I*n/(f*i
-g*h)*ln(i*x+h)*ln(((i*x+h)*e+d*i-e*h)/(d*i-e*h))*b^2*Pi*csgn(I*c*(e*x+d)^n
)^3+I*n/(f*i-g*h)*dilog(((g*x+f)*e+d*g-e*f)/(d*g-e*f))*b^2*Pi*csgn(I*c)*csg
n(I*c*(e*x+d)^n)^2-I*n/(f*i-g*h)*dilog(((g*x+f)*e+d*g-e*f)/(d*g-e*f))*b^2*P
i*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-I/(f*i-g*h)*ln(i*x+h)*ln(
c)*Pi*b^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-I/(f*i-g*h)*ln(i*
```

x+h)*Pi*a*b*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-a^2/(f*i-g*h)*l
n(g*x+f)+a^2/(f*i-g*h)*ln(i*x+h)+1/4/(f*i-g*h)*ln(g*x+f)*Pi^2*b^2*csgn(I*c)
^2*csgn(I*(e*x+d)^n)^2*csgn(I*c*(e*x+d)^n)^2+1/4/(f*i-g*h)*ln(g*x+f)*Pi^2*b
^2*csgn(I*c)^2*csgn(I*c*(e*x+d)^n)^4+I*n/(f*i-g*h)*dilog(((g*x+f)*e+d*g-e*f
)/(d*g-e*f))*b^2*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-I/(f*i-g*h)*ln(
g*x+f)*ln(c)*Pi*b^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-I/(f*i-g*h)*ln(g*x+f)*l
n(c)*Pi*b^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-I/(f*i-g*h)*ln(g*x+f)*P
i*a*b*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-I/(f*i-g*h)*ln(i*x+h)*ln((e*x+d)^n)*b
^2*Pi*csgn(I*c*(e*x+d)^n)^3+I/(f*i-g*h)*ln(i*x+h)*Pi*a*b*csgn(I*(e*x+d)^n)*
csgn(I*c*(e*x+d)^n)^2+I/(f*i-g*h)*ln(i*x+h)*ln(c)*Pi*b^2*csgn(I*c)*csgn(I*c
*(e*x+d)^n)^2-I/(f*i-g*h)*ln(i*x+h)*Pi*a*b*csgn(I*c*(e*x+d)^n)^3+1/(f*i-g*h
)*ln(g*x+f)*Pi^2*b^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^4+I*n/
(f*i-g*h)*ln(g*x+f)*ln(((g*x+f)*e+d*g-e*f)/(d*g-e*f))*b^2*Pi*csgn(I*c)*csgn
(I*c*(e*x+d)^n)^2+I*n/(f*i-g*h)*ln(g*x+f)*ln(((g*x+f)*e+d*g-e*f)/(d*g-e*f))
*b^2*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+I*ln((e*x+d)^n)/(f*i-g*h)*l
n(g*x+f)*b^2*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+I/(f*i-g*h)
*ln(g*x+f)*ln(c)*Pi*b^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+1/4
/(f*i-g*h)*ln(g*x+f)*Pi^2*b^2*csgn(I*c*(e*x+d)^n)^6-1/4/(f*i-g*h)*ln(i*x+h)
*Pi^2*b^2*csgn(I*c*(e*x+d)^n)^6-b^2/(f*i-g*h)*ln(g*(e*x+d)-d*g+e*f)*ln((e*x
+d)^n)^2+b^2/(f*i-g*h)*ln(i*(e*x+d)-d*i+e*h)*ln((e*x+d)^n)^2+1/2/(f*i-g*h)*
ln(i*x+h)*Pi^2*b^2*csgn(I*c)^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^3+1/2/
(f*i-g*h)*ln(i*x+h)*Pi^2*b^2*csgn(I*c)*csgn(I*(e*x+d)^n)^2*csgn(I*c*(e*x+d)
^n)^3-1/(f*i-g*h)*ln(i*x+h)*Pi^2*b^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(
e*x+d)^n)^4-b^2*n^2/(f*i-g*h)*ln(e*x+d)^2*ln(1+g*(e*x+d)/(-d*g+e*f))-2*b^2*
n^2/(f*i-g*h)*ln(e*x+d)*polylog(2,-g*(e*x+d)/(-d*g+e*f))+b^2*n^2/(f*i-g*h)*
ln(e*x+d)^2*ln(1+i*(e*x+d)/(-d*i+e*h))+2*b^2*n^2/(f*i-g*h)*ln(e*x+d)*polylo
g(2,-i*(e*x+d)/(-d*i+e*h))+2*b^2*n^2/(f*i-g*h)*dilog((g*(e*x+d)-d*g+e*f)/(-
d*g+e*f))*ln(e*x+d)+2*b^2*n^2/(f*i-g*h)*ln(e*x+d)^2*ln((g*(e*x+d)-d*g+e*f)/
(-d*g+e*f))-2*b^2*n^2/(f*i-g*h)*dilog((i*(e*x+d)-d*i+e*h)/(-d*i+e*h))*ln(e*
x+d)-2*b^2*n^2/(f*i-g*h)*ln(e*x+d)^2*ln((i*(e*x+d)-d*i+e*h)/(-d*i+e*h))+1/2
/(f*i-g*h)*ln(i*x+h)*Pi^2*b^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^5-I/(f*
i-g*h)*ln(g*x+f)*Pi*a*b*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-I*ln((e*x+d
)^n)/(f*i-g*h)*ln(g*x+f)*b^2*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+2*b
^2*n^2/(f*i-g*h)*polylog(3,-g*(e*x+d)/(-d*g+e*f))-2*b^2*n^2/(f*i-g*h)*polyl
og(3,-i*(e*x+d)/(-d*i+e*h))+I/(f*i-g*h)*ln(g*x+f)*Pi*a*b*csgn(I*c)*csgn(I*(
e*x+d)^n)*csgn(I*c*(e*x+d)^n)+I*ln((e*x+d)^n)/(f*i-g*h)*ln(g*x+f)*b^2*Pi*cs
gn(I*c*(e*x+d)^n)^3-1/2/(f*i-g*h)*ln(g*x+f)*Pi^2*b^2*csgn(I*c)*csgn(I*(e*x+
d)^n)^2*csgn(I*c*(e*x+d)^n)^3-b^2/(f*i-g*h)*ln(g*(e*x+d)-d*g+e*f)*ln(e*x+d)
^2*n^2-2*b^2*n/(f*i-g*h)*dilog((g*(e*x+d)-d*g+e*f)/(-d*g+e*f))*ln((e*x+d)^n
)+2*b^2*n/(f*i-g*h)*dilog((i*(e*x+d)-d*i+e*h)/(-d*i+e*h))*ln((e*x+d)^n)-I*n
/(f*i-g*h)*dilog(((i*x+h)*e+d*i-e*h)/(d*i-e*h))*b^2*Pi*csgn(I*c)*csgn(I*c*(
e*x+d)^n)^2-I*n/(f*i-g*h)*dilog(((i*x+h)*e+d*i-e*h)/(d*i-e*h))*b^2*Pi*csgn(
I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-I*n/(f*i-g*h)*ln(g*x+f)*ln(((g*x+f)*e+d*
g-e*f)/(d*g-e*f))*b^2*Pi*csgn(I*c*(e*x+d)^n)^3-I*ln((e*x+d)^n)/(f*i-g*h)*ln
(g*x+f)*b^2*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-1/4/(f*i-g*h)*ln(i*x+h)*Pi^2

```
*b^2*csgn(I*c)^2*csgn(I*(e*x+d)^n)^2*csgn(I*c*(e*x+d)^n)^2-1/2/(f*i-g*h)*ln
(g*x+f)*Pi^2*b^2*csgn(I*c)^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^3+I*n/(f
*i-g*h)*dilog(((i*x+h)*e+d*i-e*h)/(d*i-e*h))*b^2*Pi*csgn(I*c*(e*x+d)^n)^3+I
/(f*i-g*h)*ln(g*x+f)*ln(c)*Pi*b^2*csgn(I*c*(e*x...
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/(g*x+f)/(i*x+h),x, algorithm="maxima")
```

```
[Out] a^2*(log(g*x + f)/(g*h - I*f) - log(h + I*x)/(g*h - I*f)) - integrate((I*b^
2*log((x*e + d)^n)^2 + I*b^2*log(c)^2 + 2*I*a*b*log(c) - 2*(-I*b^2*log(c) -
 I*a*b)*log((x*e + d)^n))/(g*x^2 - I*f*h + (-I*g*h + f)*x), x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/(g*x+f)/(i*x+h),x, algorithm="fricas")
```

```
[Out] integral((-I*b^2*n^2*log(x*e + d)^2 - I*b^2*log(c)^2 - 2*I*a*b*log(c) - I*a
^2 - 2*(I*b^2*n*log(c) + I*a*b*n)*log(x*e + d))/(g*x^2 - I*f*h + (-I*g*h +
f)*x), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a + b\log{(c(d + ex)^n)})^2}{(f + gx)\,(h + ix)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**2/(g*x+f)/(i*x+h),x)
```

```
[Out] Integral((a + b*log(c*(d + e*x)**n))**2/((f + g*x)*(h + i*x)), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/(g*x+f)/(i*x+h),x, algorithm="giac")
[Out] integrate((b*log((x*e + d)^n*c) + a)^2/((g*x + f)*(h + I*x)), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)}^2}{\left(f+g\,x\right)\,\left(h+i\,x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))^2/((f + g*x)*(h + i*x)),x)
[Out] int((a + b*log(c*(d + e*x)^n))^2/((f + g*x)*(h + i*x)), x)
```

3.228 $\int \frac{(a+b\log(c(d+ex)^n))^2}{(f+gx)(h+ix)^2}\,dx$

Optimal. Leaf size=427

$$-\frac{i(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{(eh-di)(gh-fi)(h+ix)}+\frac{g\left(a+b\log\left(c(d+ex)^n\right)\right)^2\log\left(\frac{e(f+gx)}{ef-dg}\right)}{(gh-fi)^2}+\frac{2ben\left(a+b\log\left(c(d+ex)^n\right)\right)}{(eh-di)(gh-f}$$

```
[Out] -i*(e*x+d)*(a+b*ln(c*(e*x+d)^n))^2/(-d*i+e*h)/(-f*i+g*h)/(i*x+h)+g*(a+b*ln(
c*(e*x+d)^n))^2*ln(e*(g*x+f)/(-d*g+e*f))/(-f*i+g*h)^2+2*b*e*n*(a+b*ln(c*(e*
x+d)^n))*ln(e*(i*x+h)/(-d*i+e*h))/(-d*i+e*h)/(-f*i+g*h)-g*(a+b*ln(c*(e*x+d)
^n))^2*ln(e*(i*x+h)/(-d*i+e*h))/(-f*i+g*h)^2+2*b*g*n*(a+b*ln(c*(e*x+d)^n))*
polylog(2,-g*(e*x+d)/(-d*g+e*f))/(-f*i+g*h)^2+2*b^2*e*n^2*polylog(2,-i*(e*x
+d)/(-d*i+e*h))/(-d*i+e*h)/(-f*i+g*h)-2*b*g*n*(a+b*ln(c*(e*x+d)^n))*polylog
(2,-i*(e*x+d)/(-d*i+e*h))/(-f*i+g*h)^2-2*b^2*g*n^2*polylog(3,-g*(e*x+d)/(-d
*g+e*f))/(-f*i+g*h)^2+2*b^2*g*n^2*polylog(3,-i*(e*x+d)/(-d*i+e*h))/(-f*i+g*
h)^2
```

Rubi [A]
time = 0.34, antiderivative size = 427, normalized size of antiderivative = 1.00, number of steps used = 14, number of rules used = 9, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.290$, Rules used = {2465, 2443, 2481, 2421, 6724, 2444, 2441, 2440, 2438}

$$\frac{2bgn\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{(gh-fi)^2}-\frac{2bgn\text{PolyLog}\left(2,-\frac{i(d+ex)}{eh-di}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{(gh-fi)^2}+\frac{2b^2en^2\text{PolyLog}\left(2,-\frac{i(d+ex)}{eh-di}\right)}{(eh-di)(gh-fi)}-\frac{2b^2gn^2\text{PolyLog}\left(3,-\frac{g(d+ex)}{ef-dg}\right)}{(gh-fi)^2}+\frac{2b^2gn^2\text{PolyLog}\left(3,-\frac{i(d+ex)}{eh-di}\right)}{(gh-fi)^2}+\frac{2ben\log\left(\frac{e(h+ix)}{eh-di}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{(eh-di)(gh-fi)}-\frac{i(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{(h+ix)(eh-di)(gh-fi)}+\frac{g\log\left(\frac{e(f+gx)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{(gh-fi)^2}-\frac{g\log\left(\frac{e(h+ix)}{eh-di}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{(gh-fi)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^2/((f + g*x)*(h + i*x)^2),x]
```

```
[Out] -((i*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^2)/((e*h - d*i)*(g*h - f*i)*(h +
i*x))) + (g*(a + b*Log[c*(d + e*x)^n])^2*Log[(e*(f + g*x))/(e*f - d*g)])/(g
*h - f*i)^2 + (2*b*e*n*(a + b*Log[c*(d + e*x)^n])*Log[(e*(h + i*x))/(e*h -
d*i)])/((e*h - d*i)*(g*h - f*i)) - (g*(a + b*Log[c*(d + e*x)^n])^2*Log[(e*(
h + i*x))/(e*h - d*i)])/(g*h - f*i)^2 + (2*b*g*n*(a + b*Log[c*(d + e*x)^n])
*PolyLog[2, -((g*(d + e*x))/(e*f - d*g))])/(g*h - f*i)^2 + (2*b^2*e*n^2*Pol
yLog[2, -((i*(d + e*x))/(e*h - d*i))])/((e*h - d*i)*(g*h - f*i)) - (2*b*g*n
*(a + b*Log[c*(d + e*x)^n])*PolyLog[2, -((i*(d + e*x))/(e*h - d*i))])/(g*h
- f*i)^2 - (2*b^2*g*n^2*PolyLog[3, -((g*(d + e*x))/(e*f - d*g))])/(g*h - f*
i)^2 + (2*b^2*g*n^2*PolyLog[3, -((i*(d + e*x))/(e*h - d*i))])/(g*h - f*i)^2
```

Rule 2421

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> Simp[(-PolyLog[2, (-d)*f*x^m])*((a + b*Log[c
*x^n])^p/m), x] + Dist[b*n*(p/m), Int[PolyLog[2, (-d)*f*x^m]*((a + b*Log[c*
x^n])^(p - 1)/x), x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0
```

```
] && EqQ[d*e, 1]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + c*e*(x/g)])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2441

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d + e*x
)^n])/g), x] - Dist[b*e*(n/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2443

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d
+ e*x)^n])^p/g), x] - Dist[b*e*n*(p/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]*
((a + b*Log[c*(d + e*x)^n])^(p - 1)/(d + e*x)), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2444

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_))^2, x_Symbol] :> Simp[(d + e*x)*((a + b*Log[c*(d + e*x)^n])^p/((e*f
- d*g)*(f + g*x))), x] - Dist[b*e*n*(p/(e*f - d*g)), Int[(a + b*Log[c*(d +
e*x)^n])^(p - 1)/(f + g*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] &&
 NeQ[e*f - d*g, 0] && GtQ[p, 0]
```

Rule 2465

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2481

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[(k*(x/d))^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + j*(x/e))^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 6724

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(a+b\log(c(d+ex)^n))^2}{(h+228x)^2(f+gx)}\,dx = \int \left(\frac{228(a+b\log(c(d+ex)^n))^2}{(228f-gh)(h+228x)^2} - \frac{228g(a+b\log(c(d+ex)^n))^2}{(228f-gh)^2(h+228x)} + \frac{g^2(a\cdots}{(22\cdots}\right.$$

$$= -\frac{(228g)\int \frac{(a+b\log(c(d+ex)^n))^2}{h+228x}\,dx}{(228f-gh)^2} + \frac{g^2\int \frac{(a+b\log(c(d+ex)^n))^2}{f+gx}\,dx}{(228f-gh)^2} + \frac{228\int \frac{(a+b\log\cdots}{(h\cdots}}{228f\cdots}$$

$$= -\frac{228(d+ex)(a+b\log(c(d+ex)^n))^2}{(228d-eh)(228f-gh)(h+228x)} - \frac{g\log\left(-\frac{e(h+228x)}{228d-eh}\right)(a+b\log(c(\cdots}{(228f-gh)^2}$$

$$= \frac{2ben\log\left(-\frac{e(h+228x)}{228d-eh}\right)(a+b\log(c(d+ex)^n))}{(228d-eh)(228f-gh)} - \frac{228(d+ex)(a+b\log(c(\cdots}{(228d-eh)(228f-gh)\cdots}$$

$$= \frac{2ben\log\left(-\frac{e(h+228x)}{228d-eh}\right)(a+b\log(c(d+ex)^n))}{(228d-eh)(228f-gh)} - \frac{228(d+ex)(a+b\log(c(\cdots}{(228d-eh)(228f-gh)\cdots}$$

$$= \frac{2ben\log\left(-\frac{e(h+228x)}{228d-eh}\right)(a+b\log(c(d+ex)^n))}{(228d-eh)(228f-gh)} - \frac{228(d+ex)(a+b\log(c(\cdots}{(228d-eh)(228f-gh)\cdots}$$

Mathematica [A]
time = 0.41, size = 630, normalized size = 1.48

[illegible]

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^2/((f + g*x)*(h + i*x)^2),x]
```

```
[Out] ((e*h - d*i)*(g*h - f*i)*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2 +
g*(e*h - d*i)*(h + i*x)*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2*Log
[f + g*x] - g*(e*h - d*i)*(h + i*x)*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*
x)^n])^2*Log[h + i*x] - 2*b*n*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])
*((g*h - f*i)*(i*(d + e*x)*Log[d + e*x] - e*(h + i*x)*Log[h + i*x]) - g*(e*
h - d*i)*(h + i*x)*(Log[d + e*x]*Log[(e*(f + g*x))/(e*f - d*g)] + PolyLog[2
, (g*(d + e*x))/(-(e*f) + d*g)]) + g*(e*h - d*i)*(h + i*x)*(Log[d + e*x]*Lo
g[(e*(h + i*x))/(e*h - d*i)] + PolyLog[2, (i*(d + e*x))/(-(e*h) + d*i)])) -
 b^2*n^2*((g*h - f*i)*(Log[d + e*x]*(i*(d + e*x)*Log[d + e*x] - 2*e*(h + i*
x)*Log[(e*(h + i*x))/(e*h - d*i)]) - 2*e*(h + i*x)*PolyLog[2, (i*(d + e*x))
/(-(e*h) + d*i)]) - g*(e*h - d*i)*(h + i*x)*(Log[d + e*x]^2*Log[(e*(f + g*x
))/(e*f - d*g)] + 2*Log[d + e*x]*PolyLog[2, (g*(d + e*x))/(-(e*f) + d*g)] -
 2*PolyLog[3, (g*(d + e*x))/(-(e*f) + d*g)]) + g*(e*h - d*i)*(h + i*x)*(Log
[d + e*x]^2*Log[(e*(h + i*x))/(e*h - d*i)] + 2*Log[d + e*x]*PolyLog[2, (i*(
d + e*x))/(-(e*h) + d*i)] - 2*PolyLog[3, (i*(d + e*x))/(-(e*h) + d*i)])))/(
(e*h - d*i)*(g*h - f*i)^2*(h + i*x))
```

Maple [F]
time = 0.32, size = 0, normalized size = 0.00

$$\int \frac{\left(a+b\ln\left(c\left(ex+d\right)^{n}\right)\right)^{2}}{\left(gx+f\right)\left(ix+h\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))^2/(g*x+f)/(i*x+h)^2,x)
```

```
[Out] int((a+b*ln(c*(e*x+d)^n))^2/(g*x+f)/(i*x+h)^2,x)
```

Maxima [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/(g*x+f)/(i*x+h)^2,x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError >> ECL says: THROW: The catch RAT-ERR is und
efined.
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/(g*x+f)/(i*x+h)^2,x, algorithm="fricas")
```

```
[Out] integral(-(b^2*n^2*log(x*e + d)^2 + b^2*log(c)^2 + 2*a*b*log(c) + a^2 + 2*(
b^2*n*log(c) + a*b*n)*log(x*e + d))/(g*x^3 - f*h^2 + (-2*I*g*h + f)*x^2 - (
g*h^2 + 2*I*f*h)*x), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a + b\log{(c(d + ex)^n)})^2}{(f + gx)(h + ix)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**2/(g*x+f)/(i*x+h)**2,x)
```

```
[Out] Integral((a + b*log(c*(d + e*x)**n))**2/((f + g*x)*(h + i*x)**2), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/(g*x+f)/(i*x+h)^2,x, algorithm="giac")
```

```
[Out] integrate((b*log((x*e + d)^n*c) + a)^2/((g*x + f)*(h + I*x)^2), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(a + b\,\ln{(c\,(d + e\,x)^n)})^2}{(f + g\,x)\,(h + i\,x)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))^2/((f + g*x)*(h + i*x)^2),x)
```

```
[Out] int((a + b*log(c*(d + e*x)^n))^2/((f + g*x)*(h + i*x)^2), x)
```

3.229 $\int \frac{(h+ix)^2(a+b\log(c(d+ex)^n))^3}{f+gx}\,dx$

Optimal. Leaf size=660

$$\frac{6ab^2i(eh-di)n^2x}{eg}+\frac{6ab^2i(gh-fi)n^2x}{g^2}-\frac{6b^3i(eh-di)n^3x}{eg}-\frac{6b^3i(gh-fi)n^3x}{g^2}-\frac{3b^3i^2n^3(d+ex)^2}{8e^2g}+\frac{6b^3i(eh-}{}$$

```
[Out] 6*a*b^2*i*(-d*i+e*h)*n^2*x/e/g+6*a*b^2*i*(-f*i+g*h)*n^2*x/g^2-6*b^3*i*(-d*i
+e*h)*n^3*x/e/g-6*b^3*i*(-f*i+g*h)*n^3*x/g^2-3/8*b^3*i^2*n^3*(e*x+d)^2/e^2/
g+6*b^3*i*(-d*i+e*h)*n^2*(e*x+d)*ln(c*(e*x+d)^n)/e^2/g+6*b^3*i*(-f*i+g*h)*n
^2*(e*x+d)*ln(c*(e*x+d)^n)/e/g^2+3/4*b^2*i^2*n^2*(e*x+d)^2*(a+b*ln(c*(e*x+d
)^n))/e^2/g-3*b*i*(-d*i+e*h)*n*(e*x+d)*(a+b*ln(c*(e*x+d)^n))^2/e^2/g-3*b*i*
(-f*i+g*h)*n*(e*x+d)*(a+b*ln(c*(e*x+d)^n))^2/e/g^2-3/4*b*i^2*n*(e*x+d)^2*(a
+b*ln(c*(e*x+d)^n))^2/e^2/g+i*(-d*i+e*h)*(e*x+d)*(a+b*ln(c*(e*x+d)^n))^3/e^
2/g+i*(-f*i+g*h)*(e*x+d)*(a+b*ln(c*(e*x+d)^n))^3/e/g^2+1/2*i^2*(e*x+d)^2*(a
+b*ln(c*(e*x+d)^n))^3/e^2/g+(-f*i+g*h)^2*(a+b*ln(c*(e*x+d)^n))^3*ln(e*(g*x+
f)/(-d*g+e*f))/g^3+3*b*(-f*i+g*h)^2*n*(a+b*ln(c*(e*x+d)^n))^2*polylog(2,-g*
(e*x+d)/(-d*g+e*f))/g^3-6*b^2*(-f*i+g*h)^2*n^2*(a+b*ln(c*(e*x+d)^n))*polylo
g(3,-g*(e*x+d)/(-d*g+e*f))/g^3+6*b^3*(-f*i+g*h)^2*n^3*polylog(4,-g*(e*x+d)/
(-d*g+e*f))/g^3
```

Rubi [A]

time = 0.51, antiderivative size = 660, normalized size of antiderivative = 1.00, number of steps used = 23, number of rules used = 13, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.419$, Rules used = {2465, 2436, 2333, 2332, 2443, 2481, 2421, 2430, 6724, 2448, 2437, 2342, 2341}

$$-\frac{6b^2n^2(gh-fi)^2\text{PolyLog}\left(3,-\frac{g(d+ex)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{g^3}+\frac{3bn(gh-fi)^2\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{g^3}+\frac{6b^3n^3(gh-fi)^2\text{PolyLog}\left(4,-\frac{g(d+ex)}{ef-dg}\right)}{g^3}+\frac{3b^2i^2n^2(d+ex)^2\left(a+b\log\left(c(d+ex)^n\right)\right)}{4e^2g}+\frac{6ab^2in^2x(eh-di)}{eg}+\frac{6ab^2in^2x(gh-fi)}{g^2}-\frac{3bin(d+ex)(eh-di)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{e^2g}+\frac{i(d+ex)(eh-di)\left(a+b\log\left(c(d+ex)^n\right)\right)^3}{e^2g}-\frac{3bi^2n(d+ex)^2\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{4e^2g}+\frac{i^2(d+ex)^2\left(a+b\log\left(c(d+ex)^n\right)\right)^3}{2e^2g}+\frac{(gh-fi)^2\log\left(\frac{e(f+gx)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)^3}{g^3}-\frac{3bin(d+ex)(gh-fi)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{eg^2}+\frac{i(d+ex)(gh-fi)\left(a+b\log\left(c(d+ex)^n\right)\right)^3}{eg^2}+\frac{6b^3in^2(d+ex)(eh-di)\log\left(c(d+ex)^n\right)}{e^2g}+\frac{6b^3in^2(d+ex)(gh-fi)\log\left(c(d+ex)^n\right)}{eg^2}-\frac{3b^3i^2n^3(d+ex)^2}{8e^2g}-\frac{6b^3in^3x(eh-di)}{eg}-\frac{6b^3in^3x(gh-fi)}{g^2}$$

Antiderivative was successfully verified.

```
[In] Int[((h + i*x)^2*(a + b*Log[c*(d + e*x)^n])^3)/(f + g*x),x]
```

```
[Out] (6*a*b^2*i*(e*h - d*i)*n^2*x)/(e*g) + (6*a*b^2*i*(g*h - f*i)*n^2*x)/g^2 - (
6*b^3*i*(e*h - d*i)*n^3*x)/(e*g) - (6*b^3*i*(g*h - f*i)*n^3*x)/g^2 - (3*b^3
*i^2*n^3*(d + e*x)^2)/(8*e^2*g) + (6*b^3*i*(e*h - d*i)*n^2*(d + e*x)*Log[c*
(d + e*x)^n])/(e^2*g) + (6*b^3*i*(g*h - f*i)*n^2*(d + e*x)*Log[c*(d + e*x)^
n])/(e*g^2) + (3*b^2*i^2*n^2*(d + e*x)^2*(a + b*Log[c*(d + e*x)^n]))/(4*e^2
*g) - (3*b*i*(e*h - d*i)*n*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^2)/(e^2*g)
- (3*b*i*(g*h - f*i)*n*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^2)/(e*g^2) - (3
*b*i^2*n*(d + e*x)^2*(a + b*Log[c*(d + e*x)^n])^2)/(4*e^2*g) + (i*(e*h - d*
i)*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^3)/(e^2*g) + (i*(g*h - f*i)*(d + e*
x)*(a + b*Log[c*(d + e*x)^n])^3)/(e*g^2) + (i^2*(d + e*x)^2*(a + b*Log[c*(d
 + e*x)^n])^3)/(2*e^2*g) + ((g*h - f*i)^2*(a + b*Log[c*(d + e*x)^n])^3*Log[
(e*(f + g*x))/(e*f - d*g)])/g^3 + (3*b*(g*h - f*i)^2*n*(a + b*Log[c*(d + e*
x)^n])^2*PolyLog[2, -((g*(d + e*x))/(e*f - d*g))])/g^3 - (6*b^2*(g*h - f*i)
```

```
^2*n^2*(a + b*Log[c*(d + e*x)^n])*PolyLog[3, -((g*(d + e*x))/(e*f - d*g))])
/g^3 + (6*b^3*(g*h - f*i)^2*n^3*PolyLog[4, -((g*(d + e*x))/(e*f - d*g))])/g
^3
```

Rule 2332

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2333

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2341

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_.)*(x_))^(m_.), x_Symbol] :>
Simp[(d*x)^(m + 1)*((a + b*Log[c*x^n])/(d*(m + 1))), x] - Simp[b*n*((d*x)^(
m + 1)/(d*(m + 1)^2)), x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[m, -1]
```

Rule 2342

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_.)*(x_))^(m_.), x_Symbo
l] :> Simp[(d*x)^(m + 1)*((a + b*Log[c*x^n])^p/(d*(m + 1))), x] - Dist[b*n*
(p/(m + 1)), Int[(d*x)^m*(a + b*Log[c*x^n])^(p - 1), x], x] /; FreeQ[{a, b,
 c, d, m, n}, x] && NeQ[m, -1] && GtQ[p, 0]
```

Rule 2421

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> Simp[(-PolyLog[2, (-d)*f*x^m])*((a + b*Log[c
*x^n])^p/m), x] + Dist[b*n*(p/m), Int[PolyLog[2, (-d)*f*x^m]*((a + b*Log[c*
x^n])^(p - 1)/x), x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0
] && EqQ[d*e, 1]
```

Rule 2430

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*PolyLog[k_, (e_.)*(x_)^(q_
.)])/(x_), x_Symbol] :> Simp[PolyLog[k + 1, e*x^q]*((a + b*Log[c*x^n])^p/q)
, x] - Dist[b*n*(p/q), Int[PolyLog[k + 1, e*x^q]*((a + b*Log[c*x^n])^(p - 1
)/x), x], x] /; FreeQ[{a, b, c, e, k, n, q}, x] && GtQ[p, 0]
```

Rule 2436

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
```

```
, b, c, d, e, n, p}, x]
```

Rule 2437

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[(f*(x/d))^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2443

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d
+ e*x)^n])^p/g), x] - Dist[b*e*n*(p/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]*
((a + b*Log[c*(d + e*x)^n])^(p - 1)/(d + e*x)), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2448

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q*(a + b*Log[c*(d
 + e*x)^n])^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f -
 d*g, 0] && IGtQ[q, 0]
```

Rule 2465

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2481

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[(k*(x/d))^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + j*(x/e))^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 6724

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(h+229x)^2 (a+b\log (c(d+ex)^n))^3}{f+gx} \, dx = \int \left(\frac{229(-229f+gh) (a+b\log (c(d+ex)^n))^3}{g^2} + \frac{229(h+22}{}\right.$$

$$= \frac{229 \int (h+229x) (a+b\log (c(d+ex)^n))^3 \, dx}{g} - \frac{(229(229f-}{}$$

$$= \frac{(229f-gh)^2 (a+b\log (c(d+ex)^n))^3 \log \left(\frac{e(f+gx)}{ef-dg}\right)}{g^3} + \frac{229 \int (}{}$$

$$= -\frac{229(229f-gh)(d+ex) (a+b\log (c(d+ex)^n))^3}{eg^2} + \frac{(229f -}{}$$

$$= \frac{687b(229f-gh)n(d+ex) (a+b\log (c(d+ex)^n))^2}{eg^2} - \frac{229(22}{}$$

$$= -\frac{1374ab^2(229f-gh)n^2x}{g^2} + \frac{687b(229f-gh)n(d+ex) (a+}{eg^2}$$

$$= -\frac{1374ab^2(229f-gh)n^2x}{g^2} + \frac{1374b^3(229f-gh)n^3x}{g^2} - \frac{1374b}{}$$

$$= -\frac{1374ab^2(229d-eh)n^2x}{eg} - \frac{1374ab^2(229f-gh)n^2x}{g^2} + \frac{1374}{}$$

$$= -\frac{1374ab^2(229d-eh)n^2x}{eg} - \frac{1374ab^2(229f-gh)n^2x}{g^2} + \frac{1374}{}$$

Mathematica [**B**] Leaf count is larger than twice the leaf count of optimal. 1521 vs. $2(660) = 1320$.
time $= 0.55$, size $= 1521$, normalized size $= 2.30$

Antiderivative was successfully verified.

```
[In] Integrate[((h + i*x)^2*(a + b*Log[c*(d + e*x)^n])^3)/(f + g*x),x]
```

```
[Out] (8*e^2*g*i*(2*g*h - f*i)*x*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^3
+ 4*e^2*g^2*i^2*x^2*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^3 + 8*e^2
*(g*h - f*i)^2*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^3*Log[f + g*x]
 + 24*b*e^2*g^2*h^2*n*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2*(Log[
```

```
d + e*x]*Log[(e*(f + g*x))/(e*f - d*g)] + PolyLog[2, (g*(d + e*x))/(-(e*f)
+ d*g)]) + 6*b*i^2*n*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2*(e*g*(
e*x*(4*f - g*x) + 2*d*(2*f + g*x)) - 2*Log[d + e*x]*(g*(d + e*x)*(2*e*f + d
*g - e*g*x) - 2*e^2*f^2*Log[(e*(f + g*x))/(e*f - d*g)]) + 4*e^2*f^2*PolyLog
[2, (g*(d + e*x))/(-(e*f) + d*g)]) - 48*b*e*g*h*i*n*(a - b*n*Log[d + e*x] +
 b*Log[c*(d + e*x)^n])^2*(-(g*(d + e*x)*(-1 + Log[d + e*x])) + e*f*(Log[d +
 e*x]*Log[(e*(f + g*x))/(e*f - d*g)] + PolyLog[2, (g*(d + e*x))/(-(e*f) + d
*g)])) + 48*b^2*e*g*h*i*n^2*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])*(
g*(2*e*x - 2*(d + e*x)*Log[d + e*x] + (d + e*x)*Log[d + e*x]^2) - e*f*(Log[
d + e*x]^2*Log[(e*(f + g*x))/(e*f - d*g)] + 2*Log[d + e*x]*PolyLog[2, (g*(d
 + e*x))/(-(e*f) + d*g)] - 2*PolyLog[3, (g*(d + e*x))/(-(e*f) + d*g)])) - 6
*b^2*i^2*n^2*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])*(4*e*f*g*(2*e*x
- 2*(d + e*x)*Log[d + e*x] + (d + e*x)*Log[d + e*x]^2) + g^2*(e*x*(6*d - e*
x) + (-6*d^2 - 4*d*e*x + 2*e^2*x^2)*Log[d + e*x] + 2*(d^2 - e^2*x^2)*Log[d
+ e*x]^2) - 4*e^2*f^2*(Log[d + e*x]^2*Log[(e*(f + g*x))/(e*f - d*g)] + 2*Lo
g[d + e*x]*PolyLog[2, (g*(d + e*x))/(-(e*f) + d*g)] - 2*PolyLog[3, (g*(d +
e*x))/(-(e*f) + d*g)])) + 48*b^2*e^2*g^2*h^2*n^2*(a - b*n*Log[d + e*x] + b*
Log[c*(d + e*x)^n])*((Log[d + e*x]^2*Log[(e*(f + g*x))/(e*f - d*g)])/2 + Lo
g[d + e*x]*PolyLog[2, (g*(d + e*x))/(-(e*f) + d*g)] - PolyLog[3, (g*(d + e*
x))/(-(e*f) + d*g)]) + 8*b^3*e^2*g^2*h^2*n^3*(Log[d + e*x]^3*Log[(e*(f + g*
x))/(e*f - d*g)] + 3*Log[d + e*x]^2*PolyLog[2, (g*(d + e*x))/(-(e*f) + d*g)
] - 6*Log[d + e*x]*PolyLog[3, (g*(d + e*x))/(-(e*f) + d*g)] + 6*PolyLog[4,
(g*(d + e*x))/(-(e*f) + d*g)]) - 16*b^3*e*g*h*i*n^3*(g*(6*e*x - 6*(d + e*x)
*Log[d + e*x] + 3*(d + e*x)*Log[d + e*x]^2 - (d + e*x)*Log[d + e*x]^3) + e*
f*(Log[d + e*x]^3*Log[(e*(f + g*x))/(e*f - d*g)] + 3*Log[d + e*x]^2*PolyLog
[2, (g*(d + e*x))/(-(e*f) + d*g)] - 6*Log[d + e*x]*PolyLog[3, (g*(d + e*x))
/(-(e*f) + d*g)] + 6*PolyLog[4, (g*(d + e*x))/(-(e*f) + d*g)])) + b^3*i^2*n
^3*(8*e*f*g*(6*e*x - 6*(d + e*x)*Log[d + e*x] + 3*(d + e*x)*Log[d + e*x]^2
- (d + e*x)*Log[d + e*x]^3) - g^2*(3*e*x*(-14*d + e*x) + 6*(7*d^2 + 6*d*e*x
 - e^2*x^2)*Log[d + e*x] - 6*(3*d^2 + 2*d*e*x - e^2*x^2)*Log[d + e*x]^2 + 4
*(d^2 - e^2*x^2)*Log[d + e*x]^3) + 8*e^2*f^2*(Log[d + e*x]^3*Log[(e*(f + g*
x))/(e*f - d*g)] + 3*Log[d + e*x]^2*PolyLog[2, (g*(d + e*x))/(-(e*f) + d*g)
] - 6*Log[d + e*x]*PolyLog[3, (g*(d + e*x))/(-(e*f) + d*g)] + 6*PolyLog[4,
(g*(d + e*x))/(-(e*f) + d*g)])))/(8*e^2*g^3)
```

Maple [F]
time = 0.33, size = 0, normalized size = 0.00

$$\int \frac{(ix+h)^2 (a+b\ln(c(ex+d)^n))^3}{gx+f}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((i*x+h)^2*(a+b*ln(c*(e*x+d)^n))^3/(g*x+f),x)
```

```
[Out] int((i*x+h)^2*(a+b*ln(c*(e*x+d)^n))^3/(g*x+f),x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^2*(a+b*log(c*(e*x+d)^n))^3/(g*x+f),x, algorithm="maxima")
```

```
[Out] 2*I*a^3*h*(x/g - f*log(g*x + f)/g^2) + a^3*h^2*log(g*x + f)/g - 1/2*a^3*(2*
f^2*log(g*x + f)/g^3 + (g*x^2 - 2*f*x)/g^2) - integrate(-(b^3*h^2*log(c)^3
+ 3*a*b^2*h^2*log(c)^2 + 3*a^2*b*h^2*log(c) + (b^3*h^2 + 2*I*b^3*h*x - b^3*
x^2)*log((x*e + d)^n)^3 - (b^3*log(c)^3 + 3*a*b^2*log(c)^2 + 3*a^2*b*log(c)
)*x^2 + 3*(b^3*h^2*log(c) + a*b^2*h^2 - (b^3*log(c) + a*b^2)*x^2 + 2*(I*b^3
*h*log(c) + I*a*b^2*h)*x)*log((x*e + d)^n)^2 + 2*(I*b^3*h*log(c)^3 + 3*I*a*
b^2*h*log(c)^2 + 3*I*a^2*b*h*log(c))*x + 3*(b^3*h^2*log(c)^2 + 2*a*b^2*h^2*
log(c) + a^2*b*h^2 - (b^3*log(c)^2 + 2*a*b^2*log(c) + a^2*b)*x^2 + 2*(I*b^3
*h*log(c)^2 + 2*I*a*b^2*h*log(c) + I*a^2*b*h)*x)*log((x*e + d)^n))/(g*x + f
), x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^2*(a+b*log(c*(e*x+d)^n))^3/(g*x+f),x, algorithm="fricas")
```

```
[Out] integral((a^3*h^2 + 2*I*a^3*h*x - a^3*x^2 + (b^3*h^2*n^3 + 2*I*b^3*h*n^3*x
- b^3*n^3*x^2)*log(x*e + d)^3 + (b^3*h^2 + 2*I*b^3*h*x - b^3*x^2)*log(c)^3
+ 3*(a*b^2*h^2*n^2 + 2*I*a*b^2*h*n^2*x - a*b^2*n^2*x^2 + (b^3*h^2*n^2 + 2*I
*b^3*h*n^2*x - b^3*n^2*x^2)*log(c))*log(x*e + d)^2 + 3*(a*b^2*h^2 + 2*I*a*b
^2*h*x - a*b^2*x^2)*log(c)^2 + 3*(a^2*b*h^2*n + 2*I*a^2*b*h*n*x - a^2*b*n*x
^2 + (b^3*h^2*n + 2*I*b^3*h*n*x - b^3*n*x^2)*log(c)^2 + 2*(a*b^2*h^2*n + 2*
I*a*b^2*h*n*x - a*b^2*n*x^2)*log(c))*log(x*e + d) + 3*(a^2*b*h^2 + 2*I*a^2*
b*h*x - a^2*b*x^2)*log(c))/(g*x + f), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a + b\log{(c(d+ex)^n)})^3 (h+ix)^2}{f+gx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)**2*(a+b*ln(c*(e*x+d)**n))**3/(g*x+f),x)
```

```
[Out] Integral((a + b*log(c*(d + e*x)**n))**3*(h + i*x)**2/(f + g*x), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^2*(a+b*log(c*(e*x+d)^n))^3/(g*x+f),x, algorithm="giac")
[Out] integrate((b*log((x*e + d)^n*c) + a)^3*(h + I*x)^2/(g*x + f), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(h+i\,x)^2\,\left(a+b\,\ln\left(c\,{(d+e\,x)}^n\right)\right)^3}{f+g\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((h + i*x)^2*(a + b*log(c*(d + e*x)^n))^3)/(f + g*x),x)
[Out] int(((h + i*x)^2*(a + b*log(c*(d + e*x)^n))^3)/(f + g*x), x)
```

3.230 $\int \frac{(h+ix)(a+b\log(c(d+ex)^n))^3}{f+gx}\,dx$

Optimal. Leaf size=308

$$\frac{6ab^2in^2x}{g}-\frac{6b^3in^3x}{g}+\frac{6b^3in^2(d+ex)\log\left(c(d+ex)^n\right)}{eg}-\frac{3bin(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{eg}+\frac{i(d+ex)\left(a-\right.}{}$$

```
[Out] 6*a*b^2*i*n^2*x/g-6*b^3*i*n^3*x/g+6*b^3*i*n^2*(e*x+d)*ln(c*(e*x+d)^n)/e/g-3
*b*i*n*(e*x+d)*(a+b*ln(c*(e*x+d)^n))^2/e/g+i*(e*x+d)*(a+b*ln(c*(e*x+d)^n))^
3/e/g+(-f*i+g*h)*(a+b*ln(c*(e*x+d)^n))^3*ln(e*(g*x+f)/(-d*g+e*f))/g^2+3*b*(
-f*i+g*h)*n*(a+b*ln(c*(e*x+d)^n))^2*polylog(2,-g*(e*x+d)/(-d*g+e*f))/g^2-6*
b^2*(-f*i+g*h)*n^2*(a+b*ln(c*(e*x+d)^n))*polylog(3,-g*(e*x+d)/(-d*g+e*f))/g
^2+6*b^3*(-f*i+g*h)*n^3*polylog(4,-g*(e*x+d)/(-d*g+e*f))/g^2
```

Rubi [A]
time = 0.26, antiderivative size = 308, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 9, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.310$, Rules used = {2465, 2436, 2333, 2332, 2443, 2481, 2421, 2430, 6724}

$$-\frac{6b^2n^2(gh-fi)\text{PolyLog}\left(3,-\frac{g(d+ex)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{g^2}+\frac{3bn(gh-fi)\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{g^2}+\frac{6b^3n^3(gh-fi)\text{PolyLog}\left(4,-\frac{g(d+ex)}{ef-dg}\right)}{g^2}+\frac{6ab^2in^2x}{g}+\frac{(gh-fi)\log\left(\frac{e(f+gx)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)^3}{g^2}-\frac{3bin(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{eg}+\frac{i(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^3}{eg}+\frac{6b^3in^2(d+ex)\log\left(c(d+ex)^n\right)}{eg}-\frac{6b^3in^3x}{g}$$

Antiderivative was successfully verified.

```
[In] Int[((h + i*x)*(a + b*Log[c*(d + e*x)^n])^3)/(f + g*x),x]
```

```
[Out] (6*a*b^2*i*n^2*x)/g - (6*b^3*i*n^3*x)/g + (6*b^3*i*n^2*(d + e*x)*Log[c*(d +
 e*x)^n])/(e*g) - (3*b*i*n*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^2)/(e*g) +
(i*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^3)/(e*g) + ((g*h - f*i)*(a + b*Log[
c*(d + e*x)^n])^3*Log[(e*(f + g*x))/(e*f - d*g)])/g^2 + (3*b*(g*h - f*i)*n*
(a + b*Log[c*(d + e*x)^n])^2*PolyLog[2, -((g*(d + e*x))/(e*f - d*g))])/g^2
- (6*b^2*(g*h - f*i)*n^2*(a + b*Log[c*(d + e*x)^n])*PolyLog[3, -((g*(d + e*
x))/(e*f - d*g))])/g^2 + (6*b^3*(g*h - f*i)*n^3*PolyLog[4, -((g*(d + e*x))/
(e*f - d*g))])/g^2
```

Rule 2332

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2333

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2421

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> Simp[(-PolyLog[2, (-d)*f*x^m])*((a + b*Log[c
*x^n])^p/m), x] + Dist[b*n*(p/m), Int[PolyLog[2, (-d)*f*x^m]*((a + b*Log[c*
x^n])^(p - 1)/x), x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0
] && EqQ[d*e, 1]
```

Rule 2430

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*PolyLog[k_, (e_.)*(x_)^(q_
.)])/(x_), x_Symbol] :> Simp[PolyLog[k + 1, e*x^q]*((a + b*Log[c*x^n])^p/q)
, x] - Dist[b*n*(p/q), Int[PolyLog[k + 1, e*x^q]*((a + b*Log[c*x^n])^(p - 1
)/x), x], x] /; FreeQ[{a, b, c, e, k, n, q}, x] && GtQ[p, 0]
```

Rule 2436

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2443

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d
+ e*x)^n])^p/g), x] - Dist[b*e*n*(p/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]*
((a + b*Log[c*(d + e*x)^n])^(p - 1)/(d + e*x)), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2465

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2481

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[(k*(x/d))^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + j*(x/e))^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 6724

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
```

```
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(h+230x)\left(a+b\log\left(c(d+ex)^n\right)\right)^3}{f+gx}\,dx = \int \left(\frac{230\left(a+b\log\left(c(d+ex)^n\right)\right)^3}{g}+\frac{(-230f+gh)\left(a+b\log\left(c\right.\right.}{g(f+gx)}\right.$$

$$= \frac{230\int \left(a+b\log\left(c(d+ex)^n\right)\right)^3\,dx}{g}+\frac{(-230f+gh)\int \frac{(a+b\log(c(}{f+}}{g}$$

$$= -\frac{(230f-gh)\left(a+b\log\left(c(d+ex)^n\right)\right)^3\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g^2}+\frac{230\mathrm{Sul}}{}$$

$$= \frac{230(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^3}{eg}-\frac{(230f-gh)\left(a+b\log\right.}{}$$

$$= -\frac{690bn(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{eg}+\frac{230(d+ex)\left(a+b\right.}{e}$$

$$= \frac{1380ab^2n^2x}{g}-\frac{690bn(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{eg}+\frac{230(}{}$$

$$= \frac{1380ab^2n^2x}{g}-\frac{1380b^3n^3x}{g}+\frac{1380b^3n^2(d+ex)\log\left(c(d+ex)^n\right)}{eg}$$

Mathematica [**B**] Leaf count is larger than twice the leaf count of optimal. 799 vs. 2(308) = 616.
time = 0.23, size = 799, normalized size = 2.59

Antiderivative was successfully verified.

```
[In] Integrate[((h + i*x)*(a + b*Log[c*(d + e*x)^n])^3)/(f + g*x),x]
```

```
[Out] (e*g*i*x*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^3 + e*(g*h - f*i)*(a
 - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^3*Log[f + g*x] + 3*b*e*g*h*n*(a
 - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2*(Log[d + e*x]*Log[(e*(f + g*x
))/(e*f - d*g)] + PolyLog[2, (g*(d + e*x))/(-(e*f) + d*g)]) - 3*b*i*n*(a -
b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2*(-(g*(d + e*x)*(-1 + Log[d + e*x
])) + e*f*(Log[d + e*x]*Log[(e*(f + g*x))/(e*f - d*g)] + PolyLog[2, (g*(d +
```

```
e*x))/(-(e*f) + d*g)])) + 3*b^2*i*n^2*(a - b*n*Log[d + e*x] + b*Log[c*(d +
e*x)^n])*(g*(2*e*x - 2*(d + e*x)*Log[d + e*x] + (d + e*x)*Log[d + e*x]^2)
- e*f*(Log[d + e*x]^2*Log[(e*(f + g*x))/(e*f - d*g)] + 2*Log[d + e*x]*PolyL
og[2, (g*(d + e*x))/(-(e*f) + d*g)] - 2*PolyLog[3, (g*(d + e*x))/(-(e*f) +
d*g)])) + 6*b^2*e*g*h*n^2*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])*((L
og[d + e*x]^2*Log[(e*(f + g*x))/(e*f - d*g)])/2 + Log[d + e*x]*PolyLog[2, (
g*(d + e*x))/(-(e*f) + d*g)] - PolyLog[3, (g*(d + e*x))/(-(e*f) + d*g)]) +
b^3*e*g*h*n^3*(Log[d + e*x]^3*Log[(e*(f + g*x))/(e*f - d*g)] + 3*Log[d + e*
x]^2*PolyLog[2, (g*(d + e*x))/(-(e*f) + d*g)] - 6*Log[d + e*x]*PolyLog[3, (
g*(d + e*x))/(-(e*f) + d*g)] + 6*PolyLog[4, (g*(d + e*x))/(-(e*f) + d*g)])
- b^3*i*n^3*(g*(6*e*x - 6*(d + e*x)*Log[d + e*x] + 3*(d + e*x)*Log[d + e*x]
^2 - (d + e*x)*Log[d + e*x]^3) + e*f*(Log[d + e*x]^3*Log[(e*(f + g*x))/(e*f
 - d*g)] + 3*Log[d + e*x]^2*PolyLog[2, (g*(d + e*x))/(-(e*f) + d*g)] - 6*Lo
g[d + e*x]*PolyLog[3, (g*(d + e*x))/(-(e*f) + d*g)] + 6*PolyLog[4, (g*(d +
e*x))/(-(e*f) + d*g)])))/(e*g^2)
```

Maple [F]
time = 0.17, size = 0, normalized size = 0.00

$$\int \frac{(ix+h)\left(a+b\ln\left(c(ex+d)^{n}\right)\right)^{3}}{gx+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((i*x+h)*(a+b*ln(c*(e*x+d)^n))^3/(g*x+f),x)
```

```
[Out] int((i*x+h)*(a+b*ln(c*(e*x+d)^n))^3/(g*x+f),x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)*(a+b*log(c*(e*x+d)^n))^3/(g*x+f),x, algorithm="maxima")
```

```
[Out] I*a^3*(x/g - f*log(g*x + f)/g^2) + a^3*h*log(g*x + f)/g + integrate((b^3*h*
log(c)^3 + 3*a*b^2*h*log(c)^2 + 3*a^2*b*h*log(c) + (b^3*h + I*b^3*x)*log((x
*e + d)^n)^3 + 3*(b^3*h*log(c) + a*b^2*h - (-I*b^3*log(c) - I*a*b^2)*x)*log
((x*e + d)^n)^2 + (I*b^3*log(c)^3 + 3*I*a*b^2*log(c)^2 + 3*I*a^2*b*log(c))*
x + 3*(b^3*h*log(c)^2 + 2*a*b^2*h*log(c) + a^2*b*h - (-I*b^3*log(c)^2 - 2*I
*a*b^2*log(c) - I*a^2*b)*x)*log((x*e + d)^n))/(g*x + f), x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)*(a+b*log(c*(e*x+d)^n))^3/(g*x+f),x, algorithm="fricas")
```

```
[Out] integral((a^3*h + I*a^3*x + (b^3*h*n^3 + I*b^3*n^3*x)*log(x*e + d)^3 + (b^3
*h + I*b^3*x)*log(c)^3 + 3*(a*b^2*h*n^2 + I*a*b^2*n^2*x + (b^3*h*n^2 + I*b^
3*n^2*x)*log(c))*log(x*e + d)^2 + 3*(a*b^2*h + I*a*b^2*x)*log(c)^2 + 3*(a^2
*b*h*n + I*a^2*b*n*x + (b^3*h*n + I*b^3*n*x)*log(c)^2 + 2*(a*b^2*h*n + I*a*
b^2*n*x)*log(c))*log(x*e + d) + 3*(a^2*b*h + I*a^2*b*x)*log(c))/(g*x + f),
x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a + b \log (c(d + ex)^n))^3 (h + ix)}{f + gx} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)*(a+b*ln(c*(e*x+d)**n))**3/(g*x+f),x)
```

```
[Out] Integral((a + b*log(c*(d + e*x)**n))**3*(h + i*x)/(f + g*x), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)*(a+b*log(c*(e*x+d)^n))^3/(g*x+f),x, algorithm="giac")
```

```
[Out] integrate((b*log((x*e + d)^n*c) + a)^3*(h + I*x)/(g*x + f), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(h + i\,x)\,\left(a + b\,\ln\left(c\,{\left(d + e\,x\right)}^n\right)\right)^3}{f + g\,x} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((h + i*x)*(a + b*log(c*(d + e*x)^n))^3)/(f + g*x),x)
```

```
[Out] int(((h + i*x)*(a + b*log(c*(d + e*x)^n))^3)/(f + g*x), x)
```

3.231 $\int \frac{(a+b\log(c(d+ex)^n))^3}{f+gx}\,dx$

Optimal. Leaf size=158

$$\frac{(a+b\log(c(d+ex)^n))^3\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g}+\frac{3bn(a+b\log(c(d+ex)^n))^2\operatorname{Li}_2\left(-\frac{g(d+ex)}{ef-dg}\right)}{g}-\frac{6b^2n^2(a+b\log(c(d+e}{g}$$

```
[Out] (a+b*ln(c*(e*x+d)^n))^3*ln(e*(g*x+f)/(-d*g+e*f))/g+3*b*n*(a+b*ln(c*(e*x+d)^
n))^2*polylog(2,-g*(e*x+d)/(-d*g+e*f))/g-6*b^2*n^2*(a+b*ln(c*(e*x+d)^n))*po
lylog(3,-g*(e*x+d)/(-d*g+e*f))/g+6*b^3*n^3*polylog(4,-g*(e*x+d)/(-d*g+e*f))
/g
```

Rubi [A]
time = 0.12, antiderivative size = 158, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.208$, Rules used = {2443, 2481, 2421, 2430, 6724}

$$-\frac{6b^2n^2\text{PolyLog}\left(3,-\frac{g(d+ex)}{ef-dg}\right)(a+b\log(c(d+ex)^n))}{g}+\frac{3bn\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)(a+b\log(c(d+ex)^n))^2}{g}+\frac{6b^3n^3\text{PolyLog}\left(4,-\frac{g(d+ex)}{ef-dg}\right)}{g}+\frac{\log\left(\frac{e(f+gx)}{ef-dg}\right)(a+b\log(c(d+ex)^n))^3}{g}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^3/(f + g*x),x]
```

```
[Out] ((a + b*Log[c*(d + e*x)^n])^3*Log[(e*(f + g*x))/(e*f - d*g)])/g + (3*b*n*(a
 + b*Log[c*(d + e*x)^n])^2*PolyLog[2, -((g*(d + e*x))/(e*f - d*g))])/g - (6
*b^2*n^2*(a + b*Log[c*(d + e*x)^n])*PolyLog[3, -((g*(d + e*x))/(e*f - d*g))
])/g + (6*b^3*n^3*PolyLog[4, -((g*(d + e*x))/(e*f - d*g))])/g
```

Rule 2421

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> Simp[(-PolyLog[2, (-d)*f*x^m])*((a + b*Log[c
*x^n])^p/m), x] + Dist[b*n*(p/m), Int[PolyLog[2, (-d)*f*x^m]*((a + b*Log[c*
x^n])^(p - 1)/x), x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0
] && EqQ[d*e, 1]
```

Rule 2430

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*PolyLog[k_, (e_.)*(x_)^(q_
.)])/(x_), x_Symbol] :> Simp[PolyLog[k + 1, e*x^q]*((a + b*Log[c*x^n])^p/q)
, x] - Dist[b*n*(p/q), Int[PolyLog[k + 1, e*x^q]*((a + b*Log[c*x^n])^(p - 1
)/x), x], x] /; FreeQ[{a, b, c, e, k, n, q}, x] && GtQ[p, 0]
```

Rule 2443

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d
```

```
+ e*x)^n])^p/g), x] - Dist[b*e*n*(p/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]*
((a + b*Log[c*(d + e*x)^n])^(p - 1)/(d + e*x)), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2481

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[(k*(x/d))^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + j*(x/e))^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 6724

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(a+b\log(c(d+ex)^n))^3}{f+gx}\,dx = \frac{(a+b\log(c(d+ex)^n))^3\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g} - \frac{(3ben)\int \frac{(a+b\log(c(d+ex)^n))^2\log\left(\frac{e(f+g}{ef-}\right.}{d+ex}}{g}$$

$$= \frac{(a+b\log(c(d+ex)^n))^3\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g} - \frac{(3bn)\mathrm{Subst}\left(\int \frac{(a+b\log(cx^n))^2\log\left(\frac{e(}{-}\right.}{x}\right.}{g}$$

$$= \frac{(a+b\log(c(d+ex)^n))^3\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g} + \frac{3bn(a+b\log(c(d+ex)^n))^2\,\mathrm{Li}_2\left(\right.}{g}$$

$$= \frac{(a+b\log(c(d+ex)^n))^3\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g} + \frac{3bn(a+b\log(c(d+ex)^n))^2\,\mathrm{Li}_2\left(\right.}{g}$$

$$= \frac{(a+b\log(c(d+ex)^n))^3\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g} + \frac{3bn(a+b\log(c(d+ex)^n))^2\,\mathrm{Li}_2\left(\right.}{g}$$

Mathematica [B] Leaf count is larger than twice the leaf count of optimal. 335 vs. 2(158) = 316.

time = 0.10, size = 335, normalized size = 2.12

$$\frac{(a-bn\log(d+ex)+b\log(c(d+ex)^n))^3\log(f+gx)+3bn(a-bn\log(d+ex)+b\log(c(d+ex)^n))^2\left(\log(d+ex)\log\left(\frac{e(f+gx)}{ef-dg}\right)+\mathrm{Li}_2\left(\frac{g(d+ex)}{-ef+dg}\right)\right)+6b^2n^2(a-bn\log(d+ex)+b\log(c(d+ex)^n))\left(\frac{1}{2}\log^2(d+ex)\log\left(\frac{e(f+gx)}{ef-dg}\right)+\log(d+ex)\mathrm{Li}_2\left(\frac{g(d+ex)}{-ef+dg}\right)-\mathrm{Li}_3\left(\frac{g(d+ex)}{-ef+dg}\right)\right)+b^3n^3\left(\log^3(d+ex)\log\left(\frac{e(f+gx)}{ef-dg}\right)+3\log^2(d+ex)\mathrm{Li}_2\left(\frac{g(d+ex)}{-ef+dg}\right)-6\log(d+ex)\mathrm{Li}_3\left(\frac{g(d+ex)}{-ef+dg}\right)+6\mathrm{Li}_4\left(\frac{g(d+ex)}{-ef+dg}\right)\right)}{g}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^3/(f + g*x),x]
```

```
[Out] ((a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^3*Log[f + g*x] + 3*b*n*(a -
b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2*(Log[d + e*x]*Log[(e*(f + g*x))/
(e*f - d*g)] + PolyLog[2, (g*(d + e*x))/(-(e*f) + d*g)]) + 6*b^2*n^2*(a - b
*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])*((Log[d + e*x]^2*Log[(e*(f + g*x))/
(e*f - d*g)])/2 + Log[d + e*x]*PolyLog[2, (g*(d + e*x))/(-(e*f) + d*g)] - P
olyLog[3, (g*(d + e*x))/(-(e*f) + d*g)]) + b^3*n^3*(Log[d + e*x]^3*Log[(e*(
f + g*x))/(e*f - d*g)] + 3*Log[d + e*x]^2*PolyLog[2, (g*(d + e*x))/(-(e*f)
+ d*g)] - 6*Log[d + e*x]*PolyLog[3, (g*(d + e*x))/(-(e*f) + d*g)] + 6*PolyL
og[4, (g*(d + e*x))/(-(e*f) + d*g)]))/g
```

Maple [C] Result contains higher order function than in optimal. Order 9 vs. order 4.
time = 0.30, size = 9538, normalized size = 60.37

method	result	size
risch	Expression too large to display	9538

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))^3/(g*x+f),x,method=_RETURNVERBOSE)
```

```
[Out] result too large to display
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^3/(g*x+f),x, algorithm="maxima")
```

```
[Out] a^3*log(g*x + f)/g + integrate((b^3*log((x*e + d)^n)^3 + b^3*log(c)^3 + 3*a
*b^2*log(c)^2 + 3*a^2*b*log(c) + 3*(b^3*log(c) + a*b^2)*log((x*e + d)^n)^2
+ 3*(b^3*log(c)^2 + 2*a*b^2*log(c) + a^2*b)*log((x*e + d)^n))/(g*x + f), x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^3/(g*x+f),x, algorithm="fricas")
```

```
[Out] integral((b^3*log((x*e + d)^n*c)^3 + 3*a*b^2*log((x*e + d)^n*c)^2 + 3*a^2*b
*log((x*e + d)^n*c) + a^3)/(g*x + f), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a + b\log(c(d + ex)^n))^3}{f + gx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**3/(g*x+f),x)
```

```
[Out] Integral((a + b*log(c*(d + e*x)**n))**3/(f + g*x), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^3/(g*x+f),x, algorithm="giac")
```

```
[Out] integrate((b*log((x*e + d)^n*c) + a)^3/(g*x + f), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(a + b\,\ln(c\,(d + e\,x)^n))^3}{f + g\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))^3/(f + g*x),x)
```

```
[Out] int((a + b*log(c*(d + e*x)^n))^3/(f + g*x), x)
```

3.232 $\int \frac{(a+b\log(c(d+ex)^n))^3}{(f+gx)(h+ix)}\,dx$

Optimal. Leaf size=372

$$\frac{(a+b\log(c(d+ex)^n))^3\log\left(\frac{e(f+gx)}{ef-dg}\right)}{gh-fi}-\frac{(a+b\log(c(d+ex)^n))^3\log\left(\frac{e(h+ix)}{eh-di}\right)}{gh-fi}+\frac{3bn(a+b\log(c(d+ex)^n))^2\,\mathrm{I}}{gh-fi}$$

```
[Out] (a+b*ln(c*(e*x+d)^n))^3*ln(e*(g*x+f)/(-d*g+e*f))/(-f*i+g*h)-(a+b*ln(c*(e*x+
d)^n))^3*ln(e*(i*x+h)/(-d*i+e*h))/(-f*i+g*h)+3*b*n*(a+b*ln(c*(e*x+d)^n))^2*
polylog(2,-g*(e*x+d)/(-d*g+e*f))/(-f*i+g*h)-3*b*n*(a+b*ln(c*(e*x+d)^n))^2*p
olylog(2,-i*(e*x+d)/(-d*i+e*h))/(-f*i+g*h)-6*b^2*n^2*(a+b*ln(c*(e*x+d)^n))*
polylog(3,-g*(e*x+d)/(-d*g+e*f))/(-f*i+g*h)+6*b^2*n^2*(a+b*ln(c*(e*x+d)^n))
*polylog(3,-i*(e*x+d)/(-d*i+e*h))/(-f*i+g*h)+6*b^3*n^3*polylog(4,-g*(e*x+d)
/(-d*g+e*f))/(-f*i+g*h)-6*b^3*n^3*polylog(4,-i*(e*x+d)/(-d*i+e*h))/(-f*i+g*
h)
```

Rubi [A]
time = 0.36, antiderivative size = 372, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 6, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.194$, Rules used = {2465, 2443, 2481, 2421, 2430, 6724}

$$-\frac{6b^2n^2\text{PolyLog}\left(3,-\frac{g(d+ex)}{ef-dg}\right)(a+b\log(c(d+ex)^n))}{gh-fi}+\frac{6b^2n^2\text{PolyLog}\left(3,-\frac{i(d+ex)}{eh-di}\right)(a+b\log(c(d+ex)^n))}{gh-fi}+\frac{3bn\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)(a+b\log(c(d+ex)^n))^2}{gh-fi}-\frac{3bn\text{PolyLog}\left(2,-\frac{i(d+ex)}{eh-di}\right)(a+b\log(c(d+ex)^n))^2}{gh-fi}+\frac{6b^3n^3\text{PolyLog}\left(4,-\frac{g(d+ex)}{ef-dg}\right)}{gh-fi}-\frac{6b^3n^3\text{PolyLog}\left(4,-\frac{i(d+ex)}{eh-di}\right)}{gh-fi}+\frac{\log\left(\frac{e(f+gx)}{ef-dg}\right)(a+b\log(c(d+ex)^n))^3}{gh-fi}-\frac{\log\left(\frac{e(h+ix)}{eh-di}\right)(a+b\log(c(d+ex)^n))^3}{gh-fi}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^3/((f + g*x)*(h + i*x)),x]
```

```
[Out] ((a + b*Log[c*(d + e*x)^n])^3*Log[(e*(f + g*x))/(e*f - d*g)])/(g*h - f*i) -
 ((a + b*Log[c*(d + e*x)^n])^3*Log[(e*(h + i*x))/(e*h - d*i)])/(g*h - f*i)
+ (3*b*n*(a + b*Log[c*(d + e*x)^n])^2*PolyLog[2, -((g*(d + e*x))/(e*f - d*g
))])/(g*h - f*i) - (3*b*n*(a + b*Log[c*(d + e*x)^n])^2*PolyLog[2, -((i*(d +
 e*x))/(e*h - d*i))])/(g*h - f*i) - (6*b^2*n^2*(a + b*Log[c*(d + e*x)^n])*P
olyLog[3, -((g*(d + e*x))/(e*f - d*g))])/(g*h - f*i) + (6*b^2*n^2*(a + b*Lo
g[c*(d + e*x)^n])*PolyLog[3, -((i*(d + e*x))/(e*h - d*i))])/(g*h - f*i) + (
6*b^3*n^3*PolyLog[4, -((g*(d + e*x))/(e*f - d*g))])/(g*h - f*i) - (6*b^3*n^
3*PolyLog[4, -((i*(d + e*x))/(e*h - d*i))])/(g*h - f*i)
```

Rule 2421

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> Simp[(-PolyLog[2, (-d)*f*x^m])*((a + b*Log[c
*x^n])^p/m), x] + Dist[b*n*(p/m), Int[PolyLog[2, (-d)*f*x^m]*((a + b*Log[c*
x^n])^(p - 1)/x), x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0
] && EqQ[d*e, 1]
```

Rule 2430

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*PolyLog[k_, (e_.)*(x_)^(q_
.)])/(x_), x_Symbol] :> Simp[PolyLog[k + 1, e*x^q]*((a + b*Log[c*x^n])^p/q)
, x] - Dist[b*n*(p/q), Int[PolyLog[k + 1, e*x^q]*((a + b*Log[c*x^n])^(p - 1
)/x), x], x] /; FreeQ[{a, b, c, e, k, n, q}, x] && GtQ[p, 0]
```

Rule 2443

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d
+ e*x)^n])^p/g), x] - Dist[b*e*n*(p/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]*
((a + b*Log[c*(d + e*x)^n])^(p - 1)/(d + e*x)), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2465

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2481

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[(k*(x/d))^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + j*(x/e))^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 6724

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(a+b\log(c(d+ex)^n))^3}{(h+232x)(f+gx)}\,dx = \int \left(\frac{232(a+b\log(c(d+ex)^n))^3}{(232f-gh)(h+232x)} - \frac{g(a+b\log(c(d+ex)^n))^3}{(232f-gh)(f+gx)}\right) dx$$

$$= \frac{232\int \frac{(a+b\log(c(d+ex)^n))^3}{h+232x}\,dx}{232f-gh} - \frac{g\int \frac{(a+b\log(c(d+ex)^n))^3}{f+gx}\,dx}{232f-gh}$$

$$= \frac{\log\left(-\frac{e(h+232x)}{232d-eh}\right)(a+b\log(c(d+ex)^n))^3}{232f-gh} - \frac{(a+b\log(c(d+ex)^n))^3\log\left(\frac{e}{\right.}}{232f-gh}$$

$$= \frac{\log\left(-\frac{e(h+232x)}{232d-eh}\right)(a+b\log(c(d+ex)^n))^3}{232f-gh} - \frac{(a+b\log(c(d+ex)^n))^3\log\left(\frac{e}{\right.}}{232f-gh}$$

$$= \frac{\log\left(-\frac{e(h+232x)}{232d-eh}\right)(a+b\log(c(d+ex)^n))^3}{232f-gh} - \frac{(a+b\log(c(d+ex)^n))^3\log\left(\frac{e}{\right.}}{232f-gh}$$

$$= \frac{\log\left(-\frac{e(h+232x)}{232d-eh}\right)(a+b\log(c(d+ex)^n))^3}{232f-gh} - \frac{(a+b\log(c(d+ex)^n))^3\log\left(\frac{e}{\right.}}{232f-gh}$$

$$= \frac{\log\left(-\frac{e(h+232x)}{232d-eh}\right)(a+b\log(c(d+ex)^n))^3}{232f-gh} - \frac{(a+b\log(c(d+ex)^n))^3\log\left(\frac{e}{\right.}}{232f-gh}$$

Mathematica [A]
time = 0.25, size = 599, normalized size = 1.61

$$\frac{(a-bn\log(d+ex)+b\log(c(d+ex)^n))^3\log(f+gx)-(a-bn\log(d+ex)+b\log(c(d+ex)^n))^3\log(h+ix)+3bn(a-bn\log(d+ex)+b\log(c(d+ex)^n))^2\left(\log(d+ex)\left(\log\left(\frac{e(f+gx)}{ef-dg}\right)-\log\left(\frac{e(h+ix)}{eh-di}\right)\right)+\mathrm{Li}_2\left(\frac{g(d+ex)}{-ef+dg}\right)-\mathrm{Li}_2\left(\frac{i(d+ex)}{-eh+di}\right)\right)+6b^2n^2(a-bn\log(d+ex)+b\log(c(d+ex)^n))\left(\frac{1}{2}\log^2(d+ex)\log\left(\frac{e(f+gx)}{ef-dg}\right)-\frac{1}{2}\log^2(d+ex)\log\left(\frac{e(h+ix)}{eh-di}\right)+\log(d+ex)\mathrm{Li}_2\left(\frac{g(d+ex)}{-ef+dg}\right)-\log(d+ex)\mathrm{Li}_2\left(\frac{i(d+ex)}{-eh+di}\right)-\mathrm{Li}_3\left(\frac{g(d+ex)}{-ef+dg}\right)+\mathrm{Li}_3\left(\frac{i(d+ex)}{-eh+di}\right)\right)+b^3n^3\left(\log^3(d+ex)\log\left(\frac{e(f+gx)}{ef-dg}\right)-\log^3(d+ex)\log\left(\frac{e(h+ix)}{eh-di}\right)+3\log^2(d+ex)\mathrm{Li}_2\left(\frac{g(d+ex)}{-ef+dg}\right)-3\log^2(d+ex)\mathrm{Li}_2\left(\frac{i(d+ex)}{-eh+di}\right)-6\log(d+ex)\mathrm{Li}_3\left(\frac{g(d+ex)}{-ef+dg}\right)+6\log(d+ex)\mathrm{Li}_3\left(\frac{i(d+ex)}{-eh+di}\right)+6\mathrm{Li}_4\left(\frac{g(d+ex)}{-ef+dg}\right)-6\mathrm{Li}_4\left(\frac{i(d+ex)}{-eh+di}\right)\right)}{gh-fi}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^3/((f + g*x)*(h + i*x)),x]
```

```
[Out] ((a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^3*Log[f + g*x] - (a - b*n*Lo
g[d + e*x] + b*Log[c*(d + e*x)^n])^3*Log[h + i*x] + 3*b*n*(a - b*n*Log[d +
e*x] + b*Log[c*(d + e*x)^n])^2*(Log[d + e*x]*(Log[(e*(f + g*x))/(e*f - d*g)
] - Log[(e*(h + i*x))/(e*h - d*i)]) + PolyLog[2, (g*(d + e*x))/(-(e*f) + d*
g)] - PolyLog[2, (i*(d + e*x))/(-(e*h) + d*i)]) + 6*b^2*n^2*(a - b*n*Log[d
+ e*x] + b*Log[c*(d + e*x)^n])*((Log[d + e*x]^2*Log[(e*(f + g*x))/(e*f - d*
g)])/2 - (Log[d + e*x]^2*Log[(e*(h + i*x))/(e*h - d*i)])/2 + Log[d + e*x]*P
olyLog[2, (g*(d + e*x))/(-(e*f) + d*g)] - Log[d + e*x]*PolyLog[2, (i*(d + e
*x))/(-(e*h) + d*i)] - PolyLog[3, (g*(d + e*x))/(-(e*f) + d*g)] + PolyLog[3
, (i*(d + e*x))/(-(e*h) + d*i)]) + b^3*n^3*(Log[d + e*x]^3*Log[(e*(f + g*x)
```

```
)/(e*f - d*g)] - Log[d + e*x]^3*Log[(e*(h + i*x))/(e*h - d*i)] + 3*Log[d +
e*x]^2*PolyLog[2, (g*(d + e*x))/(-(e*f) + d*g)] - 3*Log[d + e*x]^2*PolyLog[
2, (i*(d + e*x))/(-(e*h) + d*i)] - 6*Log[d + e*x]*PolyLog[3, (g*(d + e*x))/
(-(e*f) + d*g)] + 6*Log[d + e*x]*PolyLog[3, (i*(d + e*x))/(-(e*h) + d*i)] +
 6*PolyLog[4, (g*(d + e*x))/(-(e*f) + d*g)] - 6*PolyLog[4, (i*(d + e*x))/(-
(e*h) + d*i)]))/(g*h - f*i)
```

Maple [C] Result contains higher order function than in optimal. Order 9 vs. order 4.
time = 4.77, size = 21696, normalized size = 58.32

method	result	size
risch	Expression too large to display	21696

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))^3/(g*x+f)/(i*x+h),x,method=_RETURNVERBOSE)
```

```
[Out] result too large to display
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^3/(g*x+f)/(i*x+h),x, algorithm="maxima")
```

```
[Out] a^3*(log(g*x + f)/(g*h - I*f) - log(h + I*x)/(g*h - I*f)) - integrate((I*b^
3*log((x*e + d)^n)^3 + I*b^3*log(c)^3 + 3*I*a*b^2*log(c)^2 + 3*I*a^2*b*log(
c) - 3*(-I*b^3*log(c) - I*a*b^2)*log((x*e + d)^n)^2 - 3*(-I*b^3*log(c)^2 -
2*I*a*b^2*log(c) - I*a^2*b)*log((x*e + d)^n))/(g*x^2 - I*f*h + (-I*g*h + f)
*x), x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^3/(g*x+f)/(i*x+h),x, algorithm="fricas")
```

```
[Out] integral((-I*b^3*n^3*log(x*e + d)^3 - I*b^3*log(c)^3 - 3*I*a*b^2*log(c)^2 -
 3*I*a^2*b*log(c) - I*a^3 - 3*(I*b^3*n^2*log(c) + I*a*b^2*n^2)*log(x*e + d)
^2 - 3*(I*b^3*n*log(c)^2 + 2*I*a*b^2*n*log(c) + I*a^2*b*n)*log(x*e + d))/(g
*x^2 - I*f*h + (-I*g*h + f)*x), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a + b\log{(c(d + ex)^n)})^3}{(f + gx)(h + ix)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**3/(g*x+f)/(i*x+h),x)
```

```
[Out] Integral((a + b*log(c*(d + e*x)**n))**3/((f + g*x)*(h + i*x)), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^3/(g*x+f)/(i*x+h),x, algorithm="giac")
```

```
[Out] integrate((b*log((x*e + d)^n*c) + a)^3/((g*x + f)*(h + I*x)), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(a + b\,\ln\left(c\,(d + e\,x)^n\right))^3}{(f + g\,x)\,(h + i\,x)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))^3/((f + g*x)*(h + i*x)),x)
```

```
[Out] int((a + b*log(c*(d + e*x)^n))^3/((f + g*x)*(h + i*x)), x)
```

3.233 $\int \frac{(a+b\log(c(d+ex)^n))^3}{(f+gx)(h+ix)^2}\,dx$

Optimal. Leaf size=602

$$-\frac{i(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^3}{(eh-di)(gh-fi)(h+ix)}+\frac{g\left(a+b\log\left(c(d+ex)^n\right)\right)^3\log\left(\frac{e(f+gx)}{ef-dg}\right)}{(gh-fi)^2}+\frac{3ben\left(a+b\log\left(c(d+ex)^n\right)\right)}{(eh-di)(gh-}$$

```
[Out] -i*(e*x+d)*(a+b*ln(c*(e*x+d)^n))^3/(-d*i+e*h)/(-f*i+g*h)/(i*x+h)+g*(a+b*ln(
c*(e*x+d)^n))^3*ln(e*(g*x+f)/(-d*g+e*f))/(-f*i+g*h)^2+3*b*e*n*(a+b*ln(c*(e*
x+d)^n))^2*ln(e*(i*x+h)/(-d*i+e*h))/(-d*i+e*h)/(-f*i+g*h)-g*(a+b*ln(c*(e*x+
d)^n))^3*ln(e*(i*x+h)/(-d*i+e*h))/(-f*i+g*h)^2+3*b*g*n*(a+b*ln(c*(e*x+d)^n)
)^2*polylog(2,-g*(e*x+d)/(-d*g+e*f))/(-f*i+g*h)^2+6*b^2*e*n^2*(a+b*ln(c*(e*
x+d)^n))*polylog(2,-i*(e*x+d)/(-d*i+e*h))/(-d*i+e*h)/(-f*i+g*h)-3*b*g*n*(a+
b*ln(c*(e*x+d)^n))^2*polylog(2,-i*(e*x+d)/(-d*i+e*h))/(-f*i+g*h)^2-6*b^2*g*
n^2*(a+b*ln(c*(e*x+d)^n))*polylog(3,-g*(e*x+d)/(-d*g+e*f))/(-f*i+g*h)^2-6*b
^3*e*n^3*polylog(3,-i*(e*x+d)/(-d*i+e*h))/(-d*i+e*h)/(-f*i+g*h)+6*b^2*g*n^2
*(a+b*ln(c*(e*x+d)^n))*polylog(3,-i*(e*x+d)/(-d*i+e*h))/(-f*i+g*h)^2+6*b^3*
g*n^3*polylog(4,-g*(e*x+d)/(-d*g+e*f))/(-f*i+g*h)^2-6*b^3*g*n^3*polylog(4,-
i*(e*x+d)/(-d*i+e*h))/(-f*i+g*h)^2
```

Rubi [A]
time = 0.50, antiderivative size = 602, normalized size of antiderivative = 1.00, number of steps used = 17, number of rules used = 7, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.226$, Rules used = {2465, 2443, 2481, 2421, 2430, 6724, 2444}

$$\frac{6b^2en^2\text{PolyLog}\left(2,-\frac{i(d+ex)}{eh-di}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{(eh-di)(gh-fi)}-\frac{6b^2gn^2\text{PolyLog}\left(3,-\frac{g(d+ex)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{(gh-fi)^2}+\frac{6b^2gn^2\text{PolyLog}\left(3,-\frac{i(d+ex)}{eh-di}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{(gh-fi)^2}+\frac{3bgn\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{(gh-fi)^2}-\frac{3bgn\text{PolyLog}\left(2,-\frac{i(d+ex)}{eh-di}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{(gh-fi)^2}-\frac{6b^3en^3\text{PolyLog}\left(3,-\frac{i(d+ex)}{eh-di}\right)}{(eh-di)(gh-fi)}+\frac{6b^3gn^3\text{PolyLog}\left(4,-\frac{g(d+ex)}{ef-dg}\right)}{(gh-fi)^2}-\frac{6b^3gn^3\text{PolyLog}\left(4,-\frac{i(d+ex)}{eh-di}\right)}{(gh-fi)^2}+\frac{3ben\log\left(\frac{e(h+ix)}{eh-di}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{(eh-di)(gh-fi)}-\frac{i(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^3}{(h+ix)(eh-di)(gh-fi)}+\frac{g\log\left(\frac{e(f+gx)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)^3}{(gh-fi)^2}-\frac{g\log\left(\frac{e(h+ix)}{eh-di}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)^3}{(gh-fi)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^3/((f + g*x)*(h + i*x)^2),x]
```

```
[Out] -((i*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^3)/((e*h - d*i)*(g*h - f*i)*(h +
i*x))) + (g*(a + b*Log[c*(d + e*x)^n])^3*Log[(e*(f + g*x))/(e*f - d*g)])/(g
*h - f*i)^2 + (3*b*e*n*(a + b*Log[c*(d + e*x)^n])^2*Log[(e*(h + i*x))/(e*h
- d*i)])/((e*h - d*i)*(g*h - f*i)) - (g*(a + b*Log[c*(d + e*x)^n])^3*Log[(e
*(h + i*x))/(e*h - d*i)])/(g*h - f*i)^2 + (3*b*g*n*(a + b*Log[c*(d + e*x)^n
])^2*PolyLog[2, -((g*(d + e*x))/(e*f - d*g))])/(g*h - f*i)^2 + (6*b^2*e*n^2
*(a + b*Log[c*(d + e*x)^n])*PolyLog[2, -((i*(d + e*x))/(e*h - d*i))])/((e*h
 - d*i)*(g*h - f*i)) - (3*b*g*n*(a + b*Log[c*(d + e*x)^n])^2*PolyLog[2, -((
i*(d + e*x))/(e*h - d*i))])/(g*h - f*i)^2 - (6*b^2*g*n^2*(a + b*Log[c*(d +
e*x)^n])*PolyLog[3, -((g*(d + e*x))/(e*f - d*g))])/(g*h - f*i)^2 - (6*b^3*e
*n^3*PolyLog[3, -((i*(d + e*x))/(e*h - d*i))])/((e*h - d*i)*(g*h - f*i)) +
(6*b^2*g*n^2*(a + b*Log[c*(d + e*x)^n])*PolyLog[3, -((i*(d + e*x))/(e*h - d
*i))])/(g*h - f*i)^2 + (6*b^3*g*n^3*PolyLog[4, -((g*(d + e*x))/(e*f - d*g))
```

```
])/(g*h - f*i)^2 - (6*b^3*g*n^3*PolyLog[4, -((i*(d + e*x))/(e*h - d*i))])/(
g*h - f*i)^2
```

Rule 2421

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> Simp[(-PolyLog[2, (-d)*f*x^m])*((a + b*Log[c
*x^n])^p/m), x] + Dist[b*n*(p/m), Int[PolyLog[2, (-d)*f*x^m]*((a + b*Log[c*
x^n])^(p - 1)/x), x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0
] && EqQ[d*e, 1]
```

Rule 2430

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*PolyLog[k_, (e_.)*(x_)^(q_
.)])/(x_), x_Symbol] :> Simp[PolyLog[k + 1, e*x^q]*((a + b*Log[c*x^n])^p/q)
, x] - Dist[b*n*(p/q), Int[PolyLog[k + 1, e*x^q]*((a + b*Log[c*x^n])^(p - 1
)/x), x], x] /; FreeQ[{a, b, c, e, k, n, q}, x] && GtQ[p, 0]
```

Rule 2443

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d
+ e*x)^n])^p/g), x] - Dist[b*e*n*(p/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]*
((a + b*Log[c*(d + e*x)^n])^(p - 1)/(d + e*x)), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2444

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_))^2, x_Symbol] :> Simp[(d + e*x)*((a + b*Log[c*(d + e*x)^n])^p/((e*f
- d*g)*(f + g*x))), x] - Dist[b*e*n*(p/(e*f - d*g)), Int[(a + b*Log[c*(d +
e*x)^n])^(p - 1)/(f + g*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] &&
 NeQ[e*f - d*g, 0] && GtQ[p, 0]
```

Rule 2465

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2481

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[(k*(x/d))^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + j*(x/e))^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
```

```
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 6724

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(a+b\log(c(d+ex)^n))^3}{(h+233x)^2(f+gx)}\,dx = \int \left(\frac{233(a+b\log(c(d+ex)^n))^3}{(233f-gh)(h+233x)^2} - \frac{233g(a+b\log(c(d+ex)^n))^3}{(233f-gh)^2(h+233x)} + \frac{g^2(a+\cdots}{(23\cdots}\right.$$

$$= -\frac{(233g)\int \frac{(a+b\log(c(d+ex)^n))^3}{h+233x}\,dx}{(233f-gh)^2} + \frac{g^2\int \frac{(a+b\log(c(d+ex)^n))^3}{f+gx}\,dx}{(233f-gh)^2} + \frac{233\int \frac{(a+b\log\cdots}{(h\cdots}}{233f\cdots}$$

$$= -\frac{233(d+ex)(a+b\log(c(d+ex)^n))^3}{(233d-eh)(233f-gh)(h+233x)} - \frac{g\log\left(-\frac{e(h+233x)}{233d-eh}\right)(a+b\log(c(\cdots}{(233f-gh)^2}$$

$$= \frac{3ben\log\left(-\frac{e(h+233x)}{233d-eh}\right)(a+b\log(c(d+ex)^n))^2}{(233d-eh)(233f-gh)} - \frac{233(d+ex)(a+b\log(c\cdots}{(233d-eh)(233f-gh\cdots}$$

$$= \frac{3ben\log\left(-\frac{e(h+233x)}{233d-eh}\right)(a+b\log(c(d+ex)^n))^2}{(233d-eh)(233f-gh)} - \frac{233(d+ex)(a+b\log(c\cdots}{(233d-eh)(233f-gh\cdots}$$

$$= \frac{3ben\log\left(-\frac{e(h+233x)}{233d-eh}\right)(a+b\log(c(d+ex)^n))^2}{(233d-eh)(233f-gh)} - \frac{233(d+ex)(a+b\log(c\cdots}{(233d-eh)(233f-gh\cdots}$$

$$= \frac{3ben\log\left(-\frac{e(h+233x)}{233d-eh}\right)(a+b\log(c(d+ex)^n))^2}{(233d-eh)(233f-gh)} - \frac{233(d+ex)(a+b\log(c\cdots}{(233d-eh)(233f-gh\cdots}$$

Mathematica [A]
time = 0.77, size = 1025, normalized size = 1.70

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^3/((f + g*x)*(h + i*x)^2),x]
```

```
[Out] ((e*h - d*i)*(g*h - f*i)*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^3 +
g*(e*h - d*i)*(h + i*x)*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^3*Log
[f + g*x] - g*(e*h - d*i)*(h + i*x)*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*
x)^n])^3*Log[h + i*x] - 3*b*n*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])
^2*((g*h - f*i)*(i*(d + e*x)*Log[d + e*x] - e*(h + i*x)*Log[h + i*x]) - g*(
e*h - d*i)*(h + i*x)*(Log[d + e*x]*Log[(e*(f + g*x))/(e*f - d*g)] + PolyLog
[2, (g*(d + e*x))/(-(e*f) + d*g)]) + g*(e*h - d*i)*(h + i*x)*(Log[d + e*x]*
Log[(e*(h + i*x))/(e*h - d*i)] + PolyLog[2, (i*(d + e*x))/(-(e*h) + d*i)]))
 - 3*b^2*n^2*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])*((g*h - f*i)*(Lo
g[d + e*x]*(i*(d + e*x)*Log[d + e*x] - 2*e*(h + i*x)*Log[(e*(h + i*x))/(e*h
 - d*i)]) - 2*e*(h + i*x)*PolyLog[2, (i*(d + e*x))/(-(e*h) + d*i)]) - g*(e*
h - d*i)*(h + i*x)*(Log[d + e*x]^2*Log[(e*(f + g*x))/(e*f - d*g)] + 2*Log[d
 + e*x]*PolyLog[2, (g*(d + e*x))/(-(e*f) + d*g)] - 2*PolyLog[3, (g*(d + e*x
))/(-(e*f) + d*g)]) + g*(e*h - d*i)*(h + i*x)*(Log[d + e*x]^2*Log[(e*(h + i
*x))/(e*h - d*i)] + 2*Log[d + e*x]*PolyLog[2, (i*(d + e*x))/(-(e*h) + d*i)]
 - 2*PolyLog[3, (i*(d + e*x))/(-(e*h) + d*i)])) - b^3*n^3*((g*h - f*i)*(Log
[d + e*x]^2*(i*(d + e*x)*Log[d + e*x] - 3*e*(h + i*x)*Log[(e*(h + i*x))/(e*
h - d*i)]) - 6*e*(h + i*x)*Log[d + e*x]*PolyLog[2, (i*(d + e*x))/(-(e*h) +
d*i)] + 6*e*(h + i*x)*PolyLog[3, (i*(d + e*x))/(-(e*h) + d*i)]) - g*(e*h -
d*i)*(h + i*x)*(Log[d + e*x]^3*Log[(e*(f + g*x))/(e*f - d*g)] + 3*Log[d + e
*x]^2*PolyLog[2, (g*(d + e*x))/(-(e*f) + d*g)] - 6*Log[d + e*x]*PolyLog[3,
(g*(d + e*x))/(-(e*f) + d*g)] + 6*PolyLog[4, (g*(d + e*x))/(-(e*f) + d*g)])
 + g*(e*h - d*i)*(h + i*x)*(Log[d + e*x]^3*Log[(e*(h + i*x))/(e*h - d*i)] +
 3*Log[d + e*x]^2*PolyLog[2, (i*(d + e*x))/(-(e*h) + d*i)] - 6*Log[d + e*x]
*PolyLog[3, (i*(d + e*x))/(-(e*h) + d*i)] + 6*PolyLog[4, (i*(d + e*x))/(-(e
*h) + d*i)])))/((e*h - d*i)*(g*h - f*i)^2*(h + i*x))
```

Maple [F]
time = 0.29, size = 0, normalized size = 0.00

$$\int \frac{\left(a+b\ln\left(c(ex+d)^{n}\right)\right)^{3}}{(gx+f)\,(ix+h)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))^3/(g*x+f)/(i*x+h)^2,x)
```

```
[Out] int((a+b*ln(c*(e*x+d)^n))^3/(g*x+f)/(i*x+h)^2,x)
```

Maxima [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^3/(g*x+f)/(i*x+h)^2,x, algorithm="maxima")
```

[Out] Exception raised: RuntimeError >> ECL says: THROW: The catch RAT-ERR is und
efined.

Fricas [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^3/(g*x+f)/(i*x+h)^2,x, algorithm="fricas")
```

```
[Out] integral(-(b^3*n^3*log(x*e + d)^3 + b^3*log(c)^3 + 3*a*b^2*log(c)^2 + 3*a^2
*b*log(c) + a^3 + 3*(b^3*n^2*log(c) + a*b^2*n^2)*log(x*e + d)^2 + 3*(b^3*n*
log(c)^2 + 2*a*b^2*n*log(c) + a^2*b*n)*log(x*e + d))/(g*x^3 - f*h^2 + (-2*I
*g*h + f)*x^2 - (g*h^2 + 2*I*f*h)*x), x)
```

Sympy [**F**]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a + b\log{(c(d + ex)^n)})^3}{(f + gx)\,(h + ix)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**3/(g*x+f)/(i*x+h)**2,x)
```

```
[Out] Integral((a + b*log(c*(d + e*x)**n))**3/((f + g*x)*(h + i*x)**2), x)
```

Giac [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^3/(g*x+f)/(i*x+h)^2,x, algorithm="giac")
```

```
[Out] integrate((b*log((x*e + d)^n*c) + a)^3/((g*x + f)*(h + I*x)^2), x)
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(a + b\,\ln{(c\,(d + e\,x)^n)})^3}{(f + g\,x)\,(h + i\,x)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))^3/((f + g*x)*(h + i*x)^2),x)
```

```
[Out] int((a + b*log(c*(d + e*x)^n))^3/((f + g*x)*(h + i*x)^2), x)
```

3.234 $\int \frac{h+ix}{(f+gx)(a+b\log(c(d+ex)^n))}\,dx$

Optimal. Leaf size=107

$$\frac{e^{-\frac{a}{bn}}i(d+ex)\left(c(d+ex)^n\right)^{-1/n}\operatorname{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{begn}+\frac{(gh-fi)\operatorname{Int}\left(\frac{1}{(f+gx)(a+b\log(c(d+ex)^n))},x\right)}{g}$$

```
[Out] i*(e*x+d)*Ei((a+b*ln(c*(e*x+d)^n))/b/n)/b/e/exp(a/b/n)/g/n/((c*(e*x+d)^n)^(
1/n))+(-f*i+g*h)*Unintegrable(1/(g*x+f)/(a+b*ln(c*(e*x+d)^n)),x)/g
```

Rubi [A]

time = 0.13, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int \frac{h+ix}{(f+gx)\,(a+b\log\left(c(d+ex)^n\right))}\,dx$$

Verification is not applicable to the result.

```
[In] Int[(h + i*x)/((f + g*x)*(a + b*Log[c*(d + e*x)^n])),x]
```

```
[Out] (i*(d + e*x)*ExpIntegralEi[(a + b*Log[c*(d + e*x)^n])/(b*n)])/(b*e*E^(a/(b*
n))*g*n*(c*(d + e*x)^n)^n^(-1)) + ((g*h - f*i)*Defer[Int][1/((f + g*x)*(a +
 b*Log[c*(d + e*x)^n])), x])/g
```

Rubi steps

$$\begin{aligned}
\int \frac{h+234x}{(f+gx)\,(a+b\log\left(c(d+ex)^n\right))}\,dx &= \int \left(\frac{234}{g\,(a+b\log\left(c(d+ex)^n\right))}+\frac{-234f+gh}{g(f+gx)\,(a+b\log\left(c(d+ex)^n\right))}\right.\\
&= \frac{234\int \frac{1}{a+b\log(c(d+ex)^n)}\,dx}{g}+\frac{(-234f+gh)\int \frac{1}{(f+gx)(a+b\log(c(d+ex)^n))}\,dx}{g}\\
&= \frac{234\text{Subst}\left(\int \frac{1}{a+b\log(cx^n)}\,dx,x,d+ex\right)}{eg}+\frac{(-234f+gh)\int \frac{}{(f+gx)(a+b}}{g}\\
&= \frac{(-234f+gh)\int \frac{1}{(f+gx)(a+b\log(c(d+ex)^n))}\,dx}{g}+\frac{\left(234(d+ex)\left(c(d+ex\right.\right.}{}\\
&= \frac{234e^{-\frac{a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\operatorname{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{begn}+\frac{(-234f+}{}
\end{aligned}$$

Mathematica [A]

time = 0.14, size = 0, normalized size = 0.00

$$\int \frac{h+ix}{(f+gx)\,(a+b\log\left(c(d+ex)^n\right))}\,dx$$

Verification is not applicable to the result.

```
[In] Integrate[(h + i*x)/((f + g*x)*(a + b*Log[c*(d + e*x)^n])),x]
[Out] Integrate[(h + i*x)/((f + g*x)*(a + b*Log[c*(d + e*x)^n])), x]
```

Maple [A]
time = 0.19, size = 0, normalized size = 0.00

$$\int \frac{ix+h}{(gx+f)\left(a+b\ln\left(c\left(ex+d\right)^{n}\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((i*x+h)/(g*x+f)/(a+b*ln(c*(e*x+d)^n)),x)
[Out] int((i*x+h)/(g*x+f)/(a+b*ln(c*(e*x+d)^n)),x)
```

Maxima [A]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)/(g*x+f)/(a+b*log(c*(e*x+d)^n)),x, algorithm="maxima")
[Out] integrate((h + I*x)/((g*x + f)*(b*log((x*e + d)^n*c) + a)), x)
```

Fricas [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)/(g*x+f)/(a+b*log(c*(e*x+d)^n)),x, algorithm="fricas")
[Out] integral((h + I*x)/(a*g*x + a*f + (b*g*n*x + b*f*n)*log(x*e + d) + (b*g*x +
 b*f)*log(c)), x)
```

Sympy [A]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{h+ix}{\left(a+b\log\left(c\left(d+ex\right)^{n}\right)\right)\left(f+gx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)/(g*x+f)/(a+b*ln(c*(e*x+d)**n)),x)
[Out] Integral((h + i*x)/((a + b*log(c*(d + e*x)**n))*(f + g*x)), x)
```

Giac [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)/(g*x+f)/(a+b*log(c*(e*x+d)^n)),x, algorithm="giac")
[Out] integrate((h + I*x)/((g*x + f)*(b*log((x*e + d)^n*c) + a)), x)
```

Mupad [A]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{h+i\,x}{(f+g\,x)\,\left(a+b\,\ln\left(c\,{(d+e\,x)}^n\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h + i*x)/((f + g*x)*(a + b*log(c*(d + e*x)^n))),x)
[Out] int((h + i*x)/((f + g*x)*(a + b*log(c*(d + e*x)^n))), x)
```

3.235 $\int \frac{1}{(f+gx)(a+b\log(c(d+ex)^n))}\,dx$

Optimal. Leaf size=27

$$\text{Int}\left(\frac{1}{(f+gx)\,(a+b\log\left(c(d+ex)^n\right))},x\right)$$

```
[Out] Unintegrable(1/(g*x+f)/(a+b*ln(c*(e*x+d)^n)),x)
```

Rubi [A]
time = 0.02, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int \frac{1}{(f+gx)\,(a+b\log\left(c(d+ex)^n\right))}\,dx$$

Verification is not applicable to the result.

```
[In] Int[1/((f + g*x)*(a + b*Log[c*(d + e*x)^n])),x]
[Out] Defer[Int][1/((f + g*x)*(a + b*Log[c*(d + e*x)^n])), x]
```

Rubi steps

$$\int \frac{1}{(f+gx)\,(a+b\log\left(c(d+ex)^n\right))}\,dx = \int \frac{1}{(f+gx)\,(a+b\log\left(c(d+ex)^n\right))}\,dx$$

Mathematica [A]
time = 0.02, size = 0, normalized size = 0.00

$$\int \frac{1}{(f+gx)\,(a+b\log\left(c(d+ex)^n\right))}\,dx$$

Verification is not applicable to the result.

```
[In] Integrate[1/((f + g*x)*(a + b*Log[c*(d + e*x)^n])),x]
[Out] Integrate[1/((f + g*x)*(a + b*Log[c*(d + e*x)^n])), x]
```

Maple [A]
time = 0.03, size = 0, normalized size = 0.00

$$\int \frac{1}{(gx+f)\,(a+b\ln\left(c\,(ex+d)^{n}\right))}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(g*x+f)/(a+b*ln(c*(e*x+d)^n)),x)
[Out] int(1/(g*x+f)/(a+b*ln(c*(e*x+d)^n)),x)
```

Maxima [A]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(a+b*log(c*(e*x+d)^n)),x, algorithm="maxima")
[Out] integrate(1/((g*x + f)*(b*log((x*e + d)^n*c) + a)), x)
```

Fricas [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(a+b*log(c*(e*x+d)^n)),x, algorithm="fricas")
[Out] integral(1/(a*g*x + a*f + (b*g*x + b*f)*log((x*e + d)^n*c)), x)
```

Sympy [A]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{(a+b\log{(c(d+ex)^n)})(f+gx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(a+b*ln(c*(e*x+d)**n)),x)
[Out] Integral(1/((a + b*log(c*(d + e*x)**n))*(f + g*x)), x)
```

Giac [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(a+b*log(c*(e*x+d)^n)),x, algorithm="giac")
[Out] integrate(1/((g*x + f)*(b*log((x*e + d)^n*c) + a)), x)
```

Mupad [A]
time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{1}{(f+g\,x)\,\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((f + g*x)*(a + b*log(c*(d + e*x)^n))),x)
[Out] int(1/((f + g*x)*(a + b*log(c*(d + e*x)^n))), x)
```

3.236 $\int \frac{1}{(f+gx)(h+ix)(a+b\log(c(d+ex)^n))}\,dx$

Optimal. Leaf size=80

$$\frac{g\text{Int}\left(\frac{1}{(f+gx)(a+b\log(c(d+ex)^n))},x\right)}{gh-fi}-\frac{i\text{Int}\left(\frac{1}{(h+ix)(a+b\log(c(d+ex)^n))},x\right)}{gh-fi}$$

```
[Out] g*Unintegrable(1/(g*x+f)/(a+b*ln(c*(e*x+d)^n)),x)/(-f*i+g*h)-i*Unintegrable
(1/(i*x+h)/(a+b*ln(c*(e*x+d)^n)),x)/(-f*i+g*h)
```

Rubi [A]
time = 0.13, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int \frac{1}{(f+gx)(h+ix)\left(a+b\log\left(c(d+ex)^n\right)\right)}\,dx$$

Verification is not applicable to the result.

```
[In] Int[1/((f + g*x)*(h + i*x)*(a + b*Log[c*(d + e*x)^n])),x]
```

```
[Out] (g*Defer[Int][1/((f + g*x)*(a + b*Log[c*(d + e*x)^n])), x])/(g*h - f*i) - (
i*Defer[Int][1/((h + i*x)*(a + b*Log[c*(d + e*x)^n])), x])/(g*h - f*i)
```

Rubi steps

$$\int \frac{1}{(h+236x)(f+gx)\left(a+b\log\left(c(d+ex)^n\right)\right)}\,dx = \int \left(\frac{236}{(236f-gh)(h+236x)\left(a+b\log\left(c(d+ex)^n\right)\right)} - \right.$$
$$= \frac{236\int \frac{1}{(h+236x)(a+b\log(c(d+ex)^n))}\,dx}{236f-gh} - \frac{g\int \frac{1}{(f+gx)(a+b\log(c(d+e}}{236f-gh}$$

Mathematica [A]
time = 0.42, size = 0, normalized size = 0.00

$$\int \frac{1}{(f+gx)(h+ix)\left(a+b\log\left(c(d+ex)^n\right)\right)}\,dx$$

Verification is not applicable to the result.

```
[In] Integrate[1/((f + g*x)*(h + i*x)*(a + b*Log[c*(d + e*x)^n])),x]
```

```
[Out] Integrate[1/((f + g*x)*(h + i*x)*(a + b*Log[c*(d + e*x)^n])), x]
```

Maple [A]
time = 0.29, size = 0, normalized size = 0.00

$$\int \frac{1}{(gx+f)(ix+h)(a+b\ln(c(ex+d)^n))}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(g*x+f)/(i*x+h)/(a+b*ln(c*(e*x+d)^n)),x)
[Out] int(1/(g*x+f)/(i*x+h)/(a+b*ln(c*(e*x+d)^n)),x)
```

Maxima [A]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(i*x+h)/(a+b*log(c*(e*x+d)^n)),x, algorithm="maxima")
[Out] integrate(1/((g*x + f)*(b*log((x*e + d)^n*c) + a)*(h + I*x)), x)
```

Fricas [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(i*x+h)/(a+b*log(c*(e*x+d)^n)),x, algorithm="fricas")
[Out] integral(-I/(a*g*x^2 - I*a*f*h + (-I*a*g*h + a*f)*x + (b*g*n*x^2 - I*b*f*h*
n + (-I*b*g*h + b*f)*n*x)*log(x*e + d) + (b*g*x^2 - I*b*f*h + (-I*b*g*h + b
*f)*x)*log(c)), x)
```

Sympy [A]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{(a+b\log(c(d+ex)^n))(f+gx)(h+ix)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(i*x+h)/(a+b*ln(c*(e*x+d)**n)),x)
[Out] Integral(1/((a + b*log(c*(d + e*x)**n))*(f + g*x)*(h + i*x)), x)
```

Giac [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(i*x+h)/(a+b*log(c*(e*x+d)^n)),x, algorithm="giac")
```

```
[Out] integrate(1/((g*x + f)*(b*log((x*e + d)^n*c) + a)*(h + I*x)), x)
```

Mupad [A]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{1}{(f+g\,x)\,(h+i\,x)\,(a+b\,\ln\left(c\,{(d+e\,x)}^n\right))}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((f + g*x)*(h + i*x)*(a + b*log(c*(d + e*x)^n))),x)
```

```
[Out] int(1/((f + g*x)*(h + i*x)*(a + b*log(c*(d + e*x)^n))), x)
```

3.237 $\int \frac{1}{(f+gx)(h+ix)^2(a+b\log(c(d+ex)^n))}\,dx$

Optimal. Leaf size=123

$$\frac{g^2\text{Int}\left(\frac{1}{(f+gx)(a+b\log(c(d+ex)^n))},x\right)}{(gh-fi)^2}-\frac{i\text{Int}\left(\frac{1}{(h+ix)^2(a+b\log(c(d+ex)^n))},x\right)}{gh-fi}-\frac{gi\text{Int}\left(\frac{1}{(h+ix)(a+b\log(c(d+ex)^n))},x\right)}{(gh-fi)^2}$$

```
[Out] g^2*Unintegrable(1/(g*x+f)/(a+b*ln(c*(e*x+d)^n)),x)/(-f*i+g*h)^2-i*Unintegr
able(1/(i*x+h)^2/(a+b*ln(c*(e*x+d)^n)),x)/(-f*i+g*h)-g*i*Unintegrable(1/(i*
x+h)/(a+b*ln(c*(e*x+d)^n)),x)/(-f*i+g*h)^2
```

Rubi [A]
time = 0.16, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{1}{(f+gx)(h+ix)^2\,(a+b\log\left(c(d+ex)^n\right))}\,dx$$

Verification is not applicable to the result.

```
[In] Int[1/((f + g*x)*(h + i*x)^2*(a + b*Log[c*(d + e*x)^n])),x]
```

```
[Out] (g^2*Defer[Int][1/((f + g*x)*(a + b*Log[c*(d + e*x)^n])), x])/(g*h - f*i)^2
 - (i*Defer[Int][1/((h + i*x)^2*(a + b*Log[c*(d + e*x)^n])), x])/(g*h - f*i
) - (g*i*Defer[Int][1/((h + i*x)*(a + b*Log[c*(d + e*x)^n])), x])/(g*h - f*
i)^2
```

Rubi steps

$$\int \frac{1}{(h+237x)^2(f+gx)\,(a+b\log\left(c(d+ex)^n\right))}\,dx=\int \left(\frac{237}{(237f-gh)(h+237x)^2\,(a+b\log\left(c(d+ex)^n\right))}\right.$$
$$=-\frac{(237g)\int \frac{1}{(h+237x)(a+b\log(c(d+ex)^n))}\,dx}{(237f-gh)^2}+\frac{g^2\int \frac{1}{(f+gx)(a+}}{(237f}$$

Mathematica [A]
time = 1.75, size = 0, normalized size = 0.00

$$\int \frac{1}{(f+gx)(h+ix)^2\,(a+b\log\left(c(d+ex)^n\right))}\,dx$$

Verification is not applicable to the result.

```
[In] Integrate[1/((f + g*x)*(h + i*x)^2*(a + b*Log[c*(d + e*x)^n])),x]
```

```
[Out] Integrate[1/((f + g*x)*(h + i*x)^2*(a + b*Log[c*(d + e*x)^n])), x]
```

Maple [A]
time = 0.34, size = 0, normalized size = 0.00

$$\int \frac{1}{(gx+f)\,(ix+h)^2\,(a+b\ln(c\,(ex+d)^n))}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(g*x+f)/(i*x+h)^2/(a+b*ln(c*(e*x+d)^n)),x)
[Out] int(1/(g*x+f)/(i*x+h)^2/(a+b*ln(c*(e*x+d)^n)),x)
```

Maxima [A]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(i*x+h)^2/(a+b*log(c*(e*x+d)^n)),x, algorithm="maxima")
[Out] integrate(1/((g*x + f)*(b*log((x*e + d)^n*c) + a)*(h + I*x)^2), x)
```

Fricas [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(i*x+h)^2/(a+b*log(c*(e*x+d)^n)),x, algorithm="fricas")
[Out] integral(-1/(a*g*x^3 - a*f*h^2 + (-2*I*a*g*h + a*f)*x^2 - (a*g*h^2 + 2*I*a*
f*h)*x + (b*g*n*x^3 - b*f*h^2*n + (-2*I*b*g*h + b*f)*n*x^2 - (b*g*h^2 + 2*I
*b*f*h)*n*x)*log(x*e + d) + (b*g*x^3 - b*f*h^2 + (-2*I*b*g*h + b*f)*x^2 - (
b*g*h^2 + 2*I*b*f*h)*x)*log(c)), x)
```

Sympy [A]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{(a+b\log(c\,(d+ex)^n))\,(f+gx)\,(h+ix)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(i*x+h)**2/(a+b*ln(c*(e*x+d)**n)),x)
[Out] Integral(1/((a + b*log(c*(d + e*x)**n))*(f + g*x)*(h + i*x)**2), x)
```

Giac [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(i*x+h)^2/(a+b*log(c*(e*x+d)^n)),x, algorithm="giac")
[Out] integrate(1/((g*x + f)*(b*log((x*e + d)^n*c) + a)*(h + I*x)^2), x)
```

Mupad [A]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{1}{(f+g\,x)\,\left(h+i\,x\right)^2\,\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((f + g*x)*(h + i*x)^2*(a + b*log(c*(d + e*x)^n))),x)
[Out] int(1/((f + g*x)*(h + i*x)^2*(a + b*log(c*(d + e*x)^n))), x)
```

3.238 $\int \frac{h+ix}{(f+gx)(a+b\log(c(d+ex)^n))^2}\,dx$

Optimal. Leaf size=143

$$\frac{e^{-\frac{a}{bn}}i(d+ex)\left(c(d+ex)^n\right)^{-1/n}\operatorname{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{b^2egn^2}-\frac{i(d+ex)}{begn\left(a+b\log\left(c(d+ex)^n\right)\right)}+\frac{(gh-fi)\operatorname{Int}\left(\frac{1}{(f+gx)(a+b\log\ldots}\right.}{g}$$

```
[Out] i*(e*x+d)*Ei((a+b*ln(c*(e*x+d)^n))/b/n)/b^2/e/exp(a/b/n)/g/n^2/((c*(e*x+d)^
n)^(1/n))-i*(e*x+d)/b/e/g/n/(a+b*ln(c*(e*x+d)^n))+(-f*i+g*h)*Unintegrable(1
/(g*x+f)/(a+b*ln(c*(e*x+d)^n))^2,x)/g
```

Rubi [A]
time = 0.14, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int \frac{h+ix}{(f+gx)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}\,dx$$

Verification is not applicable to the result.

```
[In] Int[(h + i*x)/((f + g*x)*(a + b*Log[c*(d + e*x)^n])^2),x]
```

```
[Out] (i*(d + e*x)*ExpIntegralEi[(a + b*Log[c*(d + e*x)^n])/(b*n)])/(b^2*e*E^(a/(
b*n))*g*n^2*(c*(d + e*x)^n)^n^(-1)) - (i*(d + e*x))/(b*e*g*n*(a + b*Log[c*(
d + e*x)^n])) + ((g*h - f*i)*Defer[Int][1/((f + g*x)*(a + b*Log[c*(d + e*x)
^n])^2), x])/g
```

Rubi steps

$$\begin{aligned}
\int \frac{h+238x}{(f+gx)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}\,dx &= \int \left(\frac{238}{g\left(a+b\log\left(c(d+ex)^n\right)\right)^2}+\frac{-238f+gh}{g(f+gx)\left(a+b\log\left(c(d+ex)^n\right)\ldots\right.}\right.\\
&= \frac{238\int \frac{1}{(a+b\log(c(d+ex)^n))^2}\,dx}{g}+\frac{(-238f+gh)\int \frac{1}{(f+gx)(a+b\log(c(d+ex)^n))\ldots}}{g}\\
&= \frac{238\operatorname{Subst}\left(\int \frac{1}{(a+b\log(cx^n))^2}\,dx,x,d+ex\right)}{eg}+\frac{(-238f+gh)\int \frac{}{(f+gx)(\ldots}}{g}\\
&= -\frac{238(d+ex)}{begn\left(a+b\log\left(c(d+ex)^n\right)\right)}+\frac{(-238f+gh)\int \frac{1}{(f+gx)(a+b\log(c(d+\ldots}}{g}\\
&= -\frac{238(d+ex)}{begn\left(a+b\log\left(c(d+ex)^n\right)\right)}+\frac{(-238f+gh)\int \frac{1}{(f+gx)(a+b\log(c(d+\ldots}}{g}\\
&= \frac{238e^{-\frac{a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\operatorname{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{b^2egn^2}-\frac{2\ldots}{begn\,(a+\ldots}
\end{aligned}$$

Mathematica [A]
time = 0.76, size = 0, normalized size = 0.00

$$\int \frac{h+ix}{(f+gx)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}\,dx$$

Verification is not applicable to the result.

```
[In] Integrate[(h + i*x)/((f + g*x)*(a + b*Log[c*(d + e*x)^n])^2),x]
```

```
[Out] Integrate[(h + i*x)/((f + g*x)*(a + b*Log[c*(d + e*x)^n])^2), x]
```

Maple [A]
time = 0.04, size = 0, normalized size = 0.00

$$\int \frac{ix+h}{(gx+f)\left(a+b\ln\left(c\left(ex+d\right)^n\right)\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((i*x+h)/(g*x+f)/(a+b*ln(c*(e*x+d)^n))^2,x)
```

```
[Out] int((i*x+h)/(g*x+f)/(a+b*ln(c*(e*x+d)^n))^2,x)
```

Maxima [A]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)/(g*x+f)/(a+b*log(c*(e*x+d)^n))^2,x, algorithm="maxima")
```

```
[Out] (-I*x^2*e - d*h - (h*e + I*d)*x)/((b^2*g*n*log(c) + a*b*g*n)*x*e + (b^2*f*n
*log(c) + a*b*f*n)*e + (b^2*g*n*x*e + b^2*f*n*e)*log((x*e + d)^n)) + integr
ate((I*g*x^2*e + f*h*e + 2*I*f*x*e - (g*h - I*f)*d)/((b^2*g^2*n*log(c) + a*
b*g^2*n)*x^2*e + 2*(b^2*f*g*n*log(c) + a*b*f*g*n)*x*e + (b^2*f^2*n*log(c) +
 a*b*f^2*n)*e + (b^2*g^2*n*x^2*e + 2*b^2*f*g*n*x*e + b^2*f^2*n*e)*log((x*e
+ d)^n)), x)
```

Fricas [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)/(g*x+f)/(a+b*log(c*(e*x+d)^n))^2,x, algorithm="fricas")
```

```
[Out] -(d*h + I*d*x + (h*x + I*x^2)*e - ((b^2*g*n^2*x + b^2*f*n^2)*e*log(x*e + d)
 + (b^2*g*n*x + b^2*f*n)*e*log(c) + (a*b*g*n*x + a*b*f*n)*e)*integral(-(d*g
```

```
*h - I*d*f - (I*g*x^2 + f*h + 2*I*f*x)*e)/((b^2*g^2*n^2*x^2 + 2*b^2*f*g*n^2
*x + b^2*f^2*n^2)*e*log(x*e + d) + (b^2*g^2*n*x^2 + 2*b^2*f*g*n*x + b^2*f^2
*n)*e*log(c) + (a*b*g^2*n*x^2 + 2*a*b*f*g*n*x + a*b*f^2*n)*e), x))/((b^2*g*
n^2*x + b^2*f*n^2)*e*log(x*e + d) + (b^2*g*n*x + b^2*f*n)*e*log(c) + (a*b*g
*n*x + a*b*f*n)*e)
```

Sympy [A]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{h + ix}{\left(a + b\log\left(c\left(d + ex\right)^{n}\right)\right)^{2}\left(f + gx\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)/(g*x+f)/(a+b*ln(c*(e*x+d)**n))**2,x)
[Out] Integral((h + i*x)/((a + b*log(c*(d + e*x)**n))**2*(f + g*x)), x)
```

Giac [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)/(g*x+f)/(a+b*log(c*(e*x+d)^n))^2,x, algorithm="giac")
[Out] integrate((h + I*x)/((g*x + f)*(b*log((x*e + d)^n*c) + a)^2), x)
```

Mupad [A]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{h + i\,x}{\left(f + g\,x\right)\,\left(a + b\,\ln\left(c\,\left(d + e\,x\right)^{n}\right)\right)^{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h + i*x)/((f + g*x)*(a + b*log(c*(d + e*x)^n))^2),x)
[Out] int((h + i*x)/((f + g*x)*(a + b*log(c*(d + e*x)^n))^2), x)
```

3.239 $\int \frac{1}{(f+gx)(a+b\log(c(d+ex)^n))^2}\,dx$

Optimal. Leaf size=27

$$\text{Int}\left(\frac{1}{(f+gx)\left(a+b\log\left(c(d+ex)^n\right)\right)^2},x\right)$$

```
[Out] Unintegrable(1/(g*x+f)/(a+b*ln(c*(e*x+d)^n))^2,x)
```

Rubi [A]
time = 0.02, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int \frac{1}{(f+gx)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}\,dx$$

Verification is not applicable to the result.

```
[In] Int[1/((f + g*x)*(a + b*Log[c*(d + e*x)^n])^2),x]
[Out] Defer[Int][1/((f + g*x)*(a + b*Log[c*(d + e*x)^n])^2), x]
```

Rubi steps

$$\int \frac{1}{(f+gx)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}\,dx = \int \frac{1}{(f+gx)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}\,dx$$

Mathematica [A]
time = 0.06, size = 0, normalized size = 0.00

$$\int \frac{1}{(f+gx)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}\,dx$$

Verification is not applicable to the result.

```
[In] Integrate[1/((f + g*x)*(a + b*Log[c*(d + e*x)^n])^2),x]
[Out] Integrate[1/((f + g*x)*(a + b*Log[c*(d + e*x)^n])^2), x]
```

Maple [A]
time = 0.03, size = 0, normalized size = 0.00

$$\int \frac{1}{(gx+f)\left(a+b\ln\left(c\left(ex+d\right)^{n}\right)\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(g*x+f)/(a+b*ln(c*(e*x+d)^n))^2,x)
```

```
[Out] int(1/(g*x+f)/(a+b*ln(c*(e*x+d)^n))^2,x)
```

Maxima [A]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(a+b*log(c*(e*x+d)^n))^2,x, algorithm="maxima")
```

```
[Out] -(d*g - f*e)*integrate(1/((b^2*g^2*n*log(c) + a*b*g^2*n)*x^2*e + 2*(b^2*f*g
*n*log(c) + a*b*f*g*n)*x*e + (b^2*f^2*n*log(c) + a*b*f^2*n)*e + (b^2*g^2*n*
x^2*e + 2*b^2*f*g*n*x*e + b^2*f^2*n*e)*log((x*e + d)^n)), x) - (x*e + d)/((
b^2*g*n*log(c) + a*b*g*n)*x*e + (b^2*f*n*log(c) + a*b*f*n)*e + (b^2*g*n*x*e
 + b^2*f*n*e)*log((x*e + d)^n))
```

Fricas [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(a+b*log(c*(e*x+d)^n))^2,x, algorithm="fricas")
```

```
[Out] integral(1/(a^2*g*x + a^2*f + (b^2*g*x + b^2*f)*log((x*e + d)^n*c)^2 + 2*(a
*b*g*x + a*b*f)*log((x*e + d)^n*c)), x)
```

Sympy [A]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(a + b\log\left(c\left(d + ex\right)^{n}\right)\right)^{2}\left(f + gx\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(a+b*ln(c*(e*x+d)**n))**2,x)
```

```
[Out] Integral(1/((a + b*log(c*(d + e*x)**n))**2*(f + g*x)), x)
```

Giac [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(a+b*log(c*(e*x+d)^n))^2,x, algorithm="giac")
```

```
[Out] integrate(1/((g*x + f)*(b*log((x*e + d)^n*c) + a)^2), x)
```

Mupad [A]
time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{1}{(f+g\,x)\,\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((f + g*x)*(a + b*log(c*(d + e*x)^n))^2),x)
```

```
[Out] int(1/((f + g*x)*(a + b*log(c*(d + e*x)^n))^2), x)
```

3.240 $\int \frac{1}{(f+gx)(h+ix)(a+b\log(c(d+ex)^n))^2} dx$

Optimal. Leaf size=80

$$\frac{g\text{Int}\left(\frac{1}{(f+gx)(a+b\log(c(d+ex)^n))^2},x\right)}{gh-fi}-\frac{i\text{Int}\left(\frac{1}{(h+ix)(a+b\log(c(d+ex)^n))^2},x\right)}{gh-fi}$$

```
[Out] g*Unintegrable(1/(g*x+f)/(a+b*ln(c*(e*x+d)^n))^2,x)/(-f*i+g*h)-i*Unintegrab
le(1/(i*x+h)/(a+b*ln(c*(e*x+d)^n))^2,x)/(-f*i+g*h)
```

Rubi [A]
time = 0.12, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int \frac{1}{(f+gx)(h+ix)\left(a+b\log\left(c(d+ex)^n\right)\right)^2} dx$$

Verification is not applicable to the result.

```
[In] Int[1/((f + g*x)*(h + i*x)*(a + b*Log[c*(d + e*x)^n])^2),x]
```

```
[Out] (g*Defer[Int][1/((f + g*x)*(a + b*Log[c*(d + e*x)^n])^2), x])/(g*h - f*i) -
 (i*Defer[Int][1/((h + i*x)*(a + b*Log[c*(d + e*x)^n])^2), x])/(g*h - f*i)
```

Rubi steps

$$\int \frac{1}{(h+240x)(f+gx)\left(a+b\log\left(c(d+ex)^n\right)\right)^2} dx = \int \left(\frac{240}{(240f-gh)(h+240x)\left(a+b\log\left(c(d+ex)^n\right)\right)^2} - \right.$$
$$= \frac{240\int \frac{1}{(h+240x)(a+b\log(c(d+ex)^n))^2} dx}{240f-gh} - \frac{g\int \frac{1}{(f+gx)(a+b\log(c(d-}}{240f-gh}$$

Mathematica [A]
time = 6.48, size = 0, normalized size = 0.00

$$\int \frac{1}{(f+gx)(h+ix)\left(a+b\log\left(c(d+ex)^n\right)\right)^2} dx$$

Verification is not applicable to the result.

```
[In] Integrate[1/((f + g*x)*(h + i*x)*(a + b*Log[c*(d + e*x)^n])^2),x]
```

```
[Out] Integrate[1/((f + g*x)*(h + i*x)*(a + b*Log[c*(d + e*x)^n])^2), x]
```

Maple [A]
time = 88.96, size = 0, normalized size = 0.00

$$\int \frac{1}{(gx+f)(ix+h)(a+b\ln(c(ex+d)^n))^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(g*x+f)/(i*x+h)/(a+b*ln(c*(e*x+d)^n))^2,x)
```

```
[Out] int(1/(g*x+f)/(i*x+h)/(a+b*ln(c*(e*x+d)^n))^2,x)
```

Maxima [A]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(i*x+h)/(a+b*log(c*(e*x+d)^n))^2,x, algorithm="maxima")
```

```
[Out] -(x*e + d)/((b^2*g*n*log(c) + a*b*g*n)*x^2*e + ((-I*g*h*n + f*n)*b^2*log(c)
 + (-I*g*h*n + f*n)*a*b)*x*e + (-I*b^2*f*h*n*log(c) - I*a*b*f*h*n)*e + (b^2
*g*n*x^2*e - I*b^2*f*h*n*e + (-I*g*h*n + f*n)*b^2*x*e)*log((x*e + d)^n)) -
integrate((g*x^2*e + 2*d*g*x + I*f*h*e + (-I*g*h + f)*d)/((b^2*g^2*n*log(c)
 + a*b*g^2*n)*x^4*e - 2*((I*g^2*h*n - f*g*n)*b^2*log(c) + (I*g^2*h*n - f*g*
n)*a*b)*x^3*e - ((g^2*h^2*n + 4*I*f*g*h*n - f^2*n)*b^2*log(c) + (g^2*h^2*n
+ 4*I*f*g*h*n - f^2*n)*a*b)*x^2*e - 2*((f*g*h^2*n + I*f^2*h*n)*b^2*log(c) +
 (f*g*h^2*n + I*f^2*h*n)*a*b)*x*e - (b^2*f^2*h^2*n*log(c) + a*b*f^2*h^2*n)*
e + (b^2*g^2*n*x^4*e - b^2*f^2*h^2*n*e - 2*(I*g^2*h*n - f*g*n)*b^2*x^3*e -
(g^2*h^2*n + 4*I*f*g*h*n - f^2*n)*b^2*x^2*e - 2*(f*g*h^2*n + I*f^2*h*n)*b^2
*x*e)*log((x*e + d)^n)), x)
```

Fricas [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(i*x+h)/(a+b*log(c*(e*x+d)^n))^2,x, algorithm="fricas")
```

```
[Out] (I*x*e + ((b^2*g*n^2*x^2 - I*b^2*f*h*n^2 + (-I*b^2*g*h + b^2*f)*n^2*x)*e*lo
g(x*e + d) + (b^2*g*n*x^2 - I*b^2*f*h*n + (-I*b^2*g*h + b^2*f)*n*x)*e*log(c
) + (a*b*g*n*x^2 - I*a*b*f*h*n + (-I*a*b*g*h + a*b*f)*n*x)*e)*integral((d*g
*h + 2*I*d*g*x + I*d*f + (I*g*x^2 - f*h)*e)/((b^2*g^2*n^2*x^4 - b^2*f^2*h^2
*n^2 - 2*(I*b^2*g^2*h - b^2*f*g)*n^2*x^3 - (b^2*g^2*h^2 + 4*I*b^2*f*g*h - b
^2*f^2)*n^2*x^2 - 2*(b^2*f*g*h^2 + I*b^2*f^2*h)*n^2*x)*e*log(x*e + d) + (b^
```

```
2*g^2*n*x^4 - b^2*f^2*h^2*n - 2*(I*b^2*g^2*h - b^2*f*g)*n*x^3 - (b^2*g^2*h^
2 + 4*I*b^2*f*g*h - b^2*f^2)*n*x^2 - 2*(b^2*f*g*h^2 + I*b^2*f^2*h)*n*x)*e*l
og(c) + (a*b*g^2*n*x^4 - a*b*f^2*h^2*n - 2*(I*a*b*g^2*h - a*b*f*g)*n*x^3 -
(a*b*g^2*h^2 + 4*I*a*b*f*g*h - a*b*f^2)*n*x^2 - 2*(a*b*f*g*h^2 + I*a*b*f^2*
h)*n*x)*e), x) + I*d)/((b^2*g*n^2*x^2 - I*b^2*f*h*n^2 + (-I*b^2*g*h + b^2*f
)*n^2*x)*e*log(x*e + d) + (b^2*g*n*x^2 - I*b^2*f*h*n + (-I*b^2*g*h + b^2*f)
*n*x)*e*log(c) + (a*b*g*n*x^2 - I*a*b*f*h*n + (-I*a*b*g*h + a*b*f)*n*x)*e)
```

Sympy [A]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(a + b\log\left(c\left(d + ex\right)^{n}\right)\right)^{2}\left(f + gx\right)\left(h + ix\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(i*x+h)/(a+b*ln(c*(e*x+d)**n))**2,x)
```

```
[Out] Integral(1/((a + b*log(c*(d + e*x)**n))**2*(f + g*x)*(h + i*x)), x)
```

Giac [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(i*x+h)/(a+b*log(c*(e*x+d)^n))^2,x, algorithm="giac")
```

```
[Out] integrate(1/((g*x + f)*(b*log((x*e + d)^n*c) + a)^2*(h + I*x)), x)
```

Mupad [A]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{1}{\left(f+g\,x\right)\,\left(h+i\,x\right)\,{\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)}^2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((f + g*x)*(h + i*x)*(a + b*log(c*(d + e*x)^n))^2),x)
```

```
[Out] int(1/((f + g*x)*(h + i*x)*(a + b*log(c*(d + e*x)^n))^2), x)
```

3.241 $\int \frac{1}{(f+gx)(h+ix)^2(a+b\log(c(d+ex)^n))^2}\,dx$

Optimal. Leaf size=123

$$\frac{g^2\mathrm{Int}\left(\frac{1}{(f+gx)(a+b\log(c(d+ex)^n))^2},x\right)}{(gh-fi)^2}-\frac{i\mathrm{Int}\left(\frac{1}{(h+ix)^2(a+b\log(c(d+ex)^n))^2},x\right)}{gh-fi}-\frac{gi\mathrm{Int}\left(\frac{1}{(h+ix)(a+b\log(c(d+ex)^n))^2},x\right)}{(gh-fi)^2}$$

```
[Out] g^2*Unintegrable(1/(g*x+f)/(a+b*ln(c*(e*x+d)^n))^2,x)/(-f*i+g*h)^2-i*Uninte
grable(1/(i*x+h)^2/(a+b*ln(c*(e*x+d)^n))^2,x)/(-f*i+g*h)-g*i*Unintegrable(1
/(i*x+h)/(a+b*ln(c*(e*x+d)^n))^2,x)/(-f*i+g*h)^2
```

Rubi [A]
time = 0.15, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int \frac{1}{(f+gx)(h+ix)^2\,(a+b\log(c(d+ex)^n))^2}\,dx$$

Verification is not applicable to the result.

```
[In] Int[1/((f + g*x)*(h + i*x)^2*(a + b*Log[c*(d + e*x)^n])^2),x]
```

```
[Out] (g^2*Defer[Int][1/((f + g*x)*(a + b*Log[c*(d + e*x)^n])^2), x])/(g*h - f*i)
^2 - (i*Defer[Int][1/((h + i*x)^2*(a + b*Log[c*(d + e*x)^n])^2), x])/(g*h -
 f*i) - (g*i*Defer[Int][1/((h + i*x)*(a + b*Log[c*(d + e*x)^n])^2), x])/(g*
h - f*i)^2
```

Rubi steps

$$\int \frac{1}{(h+241x)^2(f+gx)\,(a+b\log(c(d+ex)^n))^2}\,dx = \int \Bigg(\frac{241}{(241f-gh)(h+241x)^2\,(a+b\log(c(d+ex)^n))}$$

$$= -\frac{(241g)\int \frac{1}{(h+241x)(a+b\log(c(d+ex)^n))^2}\,dx}{(241f-gh)^2} + \frac{g^2\int \frac{}{(f+gx)(a}}{(24}$$

Mathematica [A]
time = 14.18, size = 0, normalized size = 0.00

$$\int \frac{1}{(f+gx)(h+ix)^2\,(a+b\log(c(d+ex)^n))^2}\,dx$$

Verification is not applicable to the result.

```
[In] Integrate[1/((f + g*x)*(h + i*x)^2*(a + b*Log[c*(d + e*x)^n])^2),x]
```

```
[Out] Integrate[1/((f + g*x)*(h + i*x)^2*(a + b*Log[c*(d + e*x)^n])^2), x]
```

Maple [A]
time = 180.00, size = 0, normalized size = 0.00

$$\int \frac{1}{(gx+f)(ix+h)^2 (a+b\ln(c(ex+d)^n))^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(g*x+f)/(i*x+h)^2/(a+b*ln(c*(e*x+d)^n))^2,x)
```

```
[Out] int(1/(g*x+f)/(i*x+h)^2/(a+b*ln(c*(e*x+d)^n))^2,x)
```

Maxima [A]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(i*x+h)^2/(a+b*log(c*(e*x+d)^n))^2,x, algorithm="maxima
")
```

```
[Out] (x*e + d)/((b^2*g*n*log(c) + a*b*g*n)*x^3*e + ((-2*I*g*h*n + f*n)*b^2*log(c
) + (-2*I*g*h*n + f*n)*a*b)*x^2*e - ((g*h^2*n + 2*I*f*h*n)*b^2*log(c) + (g*
h^2*n + 2*I*f*h*n)*a*b)*x*e - (b^2*f*h^2*n*log(c) + a*b*f*h^2*n)*e + (b^2*g
*n*x^3*e - b^2*f*h^2*n*e + (-2*I*g*h*n + f*n)*b^2*x^2*e - (g*h^2*n + 2*I*f*
h*n)*b^2*x*e)*log((x*e + d)^n)) + integrate((2*g*x^2*e + I*f*h*e + (-I*g*h
+ 2*f)*d + (3*d*g + f*e)*x)/((b^2*g^2*n*log(c) + a*b*g^2*n)*x^5*e + ((-3*I*
g^2*h*n + 2*f*g*n)*b^2*log(c) + (-3*I*g^2*h*n + 2*f*g*n)*a*b)*x^4*e - ((3*g
^2*h^2*n + 6*I*f*g*h*n - f^2*n)*b^2*log(c) + (3*g^2*h^2*n + 6*I*f*g*h*n - f
^2*n)*a*b)*x^3*e + ((I*g^2*h^3*n - 6*f*g*h^2*n - 3*I*f^2*h*n)*b^2*log(c) +
(I*g^2*h^3*n - 6*f*g*h^2*n - 3*I*f^2*h*n)*a*b)*x^2*e + ((2*I*f*g*h^3*n - 3*
f^2*h^2*n)*b^2*log(c) + (2*I*f*g*h^3*n - 3*f^2*h^2*n)*a*b)*x*e + (I*b^2*f^2
*h^3*n*log(c) + I*a*b*f^2*h^3*n)*e + (b^2*g^2*n*x^5*e + I*b^2*f^2*h^3*n*e +
 (-3*I*g^2*h*n + 2*f*g*n)*b^2*x^4*e - (3*g^2*h^2*n + 6*I*f*g*h*n - f^2*n)*b
^2*x^3*e + (I*g^2*h^3*n - 6*f*g*h^2*n - 3*I*f^2*h*n)*b^2*x^2*e + (2*I*f*g*h
^3*n - 3*f^2*h^2*n)*b^2*x*e)*log((x*e + d)^n)), x)
```

Fricas [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(i*x+h)^2/(a+b*log(c*(e*x+d)^n))^2,x, algorithm="fricas
")
```

```
[Out] (x*e + ((b^2*g*n^2*x^3 - b^2*f*h^2*n^2 + (-2*I*b^2*g*h + b^2*f)*n^2*x^2 - (
b^2*g*h^2 + 2*I*b^2*f*h)*n^2*x)*e*log(x*e + d) + (b^2*g*n*x^3 - b^2*f*h^2*n
 + (-2*I*b^2*g*h + b^2*f)*n*x^2 - (b^2*g*h^2 + 2*I*b^2*f*h)*n*x)*e*log(c) +
 (a*b*g*n*x^3 - a*b*f*h^2*n + (-2*I*a*b*g*h + a*b*f)*n*x^2 - (a*b*g*h^2 + 2
*I*a*b*f*h)*n*x)*e)*integral((-I*d*g*h + 3*d*g*x + 2*d*f + (2*g*x^2 + I*f*h
 + f*x)*e)/((b^2*g^2*n^2*x^5 + I*b^2*f^2*h^3*n^2 + (-3*I*b^2*g^2*h + 2*b^2*
f*g)*n^2*x^4 - (3*b^2*g^2*h^2 + 6*I*b^2*f*g*h - b^2*f^2)*n^2*x^3 + (I*b^2*g
^2*h^3 - 6*b^2*f*g*h^2 - 3*I*b^2*f^2*h)*n^2*x^2 + (2*I*b^2*f*g*h^3 - 3*b^2*
f^2*h^2)*n^2*x)*e*log(x*e + d) + (b^2*g^2*n*x^5 + I*b^2*f^2*h^3*n + (-3*I*b
^2*g^2*h + 2*b^2*f*g)*n*x^4 - (3*b^2*g^2*h^2 + 6*I*b^2*f*g*h - b^2*f^2)*n*x
^3 + (I*b^2*g^2*h^3 - 6*b^2*f*g*h^2 - 3*I*b^2*f^2*h)*n*x^2 + (2*I*b^2*f*g*h
^3 - 3*b^2*f^2*h^2)*n*x)*e*log(c) + (a*b*g^2*n*x^5 + I*a*b*f^2*h^3*n + (-3*
I*a*b*g^2*h + 2*a*b*f*g)*n*x^4 - (3*a*b*g^2*h^2 + 6*I*a*b*f*g*h - a*b*f^2)*
n*x^3 + (I*a*b*g^2*h^3 - 6*a*b*f*g*h^2 - 3*I*a*b*f^2*h)*n*x^2 + (2*I*a*b*f*
g*h^3 - 3*a*b*f^2*h^2)*n*x)*e), x) + d)/((b^2*g*n^2*x^3 - b^2*f*h^2*n^2 + (
-2*I*b^2*g*h + b^2*f)*n^2*x^2 - (b^2*g*h^2 + 2*I*b^2*f*h)*n^2*x)*e*log(x*e
+ d) + (b^2*g*n*x^3 - b^2*f*h^2*n + (-2*I*b^2*g*h + b^2*f)*n*x^2 - (b^2*g*h
^2 + 2*I*b^2*f*h)*n*x)*e*log(c) + (a*b*g*n*x^3 - a*b*f*h^2*n + (-2*I*a*b*g*
h + a*b*f)*n*x^2 - (a*b*g*h^2 + 2*I*a*b*f*h)*n*x)*e)
```

Sympy [A]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{(a+b\log{(c(d+ex)^n)})^2 (f+gx) (h+ix)^2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(i*x+h)**2/(a+b*ln(c*(e*x+d)**n))**2,x)
```

```
[Out] Integral(1/((a + b*log(c*(d + e*x)**n))**2*(f + g*x)*(h + i*x)**2), x)
```

Giac [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(i*x+h)^2/(a+b*log(c*(e*x+d)^n))^2,x, algorithm="giac")
```

```
[Out] integrate(1/((g*x + f)*(b*log((x*e + d)^n*c) + a)^2*(h + I*x)^2), x)
```

Mupad [A]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{1}{(f+g\,x)\,{(h+i\,x)}^2\,{(a+b\,\ln{(c\,{(d+e\,x)}^n)})}^2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((f + g*x)*(h + i*x)^2*(a + b*log(c*(d + e*x)^n))^2),x)
[Out] int(1/((f + g*x)*(h + i*x)^2*(a + b*log(c*(d + e*x)^n))^2), x)
```

3.242 $\int \frac{x^3(a+b\log(c(d+ex)^n))}{f+gx}\,dx$

Optimal. Leaf size=281

$$\frac{af^2x}{g^3}-\frac{bf^2nx}{g^3}-\frac{bdfnx}{2eg^2}-\frac{bd^2nx}{3e^2g}+\frac{bfnx^2}{4g^2}+\frac{bdnx^2}{6eg}-\frac{bnx^3}{9g}+\frac{bd^2fn\log(d+ex)}{2e^2g^2}+\frac{bd^3n\log(d+ex)}{3e^3g}+\frac{bf^2(d+ex)}{}$$

```
[Out] a*f^2*x/g^3-b*f^2*n*x/g^3-1/2*b*d*f*n*x/e/g^2-1/3*b*d^2*n*x/e^2/g+1/4*b*f*n
*x^2/g^2+1/6*b*d*n*x^2/e/g-1/9*b*n*x^3/g+1/2*b*d^2*f*n*ln(e*x+d)/e^2/g^2+1/
3*b*d^3*n*ln(e*x+d)/e^3/g+b*f^2*(e*x+d)*ln(c*(e*x+d)^n)/e/g^3-1/2*f*x^2*(a+
b*ln(c*(e*x+d)^n))/g^2+1/3*x^3*(a+b*ln(c*(e*x+d)^n))/g-f^3*(a+b*ln(c*(e*x+d
)^n))*ln(e*(g*x+f)/(-d*g+e*f))/g^4-b*f^3*n*polylog(2,-g*(e*x+d)/(-d*g+e*f))
/g^4
```

Rubi [A]
time = 0.20, antiderivative size = 281, normalized size of antiderivative = 1.00, number of steps used = 14, number of rules used = 8, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.320, Rules used = {45, 2463, 2436, 2332, 2442, 2441, 2440, 2438}

$$-\frac{bf^3n\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)}{g^4}-\frac{f^3\log\left(\frac{e(f+gx)}{ef-dg}\right)(a+b\log(c(d+ex)^n))}{g^4}-\frac{fx^2(a+b\log(c(d+ex)^n))}{2g^2}+\frac{x^3(a+b\log(c(d+ex)^n))}{3g}+\frac{af^2x}{g^3}+\frac{bf^2(d+ex)\log(c(d+ex)^n)}{eg^3}+\frac{bd^3n\log(d+ex)}{3e^3g}+\frac{bd^2fn\log(d+ex)}{2e^2g^2}-\frac{bd^2nx}{3e^2g}-\frac{bdfnx}{2eg^2}+\frac{bdnx^2}{6eg}-\frac{bf^2nx}{g^3}+\frac{bfnx^2}{4g^2}-\frac{bnx^3}{9g}$$

Antiderivative was successfully verified.

```
[In] Int[(x^3*(a + b*Log[c*(d + e*x)^n]))/(f + g*x),x]
```

```
[Out] (a*f^2*x)/g^3 - (b*f^2*n*x)/g^3 - (b*d*f*n*x)/(2*e*g^2) - (b*d^2*n*x)/(3*e^
2*g) + (b*f*n*x^2)/(4*g^2) + (b*d*n*x^2)/(6*e*g) - (b*n*x^3)/(9*g) + (b*d^2
*f*n*Log[d + e*x])/(2*e^2*g^2) + (b*d^3*n*Log[d + e*x])/(3*e^3*g) + (b*f^2*
(d + e*x)*Log[c*(d + e*x)^n])/(e*g^3) - (f*x^2*(a + b*Log[c*(d + e*x)^n]))/
(2*g^2) + (x^3*(a + b*Log[c*(d + e*x)^n]))/(3*g) - (f^3*(a + b*Log[c*(d + e
*x)^n])*Log[(e*(f + g*x))/(e*f - d*g)])/g^4 - (b*f^3*n*PolyLog[2, -((g*(d +
 e*x))/(e*f - d*g))])/g^4
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2332

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2436

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + c*e*(x/g)])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2441

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d + e*x
)^n])/g), x] - Dist[b*e*(n/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2442

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[(f + g*x)^(q + 1)*((a + b*Log[c*(d + e*x)^n])/(
g*(q + 1))), x] - Dist[b*e*(n/(g*(q + 1))), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 2463

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rubi steps

$$\int \frac{x^3(a+b\log(c(d+ex)^n))}{f+gx}\,dx = \int \left(\frac{f^2(a+b\log(c(d+ex)^n))}{g^3} - \frac{fx(a+b\log(c(d+ex)^n))}{g^2} + \frac{x^2(a+b\mathrm{l}}{}\right.$$

$$= \frac{f^2\int(a+b\log(c(d+ex)^n))\,dx}{g^3} - \frac{f^3\int\frac{a+b\log(c(d+ex)^n)}{f+gx}\,dx}{g^3} - \frac{f\int x(a+b\mathrm{l}}{}$$

$$= \frac{af^2x}{g^3} - \frac{fx^2(a+b\log(c(d+ex)^n))}{2g^2} + \frac{x^3(a+b\log(c(d+ex)^n))}{3g} - \frac{f^3(a}{}$$

$$= \frac{af^2x}{g^3} - \frac{fx^2(a+b\log(c(d+ex)^n))}{2g^2} + \frac{x^3(a+b\log(c(d+ex)^n))}{3g} - \frac{f^3(a}{}$$

$$= \frac{af^2x}{g^3} - \frac{bf^2nx}{g^3} - \frac{bdfnx}{2eg^2} - \frac{bd^2nx}{3e^2g} + \frac{bfnx^2}{4g^2} + \frac{bdnx^2}{6eg} - \frac{bnx^3}{9g} + \frac{bd^2fn\log}{2e}$$

Mathematica [A]
time = 0.19, size = 241, normalized size = 0.86

$$\frac{6bd^2g^2(3ef+2dg)n\log(d+ex)+e\left(gx(6ae^2(6f^2-3fgx+2g^2x^2)-bn(12d^2g^2-6deg(-3f+gx)+e^2(36f^2-9fgx+4g^2x^2)))-36ae^2f^3\log\left(\frac{e(f+gx)}{ef-dg}\right)+6be\log(c(d+ex)^n)\left(6df^2g+egx(6f^2-3fgx+2g^2x^2)-6ef^3\log\left(\frac{e(f+gx)}{ef-dg}\right)\right)\right)-36be^3f^3n\mathrm{Li}_2\left(\frac{g(d+ex)}{-ef+dg}\right)}{36e^3g^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^3*(a + b*Log[c*(d + e*x)^n]))/(f + g*x),x]
```

```
[Out] (6*b*d^2*g^2*(3*e*f + 2*d*g)*n*Log[d + e*x] + e*(g*x*(6*a*e^2*(6*f^2 - 3*f*
g*x + 2*g^2*x^2) - b*n*(12*d^2*g^2 - 6*d*e*g*(-3*f + g*x) + e^2*(36*f^2 - 9
*f*g*x + 4*g^2*x^2))) - 36*a*e^2*f^3*Log[(e*(f + g*x))/(e*f - d*g)] + 6*b*e
*Log[c*(d + e*x)^n]*(6*d*f^2*g + e*g*x*(6*f^2 - 3*f*g*x + 2*g^2*x^2) - 6*e*
f^3*Log[(e*(f + g*x))/(e*f - d*g)])) - 36*b*e^3*f^3*n*PolyLog[2, (g*(d + e*
x))/(-(e*f) + d*g)])/(36*e^3*g^4)
```

Maple [C] Result contains higher order function than in optimal. Order 9 vs. order 4.
time = 0.39, size = 1000, normalized size = 3.56

method	result	size
risch	Expression too large to display	1000

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(a+b*ln(c*(e*x+d)^n))/(g*x+f),x,method=_RETURNVERBOSE)
```

```
[Out] b*ln(c)/g^3*x*f^2-b*ln(c)*f^3/g^4*ln(g*x+f)-1/2*b*ln(c)/g^2*f*x^2+b*n/g^4*f
^3*dilog(((g*x+f)*e+d*g-e*f)/(d*g-e*f))+1/2*b/e^2*n/g^2*d^2*ln((g*x+f)*e+d*
g-e*f)*f-1/2*a/g^2*f*x^2+1/2*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e
```

```
*x+d)^n)*f^3/g^4*ln(g*x+f)-1/2*b*ln((e*x+d)^n)/g^2*f*x^2+b/e*n/g^3*d*ln((g*
x+f)*e+d*g-e*f)*f^2+1/3*b*ln((e*x+d)^n)/g*x^3-1/4*I*b*Pi*csgn(I*c)*csgn(I*c
*(e*x+d)^n)^2/g^2*f*x^2+1/3*a/g*x^3-a*f^3/g^4*ln(g*x+f)+1/2*I*b*Pi*csgn(I*(
e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/g^3*x*f^2+1/6*I*b*Pi*csgn(I*c)*csgn(I*c*(e*
x+d)^n)^2/g*x^3-1/6*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/
g*x^3-1/4*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/g^2*f*x^2-49/36*b*
n/g^4*f^3+1/3*b*ln(c)/g*x^3+1/2*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/g^3*
x*f^2-1/2*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2*f^3/g^4*ln(g*x+f)-
1/2*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*f^3/g^4*ln(g*x+f)-1/2*I*b*Pi*csg
n(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/g^3*x*f^2+b*ln((e*x+d)^n)/g^3*
x*f^2-b*ln((e*x+d)^n)*f^3/g^4*ln(g*x+f)-1/2*I*b*Pi*csgn(I*c*(e*x+d)^n)^3/g^
3*x*f^2+1/4*I*b*Pi*csgn(I*c*(e*x+d)^n)^3/g^2*f*x^2+1/2*I*b*Pi*csgn(I*c*(e*x
+d)^n)^3*f^3/g^4*ln(g*x+f)-1/6*I*b*Pi*csgn(I*c*(e*x+d)^n)^3/g*x^3+1/3*b/e^3
*n/g*d^3*ln((g*x+f)*e+d*g-e*f)+b*n/g^4*f^3*ln(g*x+f)*ln(((g*x+f)*e+d*g-e*f)
/(d*g-e*f))+1/6*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/g*x^3-1/3*b/
e^2*n/g^2*d^2*f-2/3*b/e*n/g^3*d*f^2+1/4*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*
csgn(I*c*(e*x+d)^n)/g^2*f*x^2-1/2*b*d*f*n*x/e/g^2+a*f^2*x/g^3-b*f^2*n*x/g^3
+1/4*b*f*n*x^2/g^2-1/3*b*d^2*n*x/e^2/g+1/6*b*d*n*x^2/e/g-1/9*b*n*x^3/g
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(a+b*log(c*(e*x+d)^n))/(g*x+f),x, algorithm="maxima")
[Out] -1/6*a*(6*f^3*log(g*x + f)/g^4 - (2*g^2*x^3 - 3*f*g*x^2 + 6*f^2*x)/g^3) + b
*integrate((x^3*log((x*e + d)^n) + x^3*log(c))/(g*x + f), x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(a+b*log(c*(e*x+d)^n))/(g*x+f),x, algorithm="fricas")
[Out] integral((b*x^3*log((x*e + d)^n*c) + a*x^3)/(g*x + f), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^3(a + b\log(c(d + ex)^n))}{f + gx}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(a+b*ln(c*(e*x+d)**n))/(g*x+f),x)
[Out] Integral(x**3*(a + b*log(c*(d + e*x)**n))/(f + g*x), x)
```

Giac [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(a+b*log(c*(e*x+d)^n))/(g*x+f),x, algorithm="giac")
[Out] integrate((b*log((x*e + d)^n*c) + a)*x^3/(g*x + f), x)
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x^3\,\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)}{f+g\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^3*(a + b*log(c*(d + e*x)^n)))/(f + g*x),x)
[Out] int((x^3*(a + b*log(c*(d + e*x)^n)))/(f + g*x), x)
```

3.243 $\int \frac{x^2(a+b\log(c(d+ex)^n))}{f+gx}\,dx$

Optimal. Leaf size=181

$$-\frac{afx}{g^2}+\frac{bfnx}{g^2}+\frac{bdnx}{2eg}-\frac{bnx^2}{4g}-\frac{bd^2n\log(d+ex)}{2e^2g}-\frac{bf(d+ex)\log\left(c(d+ex)^n\right)}{eg^2}+\frac{x^2\left(a+b\log\left(c(d+ex)^n\right)\right)}{2g}+\frac{f^2}{}$$

```
[Out] -a*f*x/g^2+b*f*n*x/g^2+1/2*b*d*n*x/e/g-1/4*b*n*x^2/g-1/2*b*d^2*n*ln(e*x+d)/
e^2/g-b*f*(e*x+d)*ln(c*(e*x+d)^n)/e/g^2+1/2*x^2*(a+b*ln(c*(e*x+d)^n))/g+f^2
*(a+b*ln(c*(e*x+d)^n))*ln(e*(g*x+f)/(-d*g+e*f))/g^3+b*f^2*n*polylog(2,-g*(e
*x+d)/(-d*g+e*f))/g^3
```

Rubi [A]

time = 0.14, antiderivative size = 181, normalized size of antiderivative = 1.00, number of steps used = 11, number of rules used = 8, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.320$, Rules used = {45, 2463, 2436, 2332, 2442, 2441, 2440, 2438}

$$\frac{bf^2n\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)}{g^3}+\frac{f^2\log\left(\frac{e(f+gx)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{g^3}+\frac{x^2\left(a+b\log\left(c(d+ex)^n\right)\right)}{2g}-\frac{afx}{g^2}-\frac{bf(d+ex)\log\left(c(d+ex)^n\right)}{eg^2}-\frac{bd^2n\log(d+ex)}{2e^2g}+\frac{bdnx}{2eg}+\frac{bfnx}{g^2}-\frac{bnx^2}{4g}$$

Antiderivative was successfully verified.

```
[In] Int[(x^2*(a + b*Log[c*(d + e*x)^n]))/(f + g*x),x]
```

```
[Out] -((a*f*x)/g^2) + (b*f*n*x)/g^2 + (b*d*n*x)/(2*e*g) - (b*n*x^2)/(4*g) - (b*d
^2*n*Log[d + e*x])/(2*e^2*g) - (b*f*(d + e*x)*Log[c*(d + e*x)^n])/(e*g^2) +
 (x^2*(a + b*Log[c*(d + e*x)^n]))/(2*g) + (f^2*(a + b*Log[c*(d + e*x)^n])*L
og[(e*(f + g*x))/(e*f - d*g)])/g^3 + (b*f^2*n*PolyLog[2, -((g*(d + e*x))/(e
*f - d*g))])/g^3
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2332

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2436

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + c*e*(x/g)])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2441

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d + e*x
)^n])/g), x] - Dist[b*e*(n/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2442

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[(f + g*x)^(q + 1)*((a + b*Log[c*(d + e*x)^n])/(
g*(q + 1))), x] - Dist[b*e*(n/(g*(q + 1))), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 2463

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rubi steps

$$\int \frac{x^2(a+b\log(c(d+ex)^n))}{f+gx}\,dx = \int \left(-\frac{f(a+b\log(c(d+ex)^n))}{g^2} + \frac{x(a+b\log(c(d+ex)^n))}{g} + \frac{f^2(a+b\log}{g^2(f}\right.$$

$$= -\frac{f\int(a+b\log(c(d+ex)^n))\,dx}{g^2} + \frac{f^2\int\frac{a+b\log(c(d+ex)^n)}{f+gx}\,dx}{g^2} + \frac{\int x(a+b\log}{}$$

$$= -\frac{afx}{g^2} + \frac{x^2(a+b\log(c(d+ex)^n))}{2g} + \frac{f^2(a+b\log(c(d+ex)^n))\log\left(\frac{e(f+g}{ef-d}\right.}{g^3}$$

$$= -\frac{afx}{g^2} + \frac{x^2(a+b\log(c(d+ex)^n))}{2g} + \frac{f^2(a+b\log(c(d+ex)^n))\log\left(\frac{e(f+g}{ef-d}\right.}{g^3}$$

$$= -\frac{afx}{g^2} + \frac{bfnx}{g^2} + \frac{bdnx}{2eg} - \frac{bnx^2}{4g} - \frac{bd^2n\log(d+ex)}{2e^2g} - \frac{bf(d+ex)\log(c(d}{eg^2}$$

Mathematica [A]
time = 0.10, size = 170, normalized size = 0.94

$$-\frac{afx}{g^2}+\frac{bfnx}{g^2}+\frac{bn\left(\frac{2dx}{e}-x^2-\frac{2d^2\log(d+ex)}{e^2}\right)}{4g}-\frac{bf(d+ex)\log(c(d+ex)^n)}{eg^2}+\frac{x^2(a+b\log(c(d+ex)^n))}{2g}+\frac{f^2(a+b\log(c(d+ex)^n))\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g^3}+\frac{bf^2n\mathrm{Li}_2\left(-\frac{g(d+ex)}{ef-dg}\right)}{g^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^2*(a + b*Log[c*(d + e*x)^n]))/(f + g*x),x]
```

```
[Out] -((a*f*x)/g^2) + (b*f*n*x)/g^2 + (b*n*((2*d*x)/e - x^2 - (2*d^2*Log[d + e*x
])/e^2))/(4*g) - (b*f*(d + e*x)*Log[c*(d + e*x)^n])/(e*g^2) + (x^2*(a + b*L
og[c*(d + e*x)^n]))/(2*g) + (f^2*(a + b*Log[c*(d + e*x)^n])*Log[(e*(f + g*x
))/(e*f - d*g)])/g^3 + (b*f^2*n*PolyLog[2, -((g*(d + e*x))/(e*f - d*g))])/g
^3
```

Maple [C] Result contains higher order function than in optimal. Order 9 vs. order 4.
time = 0.33, size = 724, normalized size = 4.00

method	result
risch	$-\frac{bn\,f^2\ln(gx+f)\ln\left(\frac{(gx+f)e+dg-ef}{dg-ef}\right)}{g^3}+\frac{b\ln(c)f^2\ln(gx+f)}{g^3}-\frac{b\ln(c)xf}{g^2}+\frac{ib\pi\,\mathrm{csgn}(ic)\mathrm{csgn}(i(ex+d)^n)\mathrm{csgn}(ic(ex+d)^n)xf}{2g^2}+\frac{b\,l}{}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(a+b*ln(c*(e*x+d)^n))/(g*x+f),x,method=_RETURNVERBOSE)
```

```
[Out] -b*n/g^3*f^2*ln(g*x+f)*ln(((g*x+f)*e+d*g-e*f)/(d*g-e*f))-1/2*I*b*Pi*csgn(I*
c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)*f^2/g^3*ln(g*x+f)+1/2*I*b*Pi*csgn(
I*c)*csgn(I*c*(e*x+d)^n)^2*f^2/g^3*ln(g*x+f)+b*ln(c)*f^2/g^3*ln(g*x+f)-b*ln
```

```
(c)/g^2*x*f-b*n/g^3*f^2*dilog(((g*x+f)*e+d*g-e*f)/(d*g-e*f))+1/2*b*ln((e*x+
d)^n)/g*x^2+1/2*a/g*x^2+1/2*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*
x+d)^n)/g^2*x*f+a*f^2/g^3*ln(g*x+f)-1/4*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*
csgn(I*c*(e*x+d)^n)/g*x^2-1/2*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/g^2*x*
f-1/2*I*b*Pi*csgn(I*c*(e*x+d)^n)^3*f^2/g^3*ln(g*x+f)-1/2*I*b*Pi*csgn(I*(e*x
+d)^n)*csgn(I*c*(e*x+d)^n)^2/g^2*x*f+5/4*b*n/g^3*f^2+1/2*I*b*Pi*csgn(I*(e*x
+d)^n)*csgn(I*c*(e*x+d)^n)^2*f^2/g^3*ln(g*x+f)-b*ln((e*x+d)^n)/g^2*x*f-1/2*
b/e^2*n/g*d^2*ln((g*x+f)*e+d*g-e*f)+1/2*b*ln(c)/g*x^2+b*ln((e*x+d)^n)*f^2/g
^3*ln(g*x+f)-1/4*I*b*Pi*csgn(I*c*(e*x+d)^n)^3/g*x^2+1/4*I*b*Pi*csgn(I*(e*x+
d)^n)*csgn(I*c*(e*x+d)^n)^2/g*x^2-b/e*n/g^2*d*ln((g*x+f)*e+d*g-e*f)*f+1/2*I
*b*Pi*csgn(I*c*(e*x+d)^n)^3/g^2*x*f+1/2*b/e*n/g^2*d*f+1/4*I*b*Pi*csgn(I*c)*
csgn(I*c*(e*x+d)^n)^2/g*x^2-a*f*x/g^2+b*f*n*x/g^2+1/2*b*d*n*x/e/g-1/4*b*n*x
^2/g
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*log(c*(e*x+d)^n))/(g*x+f),x, algorithm="maxima")
[Out] 1/2*a*(2*f^2*log(g*x + f)/g^3 + (g*x^2 - 2*f*x)/g^2) + b*integrate((x^2*log
((x*e + d)^n) + x^2*log(c))/(g*x + f), x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*log(c*(e*x+d)^n))/(g*x+f),x, algorithm="fricas")
[Out] integral((b*x^2*log((x*e + d)^n*c) + a*x^2)/(g*x + f), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^2(a + b\log{(c(d + ex)^n)})}{f + gx}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(a+b*ln(c*(e*x+d)**n))/(g*x+f),x)
[Out] Integral(x**2*(a + b*log(c*(d + e*x)**n))/(f + g*x), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*log(c*(e*x+d)^n))/(g*x+f),x, algorithm="giac")
[Out] integrate((b*log((x*e + d)^n*c) + a)*x^2/(g*x + f), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{x^2\,\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)}{f+g\,x} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^2*(a + b*log(c*(d + e*x)^n)))/(f + g*x),x)
[Out] int((x^2*(a + b*log(c*(d + e*x)^n)))/(f + g*x), x)
```

3.244 $\int \frac{x(a+b\log(c(d+ex)^n))}{f+gx}\,dx$

Optimal. Leaf size=104

$$\frac{ax}{g}-\frac{bnx}{g}+\frac{b(d+ex)\log\left(c(d+ex)^n\right)}{eg}-\frac{f\left(a+b\log\left(c(d+ex)^n\right)\right)\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g^2}-\frac{bfn\text{Li}_2\left(-\frac{g(d+ex)}{ef-dg}\right)}{g^2}$$

```
[Out] a*x/g-b*n*x/g+b*(e*x+d)*ln(c*(e*x+d)^n)/e/g-f*(a+b*ln(c*(e*x+d)^n))*ln(e*(g
*x+f)/(-d*g+e*f))/g^2-b*f*n*polylog(2,-g*(e*x+d)/(-d*g+e*f))/g^2
```

Rubi [A]
time = 0.09, antiderivative size = 104, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 7, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.304$, Rules used = {45, 2463, 2436, 2332, 2441, 2440, 2438}

$$-\frac{bfn\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)}{g^2}-\frac{f\log\left(\frac{e(f+gx)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{g^2}+\frac{ax}{g}+\frac{b(d+ex)\log\left(c(d+ex)^n\right)}{eg}-\frac{bnx}{g}$$

Antiderivative was successfully verified.

```
[In] Int[(x*(a + b*Log[c*(d + e*x)^n]))/(f + g*x),x]
```

```
[Out] (a*x)/g - (b*n*x)/g + (b*(d + e*x)*Log[c*(d + e*x)^n])/(e*g) - (f*(a + b*Lo
g[c*(d + e*x)^n])*Log[(e*(f + g*x))/(e*f - d*g)])/g^2 - (b*f*n*PolyLog[2, -
((g*(d + e*x))/(e*f - d*g))])/g^2
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2332

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2436

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + c*e*(x/g)])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2441

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d + e*x
)^n])/g), x] - Dist[b*e*(n/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2463

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rubi steps

$$\int \frac{x(a+b\log(c(d+ex)^n))}{f+gx}\,dx = \int \left(\frac{a+b\log(c(d+ex)^n)}{g}-\frac{f(a+b\log(c(d+ex)^n))}{g(f+gx)}\right)dx$$

$$= \frac{\int (a+b\log(c(d+ex)^n))\,dx}{g}-\frac{f\int \frac{a+b\log(c(d+ex)^n)}{f+gx}\,dx}{g}$$

$$= \frac{ax}{g}-\frac{f(a+b\log(c(d+ex)^n))\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g^2}+\frac{b\int \log(c(d+ex)^n)\,dx}{g}+\frac{(}{}$$

$$= \frac{ax}{g}-\frac{f(a+b\log(c(d+ex)^n))\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g^2}+\frac{b\mathrm{Subst}\left(\int \log(cx^n)\,dx,x,d\right.}{eg}$$

$$= \frac{ax}{g}-\frac{bnx}{g}+\frac{b(d+ex)\log(c(d+ex)^n)}{eg}-\frac{f(a+b\log(c(d+ex)^n))\log\left(\frac{e(f}{ef}\right.}{g^2}$$

Mathematica [A]

time = 0.05, size = 95, normalized size = 0.91

$$\frac{agx - bgnx + \frac{bg(d+ex)\log(c(d+ex)^n)}{e} - f(a + b\log(c(d+ex)^n))\log\left(\frac{e(f+gx)}{ef-dg}\right) - bfn\mathrm{Li}_2\left(\frac{g(d+ex)}{-ef+dg}\right)}{g^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x*(a + b*Log[c*(d + e*x)^n]))/(f + g*x),x]
```

```
[Out] (a*g*x - b*g*n*x + (b*g*(d + e*x)*Log[c*(d + e*x)^n])/e - f*(a + b*Log[c*(d
 + e*x)^n])*Log[(e*(f + g*x))/(e*f - d*g)] - b*f*n*PolyLog[2, (g*(d + e*x))
/(-(e*f) + d*g)])/g^2
```

Maple [C] Result contains higher order function than in optimal. Order 9 vs. order 4.
time = 0.37, size = 463, normalized size = 4.45

method	result
risch	$\frac{b\ln((ex+d)^n)x}{g} - \frac{b\ln((ex+d)^n)f\ln(gx+f)}{g^2} - \frac{bnx}{g} - \frac{bnf}{g^2} + \frac{bnd\ln((gx+f)e+dg-ef)}{eg} + \frac{bnf\,\mathrm{dilog}\left(\frac{(gx+f)e+dg-ef}{dg-ef}\right)}{g^2} + \frac{bn}{}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(a+b*ln(c*(e*x+d)^n))/(g*x+f),x,method=_RETURNVERBOSE)
```

```
[Out] b*ln((e*x+d)^n)*x/g-b*ln((e*x+d)^n)*f/g^2*ln(g*x+f)-b*n*x/g-b*n/g^2*f+b/e*n
/g*d*ln((g*x+f)*e+d*g-e*f)+b*n/g^2*f*dilog(((g*x+f)*e+d*g-e*f)/(d*g-e*f))+b
*n/g^2*f*ln(g*x+f)*ln(((g*x+f)*e+d*g-e*f)/(d*g-e*f))-1/2*I*b*Pi*csgn(I*(e*x
+d)^n)*csgn(I*c*(e*x+d)^n)^2*f/g^2*ln(g*x+f)-1/2*I*b*Pi*csgn(I*c)*csgn(I*c*
(e*x+d)^n)^2*f/g^2*ln(g*x+f)+1/2*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^
n)^2*x/g-1/2*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)*x/g+1/2
*I*b*Pi*csgn(I*c*(e*x+d)^n)^3*f/g^2*ln(g*x+f)-1/2*I*b*Pi*csgn(I*c*(e*x+d)^n
)^3*x/g+1/2*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*x/g+1/2*I*b*Pi*csgn(I*c)
*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)*f/g^2*ln(g*x+f)+b*ln(c)*x/g-b*ln(c)*
f/g^2*ln(g*x+f)+a*x/g-a*f/g^2*ln(g*x+f)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*log(c*(e*x+d)^n))/(g*x+f),x, algorithm="maxima")
```

```
[Out] a*(x/g - f*log(g*x + f)/g^2) + b*integrate((x*log((x*e + d)^n) + x*log(c))/
(g*x + f), x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*log(c*(e*x+d)^n))/(g*x+f),x, algorithm="fricas")
[Out] integral((b*x*log((x*e + d)^n*c) + a*x)/(g*x + f), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x(a + b\log(c(d + ex)^{n}))}{f + gx}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*ln(c*(e*x+d)**n))/(g*x+f),x)
[Out] Integral(x*(a + b*log(c*(d + e*x)**n))/(f + g*x), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*log(c*(e*x+d)^n))/(g*x+f),x, algorithm="giac")
[Out] integrate((b*log((x*e + d)^n*c) + a)*x/(g*x + f), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{x\,\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)}{f+g\,x} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x*(a + b*log(c*(d + e*x)^n)))/(f + g*x),x)
[Out] int((x*(a + b*log(c*(d + e*x)^n)))/(f + g*x), x)
```

3.245 $\int \frac{a+b\log(c(d+ex)^n)}{f+gx}\,dx$

Optimal. Leaf size=63

$$\frac{(a+b\log\left(c(d+ex)^n\right))\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g}+\frac{bn\text{Li}_2\left(-\frac{g(d+ex)}{ef-dg}\right)}{g}$$

```
[Out] (a+b*ln(c*(e*x+d)^n))*ln(e*(g*x+f)/(-d*g+e*f))/g+b*n*polylog(2,-g*(e*x+d)/(
-d*g+e*f))/g
```

Rubi [A]
time = 0.03, antiderivative size = 63, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.136, Rules used = {2441, 2440, 2438}

$$\frac{bn\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)}{g}+\frac{\log\left(\frac{e(f+gx)}{ef-dg}\right)(a+b\log\left(c(d+ex)^n\right))}{g}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])/(f + g*x),x]
```

```
[Out] ((a + b*Log[c*(d + e*x)^n])*Log[(e*(f + g*x))/(e*f - d*g)])/g + (b*n*PolyLo
g[2, -((g*(d + e*x))/(e*f - d*g))])/g
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + c*e*(x/g)])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2441

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d + e*x
)^n])/g), x] - Dist[b*e*(n/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rubi steps

$$\int \frac{a+b\log\left(c(d+ex)^n\right)}{f+gx}\,dx = \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g} - \frac{(ben)\int\frac{\log\left(\frac{e(f+gx)}{ef-dg}\right)}{d+ex}\,dx}{g}$$

$$= \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g} - \frac{(bn)\text{Subst}\left(\int\frac{\log\left(1+\frac{gx}{ef-dg}\right)}{x}\,dx, x, d+ex\right.}{g}$$

$$= \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g} + \frac{bn\text{Li}_2\left(-\frac{g(d+ex)}{ef-dg}\right)}{g}$$

Mathematica [A]
time = 0.01, size = 62, normalized size = 0.98

$$\frac{\left(a+b\log\left(c(d+ex)^n\right)\right)\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g} + \frac{bn\text{Li}_2\left(\frac{g(d+ex)}{-ef+dg}\right)}{g}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])/(f + g*x),x]
```

```
[Out] ((a + b*Log[c*(d + e*x)^n])*Log[(e*(f + g*x))/(e*f - d*g)])/g + (b*n*PolyLo
g[2, (g*(d + e*x))/(-(e*f) + d*g)])/g
```

Maple [C] Result contains higher order function than in optimal. Order 9 vs. order 4.
time = 0.32, size = 261, normalized size = 4.14

method	result
risch	$\frac{b\ln(gx+f)\ln\left((ex+d)^n\right)}{g} - \frac{bn\,\text{dilog}\left(\frac{(gx+f)e+dg-ef}{dg-ef}\right)}{g} - \frac{bn\ln(gx+f)\ln\left(\frac{(gx+f)e+dg-ef}{dg-ef}\right)}{g} - \frac{i\ln(gx+f)b\pi\,\text{csgn}(ic)\text{csgn}(i(ex+d)^n}{2g}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))/(g*x+f),x,method=_RETURNVERBOSE)
```

```
[Out] b*ln(g*x+f)/g*ln((e*x+d)^n)-b/g*n*dilog(((g*x+f)*e+d*g-e*f)/(d*g-e*f))-b/g*
n*ln(g*x+f)*ln(((g*x+f)*e+d*g-e*f)/(d*g-e*f))-1/2*I*ln(g*x+f)/g*b*Pi*csgn(I
*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+1/2*I*ln(g*x+f)/g*b*Pi*csgn(I*c)*
csgn(I*c*(e*x+d)^n)^2+1/2*I*ln(g*x+f)/g*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*
x+d)^n)^2-1/2*I*ln(g*x+f)/g*b*Pi*csgn(I*c*(e*x+d)^n)^3+ln(g*x+f)/g*b*ln(c)+
a*ln(g*x+f)/g
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x+f),x, algorithm="maxima")
[Out] b*integrate((log((x*e + d)^n) + log(c))/(g*x + f), x) + a*log(g*x + f)/g
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x+f),x, algorithm="fricas")
[Out] integral((b*log((x*e + d)^n*c) + a)/(g*x + f), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{a + b\log\left(c(d + ex)^n\right)}{f + gx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))/(g*x+f),x)
[Out] Integral((a + b*log(c*(d + e*x)**n))/(f + g*x), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x+f),x, algorithm="giac")
[Out] integrate((b*log((x*e + d)^n*c) + a)/(g*x + f), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{a + b\,\ln\left(c\,{\left(d + e\,x\right)}^n\right)}{f + g\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))/(f + g*x),x)
[Out] int((a + b*log(c*(d + e*x)^n))/(f + g*x), x)
```

3.246 $\int \frac{a+b\log(c(d+ex)^n)}{x(f+gx)}\,dx$

Optimal. Leaf size=107

$$\frac{\log\left(-\frac{ex}{d}\right)(a+b\log(c(d+ex)^n))}{f}-\frac{(a+b\log(c(d+ex)^n))\log\left(\frac{e(f+gx)}{ef-dg}\right)}{f}-\frac{bn\text{Li}_2\left(-\frac{g(d+ex)}{ef-dg}\right)}{f}+\frac{bn\text{Li}_2\left(1+\frac{ex}{d}\right)}{f}$$

```
[Out] ln(-e*x/d)*(a+b*ln(c*(e*x+d)^n))/f-(a+b*ln(c*(e*x+d)^n))*ln(e*(g*x+f)/(-d*g
+e*f))/f-b*n*polylog(2,-g*(e*x+d)/(-d*g+e*f))/f+b*n*polylog(2,1+e*x/d)/f
```

Rubi [A]

time = 0.10, antiderivative size = 107, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 8, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.320$, Rules used = {36, 29, 31, 2463, 2441, 2352, 2440, 2438}

$$-\frac{bn\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)}{f}+\frac{bn\text{PolyLog}\left(2,\frac{ex}{d}+1\right)}{f}-\frac{\log\left(\frac{e(f+gx)}{ef-dg}\right)(a+b\log(c(d+ex)^n))}{f}+\frac{\log\left(-\frac{ex}{d}\right)(a+b\log(c(d+ex)^n))}{f}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])/(x*(f + g*x)),x]
```

```
[Out] (Log[-((e*x)/d)]*(a + b*Log[c*(d + e*x)^n]))/f - ((a + b*Log[c*(d + e*x)^n]
)*Log[(e*(f + g*x))/(e*f - d*g)])/f - (b*n*PolyLog[2, -((g*(d + e*x))/(e*f
- d*g))])/f + (b*n*PolyLog[2, 1 + (e*x)/d])/f
```

Rule 29

```
Int[(x_)^(-1), x_Symbol] :> Simp[Log[x], x]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 36

```
Int[1/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))), x_Symbol] :> Dist[b/(b*c
 - a*d), Int[1/(a + b*x), x], x] - Dist[d/(b*c - a*d), Int[1/(c + d*x), x],
 x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0]
```

Rule 2352

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> Simp[(-e^(-1))*PolyLo
g[2, 1 - c*x], x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + c*e*(x/g)])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2441

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d + e*x
)^n])/g), x] - Dist[b*e*(n/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2463

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rubi steps

$$\begin{aligned}\int \frac{a+b\log\left(c(d+ex)^n\right)}{x(f+gx)}\,dx &= \int \left(\frac{a+b\log\left(c(d+ex)^n\right)}{fx}-\frac{g\left(a+b\log\left(c(d+ex)^n\right)\right)}{f(f+gx)}\right)dx\\ &= \frac{\int \frac{a+b\log(c(d+ex)^n)}{x}\,dx}{f}-\frac{g\int \frac{a+b\log(c(d+ex)^n)}{f+gx}\,dx}{f}\\ &= \frac{\log\left(-\frac{ex}{d}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{f}-\frac{\left(a+b\log\left(c(d+ex)^n\right)\right)\log\left(\frac{e(f+gx)}{ef-dg}\right)}{f}-\\ &= \frac{\log\left(-\frac{ex}{d}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{f}-\frac{\left(a+b\log\left(c(d+ex)^n\right)\right)\log\left(\frac{e(f+gx)}{ef-dg}\right)}{f}+\\ &= \frac{\log\left(-\frac{ex}{d}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{f}-\frac{\left(a+b\log\left(c(d+ex)^n\right)\right)\log\left(\frac{e(f+gx)}{ef-dg}\right)}{f}-\end{aligned}$$

Mathematica [A]

time = 0.03, size = 85, normalized size = 0.79

$$\frac{(a+b\log(c(d+ex)^n))\left(\log\left(-\frac{ex}{d}\right)-\log\left(\frac{e(f+gx)}{ef-dg}\right)\right)-bn\text{Li}_2\left(\frac{g(d+ex)}{-ef+dg}\right)+bn\text{Li}_2\left(1+\frac{ex}{d}\right)}{f}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])/(x*(f + g*x)),x]
```

```
[Out] ((a + b*Log[c*(d + e*x)^n])*(Log[-((e*x)/d)] - Log[(e*(f + g*x))/(e*f - d*g
)]) - b*n*PolyLog[2, (g*(d + e*x))/(-(e*f) + d*g)] + b*n*PolyLog[2, 1 + (e*
x)/d])/f
```

Maple [C] Result contains higher order function than in optimal. Order 9 vs. order 4.
time = 0.37, size = 455, normalized size = 4.25

method	result
risch	$-\frac{b\ln((ex+d)^n)\ln(gx+f)}{f}+\frac{b\ln((ex+d)^n)\ln(x)}{f}-\frac{bn\,\text{dilog}\left(\frac{ex+d}{d}\right)}{f}-\frac{bn\ln(x)\ln\left(\frac{ex+d}{d}\right)}{f}+\frac{bn\,\text{dilog}\left(\frac{(gx+f)e+dg-ef}{dg-ef}\right)}{f}+$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))/x/(g*x+f),x,method=_RETURNVERBOSE)
```

```
[Out] -b*ln((e*x+d)^n)/f*ln(g*x+f)+b*ln((e*x+d)^n)/f*ln(x)-b*n/f*dilog((e*x+d)/d)
-b*n/f*ln(x)*ln((e*x+d)/d)+b*n/f*dilog(((g*x+f)*e+d*g-e*f)/(d*g-e*f))+b*n/f
*ln(g*x+f)*ln(((g*x+f)*e+d*g-e*f)/(d*g-e*f))+1/2*I*b*Pi*csgn(I*c*(e*x+d)^n)
^3/f*ln(g*x+f)+1/2*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/f
*ln(g*x+f)-1/2*I*b*Pi*csgn(I*c*(e*x+d)^n)^3/f*ln(x)+1/2*I*b*Pi*csgn(I*c)*cs
gn(I*c*(e*x+d)^n)^2/f*ln(x)-1/2*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/f*ln
(g*x+f)+1/2*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/f*ln(x)-1/2*I*b*
Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/f*ln(g*x+f)-1/2*I*b*Pi*csgn(I*c)
*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/f*ln(x)-b*ln(c)/f*ln(g*x+f)+b*ln(c)/
f*ln(x)-a/f*ln(g*x+f)+a/f*ln(x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/x/(g*x+f),x, algorithm="maxima")
```

```
[Out] -a*(log(g*x + f)/f - log(x)/f) + b*integrate((log((x*e + d)^n) + log(c))/(g
*x^2 + f*x), x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/x/(g*x+f),x, algorithm="fricas")
[Out] integral((b*log((x*e + d)^n*c) + a)/(g*x^2 + f*x), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{a+b\log\left(c(d+ex)^n\right)}{x\left(f+gx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))/x/(g*x+f),x)
[Out] Integral((a + b*log(c*(d + e*x)**n))/(x*(f + g*x)), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/x/(g*x+f),x, algorithm="giac")
[Out] integrate((b*log((x*e + d)^n*c) + a)/((g*x + f)*x), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)}{x\,\left(f+g\,x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))/(x*(f + g*x)),x)
[Out] int((a + b*log(c*(d + e*x)^n))/(x*(f + g*x)), x)
```

3.247 $\int \frac{a+b\log(c(d+ex)^n)}{x^2(f+gx)}\,dx$

Optimal. Leaf size=162

$$\frac{ben\log(x)}{df}-\frac{ben\log(d+ex)}{df}-\frac{a+b\log\left(c(d+ex)^n\right)}{fx}-\frac{g\log\left(-\frac{ex}{d}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{f^2}+\frac{g(a+b\log\left(c(d+\right.}{}$$

```
[Out] b*e*n*ln(x)/d/f-b*e*n*ln(e*x+d)/d/f+(-a-b*ln(c*(e*x+d)^n))/f/x-g*ln(-e*x/d)
*(a+b*ln(c*(e*x+d)^n))/f^2+g*(a+b*ln(c*(e*x+d)^n))*ln(e*(g*x+f)/(-d*g+e*f))
/f^2+b*g*n*polylog(2,-g*(e*x+d)/(-d*g+e*f))/f^2-b*g*n*polylog(2,1+e*x/d)/f^
2
```

Rubi [A]
time = 0.13, antiderivative size = 162, normalized size of antiderivative = 1.00, number of steps used = 11, number of rules used = 10, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.400$, Rules used = {46, 2463, 2442, 36, 29, 31, 2441, 2352, 2440, 2438}

$$\frac{bgn\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)}{f^2}-\frac{bgn\text{PolyLog}\left(2,\frac{ex}{d}+1\right)}{f^2}-\frac{g\log\left(-\frac{ex}{d}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{f^2}+\frac{g\log\left(\frac{e(f+gx)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{f^2}-\frac{a+b\log\left(c(d+ex)^n\right)}{fx}+\frac{ben\log(x)}{df}-\frac{ben\log(d+ex)}{df}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])/(x^2*(f + g*x)),x]
```

```
[Out] (b*e*n*Log[x])/(d*f) - (b*e*n*Log[d + e*x])/(d*f) - (a + b*Log[c*(d + e*x)^
n])/(f*x) - (g*Log[-((e*x)/d)]*(a + b*Log[c*(d + e*x)^n]))/f^2 + (g*(a + b*
Log[c*(d + e*x)^n])*Log[(e*(f + g*x))/(e*f - d*g)])/f^2 + (b*g*n*PolyLog[2,
 -((g*(d + e*x))/(e*f - d*g))])/f^2 - (b*g*n*PolyLog[2, 1 + (e*x)/d])/f^2
```

Rule 29

```
Int[(x_)^(-1), x_Symbol] :> Simp[Log[x], x]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 36

```
Int[1/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))), x_Symbol] :> Dist[b/(b*c
 - a*d), Int[1/(a + b*x), x], x] - Dist[d/(b*c - a*d), Int[1/(c + d*x), x],
 x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0]
```

Rule 46

```
Int[((a_) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[E
xpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &&
```

```
NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m +
n + 2, 0])
```

Rule 2352

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> Simp[(-e^(-1))*PolyLo
g[2, 1 - c*x], x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + c*e*(x/g)])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2441

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d + e*x
)^n])/g), x] - Dist[b*e*(n/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2442

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[(f + g*x)^(q + 1)*((a + b*Log[c*(d + e*x)^n])/(
g*(q + 1))), x] - Dist[b*e*(n/(g*(q + 1))), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 2463

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rubi steps

$$\int \frac{a+b\log\left(c(d+ex)^n\right)}{x^2(f+gx)}\,dx = \int \left(\frac{a+b\log\left(c(d+ex)^n\right)}{fx^2} - \frac{g(a+b\log\left(c(d+ex)^n\right))}{f^2x} + \frac{g^2(a+b\log\left(c(d+e\right.}{f^2(f+gx)}\right.$$

$$= \frac{\int \frac{a+b\log(c(d+ex)^n)}{x^2}\,dx}{f} - \frac{g\int \frac{a+b\log(c(d+ex)^n)}{x}\,dx}{f^2} + \frac{g^2\int \frac{a+b\log(c(d+ex)^n)}{f+gx}\,dx}{f^2}$$

$$= -\frac{a+b\log\left(c(d+ex)^n\right)}{fx} - \frac{g\log\left(-\frac{ex}{d}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{f^2} + \frac{g(a+b\log\left(c\right.}{}$$

$$= -\frac{a+b\log\left(c(d+ex)^n\right)}{fx} - \frac{g\log\left(-\frac{ex}{d}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{f^2} + \frac{g(a+b\log\left(c\right.}{}$$

$$= \frac{ben\log(x)}{df} - \frac{ben\log(d+ex)}{df} - \frac{a+b\log\left(c(d+ex)^n\right)}{fx} - \frac{g\log\left(-\frac{ex}{d}\right)\left(a+b\log\right.}{f^2}$$

Mathematica [A]
time = 0.06, size = 141, normalized size = 0.87

$$\frac{\frac{befn(\log(x)-\log(d+ex))}{d} - \frac{f(a+b\log(c(d+ex)^n))}{x} - g\log\left(-\frac{ex}{d}\right)\left(a+b\log\left(c(d+ex)^n\right)\right) + g(a+b\log\left(c(d+ex)^n\right))\log\left(\frac{e(f+gx)}{ef-dg}\right) + bgn\mathrm{Li}_2\left(\frac{g(d+ex)}{-ef+dg}\right) - bgn\mathrm{Li}_2\left(1+\frac{ex}{d}\right)}{f^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])/(x^2*(f + g*x)),x]
```

```
[Out] ((b*e*f*n*(Log[x] - Log[d + e*x]))/d - (f*(a + b*Log[c*(d + e*x)^n]))/x - g
*Log[-((e*x)/d)]*(a + b*Log[c*(d + e*x)^n]) + g*(a + b*Log[c*(d + e*x)^n])*
Log[(e*(f + g*x))/(e*f - d*g)] + b*g*n*PolyLog[2, (g*(d + e*x))/(-(e*f) + d
*g)] - b*g*n*PolyLog[2, 1 + (e*x)/d])/f^2
```

Maple [C] Result contains higher order function than in optimal. Order 9 vs. order 4.
time = 0.39, size = 669, normalized size = 4.13

method	result
risch	$\frac{ib\pi\,\mathrm{csgn}(i(ex+d)^n)\mathrm{csgn}(ic(ex+d)^n)^2 g\ln(gx+f)}{2f^2} - \frac{ib\pi\,\mathrm{csgn}(i(ex+d)^n)\mathrm{csgn}(ic(ex+d)^n)^2 g\ln(x)}{2f^2} + \frac{ib\pi\,\mathrm{csgn}(ic)\mathrm{csgn}(i(ex+d)^n)\mathrm{csgn}}{2fx}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))/x^2/(g*x+f),x,method=_RETURNVERBOSE)
```

```
[Out] 1/2*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/f^2*g*ln(g*x+f)-b*n/f^2*g*dilog(
((g*x+f)*e+d*g-e*f)/(d*g-e*f))+b*n/f^2*g*dilog((e*x+d)/d)-1/2*I*b*Pi*csgn(I
*c)*csgn(I*c*(e*x+d)^n)^2/f^2*g*ln(x)+b*ln(c)/f^2*g*ln(g*x+f)-b*ln(c)/f^2*g
*ln(x)+1/2*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/f^2*g*ln(
```

```
x)-1/2*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/f/x-a/f/x+1/2*I*b*Pi*
csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/f^2*g*ln(g*x+f)-1/2*I*b*Pi*csgn(I*(
e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/f^2*g*ln(x)-b*ln(c)/f/x-b*ln((e*x+d)^n)/f^2
*g*ln(x)-b*n/f^2*g*ln(g*x+f)*ln(((g*x+f)*e+d*g-e*f)/(d*g-e*f))+b*n/f^2*g*ln
(x)*ln((e*x+d)/d)+a/f^2*g*ln(g*x+f)-a/f^2*g*ln(x)+b*ln((e*x+d)^n)/f^2*g*ln(
g*x+f)+1/2*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/f/x-1/2*I
*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/f^2*g*ln(g*x+f)-1/2*I
*b*Pi*csgn(I*c*(e*x+d)^n)^3/f^2*g*ln(g*x+f)-1/2*I*b*Pi*csgn(I*c)*csgn(I*c*(
e*x+d)^n)^2/f/x+1/2*I*b*Pi*csgn(I*c*(e*x+d)^n)^3/f^2*g*ln(x)+1/2*I*b*Pi*csg
n(I*c*(e*x+d)^n)^3/f/x+b*e*n*ln(x)/d/f-b*e*n*ln(e*x+d)/d/f-b*ln((e*x+d)^n)/
f/x
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/x^2/(g*x+f),x, algorithm="maxima")
[Out] a*(g*log(g*x + f)/f^2 - g*log(x)/f^2 - 1/(f*x)) + b*integrate((log((x*e + d
)^n) + log(c))/(g*x^3 + f*x^2), x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/x^2/(g*x+f),x, algorithm="fricas")
[Out] integral((b*log((x*e + d)^n*c) + a)/(g*x^3 + f*x^2), x)
```

Sympy [F(-1)] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))/x**2/(g*x+f),x)
[Out] Timed out
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/x^2/(g*x+f),x, algorithm="giac")
```

```
[Out] integrate((b*log((x*e + d)^n*c) + a)/((g*x + f)*x^2), x)
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)}{x^2\,\left(f+g\,x\right)} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))/(x^2*(f + g*x)),x)
```

```
[Out] int((a + b*log(c*(d + e*x)^n))/(x^2*(f + g*x)), x)
```

3.248 $\int \frac{a+b\log(c(d+ex)^n)}{x^3(f+gx)}\,dx$

Optimal. Leaf size=250

$$-\frac{ben}{2dfx}-\frac{be^2n\log(x)}{2d^2f}-\frac{begn\log(x)}{df^2}+\frac{be^2n\log(d+ex)}{2d^2f}+\frac{begn\log(d+ex)}{df^2}-\frac{a+b\log\left(c(d+ex)^n\right)}{2fx^2}+\frac{g(a+b\log$$

```
[Out] -1/2*b*e*n/d/f/x-1/2*b*e^2*n*ln(x)/d^2/f-b*e*g*n*ln(x)/d/f^2+1/2*b*e^2*n*ln
(e*x+d)/d^2/f+b*e*g*n*ln(e*x+d)/d/f^2+1/2*(-a-b*ln(c*(e*x+d)^n))/f/x^2+g*(a
+b*ln(c*(e*x+d)^n))/f^2/x+g^2*ln(-e*x/d)*(a+b*ln(c*(e*x+d)^n))/f^3-g^2*(a+b
*ln(c*(e*x+d)^n))*ln(e*(g*x+f)/(-d*g+e*f))/f^3-b*g^2*n*polylog(2,-g*(e*x+d)
/(-d*g+e*f))/f^3+b*g^2*n*polylog(2,1+e*x/d)/f^3
```

Rubi [A]
time = 0.18, antiderivative size = 250, normalized size of antiderivative = 1.00, number of steps used = 14, number of rules used = 10, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.400$, Rules used = {46, 2463, 2442, 36, 29, 31, 2441, 2352, 2440, 2438}

$$-\frac{bg^2n\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)}{f^3}+\frac{bg^2n\text{PolyLog}\left(2,\frac{ex}{d}+1\right)}{f^3}+\frac{g^2\log\left(-\frac{ex}{d}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{f^3}-\frac{g^2\log\left(\frac{e(f+gx)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{f^3}+\frac{g\left(a+b\log\left(c(d+ex)^n\right)\right)}{f^2x}-\frac{a+b\log\left(c(d+ex)^n\right)}{2fx^2}-\frac{be^2n\log(x)}{2d^2f}+\frac{be^2n\log(d+ex)}{2d^2f}-\frac{begn\log(x)}{df^2}+\frac{begn\log(d+ex)}{df^2}-\frac{ben}{2dfx}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])/(x^3*(f + g*x)),x]
```

```
[Out] -1/2*(b*e*n)/(d*f*x) - (b*e^2*n*Log[x])/(2*d^2*f) - (b*e*g*n*Log[x])/(d*f^2
) + (b*e^2*n*Log[d + e*x])/(2*d^2*f) + (b*e*g*n*Log[d + e*x])/(d*f^2) - (a
+ b*Log[c*(d + e*x)^n])/(2*f*x^2) + (g*(a + b*Log[c*(d + e*x)^n]))/(f^2*x)
+ (g^2*Log[-((e*x)/d)]*(a + b*Log[c*(d + e*x)^n]))/f^3 - (g^2*(a + b*Log[c*
(d + e*x)^n])*Log[(e*(f + g*x))/(e*f - d*g)])/f^3 - (b*g^2*n*PolyLog[2, -((
g*(d + e*x))/(e*f - d*g))])/f^3 + (b*g^2*n*PolyLog[2, 1 + (e*x)/d])/f^3
```

Rule 29

```
Int[(x_)^(-1), x_Symbol] :> Simp[Log[x], x]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 36

```
Int[1/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))), x_Symbol] :> Dist[b/(b*c
 - a*d), Int[1/(a + b*x), x], x] - Dist[d/(b*c - a*d), Int[1/(c + d*x), x],
 x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0]
```

Rule 46

```
Int[((a_) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[E
xpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m +
 n + 2, 0])
```

Rule 2352

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> Simp[(-e^(-1))*PolyLo
g[2, 1 - c*x], x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + c*e*(x/g)])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2441

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d + e*x
)^n])/g), x] - Dist[b*e*(n/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2442

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[(f + g*x)^(q + 1)*((a + b*Log[c*(d + e*x)^n])/(
g*(q + 1))), x] - Dist[b*e*(n/(g*(q + 1))), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 2463

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rubi steps

$$\int \frac{a+b\log\left(c(d+ex)^n\right)}{x^3(f+gx)}\,dx = \int \left(\frac{a+b\log\left(c(d+ex)^n\right)}{fx^3} - \frac{g\left(a+b\log\left(c(d+ex)^n\right)\right)}{f^2x^2} + \frac{g^2\left(a+b\log\left(c(d+\right.\right.}{f^3x}\right.$$

$$= \frac{\int \frac{a+b\log(c(d+ex)^n)}{x^3}\,dx}{f} - \frac{g\int \frac{a+b\log(c(d+ex)^n)}{x^2}\,dx}{f^2} + \frac{g^2\int \frac{a+b\log(c(d+ex)^n)}{x}\,dx}{f^3} - g^3\int$$

$$= -\frac{a+b\log\left(c(d+ex)^n\right)}{2fx^2} + \frac{g\left(a+b\log\left(c(d+ex)^n\right)\right)}{f^2x} + \frac{g^2\log\left(-\frac{ex}{d}\right)\left(a+b\log\right.}{f^3}$$

$$= -\frac{a+b\log\left(c(d+ex)^n\right)}{2fx^2} + \frac{g\left(a+b\log\left(c(d+ex)^n\right)\right)}{f^2x} + \frac{g^2\log\left(-\frac{ex}{d}\right)\left(a+b\log\right.}{f^3}$$

$$= -\frac{ben}{2dfx} - \frac{be^2n\log(x)}{2d^2f} - \frac{begn\log(x)}{df^2} + \frac{be^2n\log(d+ex)}{2d^2f} + \frac{begn\log(d+ex)}{df^2}$$

Mathematica [A]
time = 0.15, size = 208, normalized size = 0.83

$$-\frac{\frac{2befgn(\log(x)-\log(d+ex))}{d}+\frac{bef^2n(d+ex\log(x)-ex\log(d+ex))}{d^2x}+\frac{f^2(a+b\log(c(d+ex)^n))}{x^2}-\frac{2fg(a+b\log(c(d+ex)^n))}{x}-2g^2\log\left(-\frac{ex}{d}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)+2g^2\left(a+b\log\left(c(d+ex)^n\right)\right)\log\left(\frac{e(f+gx)}{ef-dg}\right)+2bg^2n\text{Li}_2\left(\frac{g(d+ex)}{-ef+dg}\right)-2bg^2n\text{Li}_2\left(1+\frac{ex}{d}\right)}{2f^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])/(x^3*(f + g*x)),x]
```

```
[Out] -1/2*((2*b*e*f*g*n*(Log[x] - Log[d + e*x]))/d + (b*e*f^2*n*(d + e*x*Log[x]
- e*x*Log[d + e*x]))/(d^2*x) + (f^2*(a + b*Log[c*(d + e*x)^n]))/x^2 - (2*f*
g*(a + b*Log[c*(d + e*x)^n]))/x - 2*g^2*Log[-((e*x)/d)]*(a + b*Log[c*(d + e
*x)^n]) + 2*g^2*(a + b*Log[c*(d + e*x)^n])*Log[(e*(f + g*x))/(e*f - d*g)] +
 2*b*g^2*n*PolyLog[2, (g*(d + e*x))/(-(e*f) + d*g)] - 2*b*g^2*n*PolyLog[2,
1 + (e*x)/d])/f^3
```

Maple [C] Result contains higher order function than in optimal. Order 9 vs. order 4.
time = 0.34, size = 926, normalized size = 3.70

method	result	size
risch	Expression too large to display	926

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))/x^3/(g*x+f),x,method=_RETURNVERBOSE)
```

```
[Out] 1/2*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/f^2*g/x+1/4*I*b*Pi*csgn(
I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/f/x^2-1/4*I*b*Pi*csgn(I*(e*x+d)^
```

```
n)*csgn(I*c*(e*x+d)^n)^2/f/x^2+1/2*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/f
^3*g^2*ln(x)+1/2*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/f^2*g/x-1/2*I*b*Pi*
csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/f^3*g^2*ln(g*x+f)+1/2*I*b*Pi*csgn(I*(e*x+d)
^n)*csgn(I*c*(e*x+d)^n)^2/f^3*g^2*ln(x)-1/2*a/f/x^2-1/2*b*ln((e*x+d)^n)/f/x
^2-1/2*b*ln(c)/f/x^2-b*n/f^3*g^2*ln(x)*ln((e*x+d)/d)+b*n/f^3*g^2*ln(g*x+f)*
ln(((g*x+f)*e+d*g-e*f)/(d*g-e*f))-1/2*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*
x+d)^n)^2/f^3*g^2*ln(g*x+f)+a/f^2*g/x-a/f^3*g^2*ln(g*x+f)+a/f^3*g^2*ln(x)-b
*n/f^3*g^2*dilog((e*x+d)/d)+b*n/f^3*g^2*dilog(((g*x+f)*e+d*g-e*f)/(d*g-e*f)
)+b*ln((e*x+d)^n)/f^3*g^2*ln(x)+b*ln((e*x+d)^n)/f^2*g/x+b*ln(c)/f^3*g^2*ln(
x)-1/2*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/f^2*g/x-1/4*I
*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/f/x^2+1/2*I*b*Pi*csgn(I*c)*csgn(I*(e*
x+d)^n)*csgn(I*c*(e*x+d)^n)/f^3*g^2*ln(g*x+f)+b*ln(c)/f^2*g/x-b*ln(c)/f^3*g
^2*ln(g*x+f)-1/2*I*b*Pi*csgn(I*c*(e*x+d)^n)^3/f^2*g/x-b*ln((e*x+d)^n)/f^3*g
^2*ln(g*x+f)-1/2*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/f^3
*g^2*ln(x)+1/2*I*b*Pi*csgn(I*c*(e*x+d)^n)^3/f^3*g^2*ln(g*x+f)-1/2*I*b*Pi*cs
gn(I*c*(e*x+d)^n)^3/f^3*g^2*ln(x)+1/4*I*b*Pi*csgn(I*c*(e*x+d)^n)^3/f/x^2-b*
e*g*n*ln(x)/d/f^2+b*e*g*n*ln(e*x+d)/d/f^2-1/2*b*e^2*n*ln(x)/d^2/f+1/2*b*e^2
*n*ln(e*x+d)/d^2/f-1/2*b*e*n/d/f/x
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/x^3/(g*x+f),x, algorithm="maxima")
[Out] -1/2*a*(2*g^2*log(g*x + f)/f^3 - 2*g^2*log(x)/f^3 - (2*g*x - f)/(f^2*x^2))
+ b*integrate((log((x*e + d)^n) + log(c))/(g*x^4 + f*x^3), x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/x^3/(g*x+f),x, algorithm="fricas")
[Out] integral((b*log((x*e + d)^n*c) + a)/(g*x^4 + f*x^3), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{a + b \log \left(c(d + ex)^{n}\right)}{x^{3} \left(f + gx\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))/x**3/(g*x+f),x)
[Out] Integral((a + b*log(c*(d + e*x)**n))/(x**3*(f + g*x)), x)
```

Giac [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/x^3/(g*x+f),x, algorithm="giac")
[Out] integrate((b*log((x*e + d)^n*c) + a)/((g*x + f)*x^3), x)
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)}{x^3\,\left(f+g\,x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))/(x^3*(f + g*x)),x)
[Out] int((a + b*log(c*(d + e*x)^n))/(x^3*(f + g*x)), x)
```

3.249 $\int \frac{x^3(a+b\log(c(d+ex)^n))}{(f+gx)^2}\,dx$

Optimal. Leaf size=265

$$-\frac{2afx}{g^3}+\frac{2bfnx}{g^3}+\frac{bdnx}{2eg^2}-\frac{bnx^2}{4g^2}-\frac{bd^2n\log(d+ex)}{2e^2g^2}-\frac{bef^3n\log(d+ex)}{g^4(ef-dg)}-\frac{2bf(d+ex)\log\left(c(d+ex)^n\right)}{eg^3}+\frac{x^2(a+$$

```
[Out] -2*a*f*x/g^3+2*b*f*n*x/g^3+1/2*b*d*n*x/e/g^2-1/4*b*n*x^2/g^2-1/2*b*d^2*n*ln
(e*x+d)/e^2/g^2-b*e*f^3*n*ln(e*x+d)/g^4/(-d*g+e*f)-2*b*f*(e*x+d)*ln(c*(e*x+
d)^n)/e/g^3+1/2*x^2*(a+b*ln(c*(e*x+d)^n))/g^2+f^3*(a+b*ln(c*(e*x+d)^n))/g^4
/(g*x+f)+b*e*f^3*n*ln(g*x+f)/g^4/(-d*g+e*f)+3*f^2*(a+b*ln(c*(e*x+d)^n))*ln(
e*(g*x+f)/(-d*g+e*f))/g^4+3*b*f^2*n*polylog(2,-g*(e*x+d)/(-d*g+e*f))/g^4
```

Rubi [A]
time = 0.19, antiderivative size = 265, normalized size of antiderivative = 1.00, number of steps used = 15, number of rules used = 10, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.400$, Rules used = {45, 2463, 2436, 2332, 2442, 36, 31, 2441, 2440, 2438}

$$\frac{3bf^2n\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)}{g^4}+\frac{f^3(a+b\log\left(c(d+ex)^n\right))}{g^4(f+gx)}+\frac{3f^2\log\left(\frac{e(f+gx)}{ef-dg}\right)(a+b\log\left(c(d+ex)^n\right))}{g^4}+\frac{x^2(a+b\log\left(c(d+ex)^n\right))}{2g^2}-\frac{2afx}{g^3}-\frac{2bf(d+ex)\log\left(c(d+ex)^n\right)}{eg^3}-\frac{bd^2n\log(d+ex)}{2e^2g^2}-\frac{bef^3n\log(d+ex)}{g^4(ef-dg)}+\frac{bef^3n\log(f+gx)}{g^4(ef-dg)}+\frac{bdnx}{2eg^2}+\frac{2bfnx}{g^3}-\frac{bnx^2}{4g^2}$$

Antiderivative was successfully verified.

```
[In] Int[(x^3*(a + b*Log[c*(d + e*x)^n]))/(f + g*x)^2,x]
```

```
[Out] (-2*a*f*x)/g^3 + (2*b*f*n*x)/g^3 + (b*d*n*x)/(2*e*g^2) - (b*n*x^2)/(4*g^2)
- (b*d^2*n*Log[d + e*x])/(2*e^2*g^2) - (b*e*f^3*n*Log[d + e*x])/(g^4*(e*f -
 d*g)) - (2*b*f*(d + e*x)*Log[c*(d + e*x)^n])/(e*g^3) + (x^2*(a + b*Log[c*(
d + e*x)^n]))/(2*g^2) + (f^3*(a + b*Log[c*(d + e*x)^n]))/(g^4*(f + g*x)) +
(b*e*f^3*n*Log[f + g*x])/(g^4*(e*f - d*g)) + (3*f^2*(a + b*Log[c*(d + e*x)^
n])*Log[(e*(f + g*x))/(e*f - d*g)])/g^4 + (3*b*f^2*n*PolyLog[2, -((g*(d + e
*x))/(e*f - d*g))])/g^4
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 36

```
Int[1/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))), x_Symbol] :> Dist[b/(b*c
 - a*d), Int[1/(a + b*x), x], x] - Dist[d/(b*c - a*d), Int[1/(c + d*x), x],
 x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0]
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
```

```
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2332

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2436

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + c*e*(x/g)])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2441

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d + e*x
)^n])/g), x] - Dist[b*e*(n/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2442

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[(f + g*x)^(q + 1)*((a + b*Log[c*(d + e*x)^n])/(
g*(q + 1))), x] - Dist[b*e*(n/(g*(q + 1))), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 2463

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
```

```
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rubi steps

$$\int \frac{x^3(a+b\log(c(d+ex)^n))}{(f+gx)^2}\,dx = \int \left(-\frac{2f(a+b\log(c(d+ex)^n))}{g^3} + \frac{x(a+b\log(c(d+ex)^n))}{g^2} - \frac{f^3(a+b\log}{g^3(}\right.$$

$$= -\frac{(2f)\int (a+b\log(c(d+ex)^n))\,dx}{g^3} + \frac{(3f^2)\int \frac{a+b\log(c(d+ex)^n)}{f+gx}\,dx}{g^3} - \frac{f^3\int \frac{a-}{}}{}$$

$$= -\frac{2afx}{g^3} + \frac{x^2(a+b\log(c(d+ex)^n))}{2g^2} + \frac{f^3(a+b\log(c(d+ex)^n))}{g^4(f+gx)} + \frac{3f^2(a}{}$$

$$= -\frac{2afx}{g^3} + \frac{x^2(a+b\log(c(d+ex)^n))}{2g^2} + \frac{f^3(a+b\log(c(d+ex)^n))}{g^4(f+gx)} + \frac{3f^2(a}{}$$

$$= -\frac{2afx}{g^3} + \frac{2bfnx}{g^3} + \frac{bdnx}{2eg^2} - \frac{bnx^2}{4g^2} - \frac{bd^2n\log(d+ex)}{2e^2g^2} - \frac{bef^3n\log(d+ex}{g^4(ef-dg)}$$

Mathematica [A]
time = 0.20, size = 220, normalized size = 0.83

$$\frac{-8afgx+8bfgnx-\frac{bg^2n(ex(-2d+ex)+2d^2\log(d+ex))}{e^2}-\frac{8bfg(d+ex)\log(c(d+ex)^n)}{e}+2g^2x^2(a+b\log(c(d+ex)^n))+\frac{4f^3(a+b\log(c(d+ex)^n))}{f+gx}-\frac{4bef^3n(\log(d+ex)-\log(f+gx))}{ef-dg}+12f^2(a+b\log(c(d+ex)^n))\log\left(\frac{e(f+gx)}{ef-dg}\right)+12bf^2n\text{Li}_2\left(\frac{g(d+ex)}{-ef+dg}\right)}{4g^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^3*(a + b*Log[c*(d + e*x)^n]))/(f + g*x)^2,x]
```

```
[Out] (-8*a*f*g*x + 8*b*f*g*n*x - (b*g^2*n*(e*x*(-2*d + e*x) + 2*d^2*Log[d + e*x]
))/e^2 - (8*b*f*g*(d + e*x)*Log[c*(d + e*x)^n])/e + 2*g^2*x^2*(a + b*Log[c*
(d + e*x)^n]) + (4*f^3*(a + b*Log[c*(d + e*x)^n]))/(f + g*x) - (4*b*e*f^3*n
*(Log[d + e*x] - Log[f + g*x]))/(e*f - d*g) + 12*f^2*(a + b*Log[c*(d + e*x)
^n])*Log[(e*(f + g*x))/(e*f - d*g)] + 12*b*f^2*n*PolyLog[2, (g*(d + e*x))/(
-(e*f) + d*g)])/(4*g^4)
```

Maple [C] Result contains higher order function than in optimal. Order 9 vs. order 4.
time = 0.40, size = 1063, normalized size = 4.01

method	result	size
risch	Expression too large to display	1063

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(a+b*ln(c*(e*x+d)^n))/(g*x+f)^2,x,method=_RETURNVERBOSE)
```

```
[Out] -3*b*n/g^4*f^2*ln(g*x+f)*ln(((g*x+f)*e+d*g-e*f)/(d*g-e*f))+3/2*I*b*Pi*csgn(
I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/g^4*f^2*ln(g*x+f)+1/2*I*b*Pi*csgn(I*(e*x
+d)^n)*csgn(I*c*(e*x+d)^n)^2*f^3/g^4/(g*x+f)-1/4*I*b*Pi*csgn(I*c)*csgn(I*(e
*x+d)^n)*csgn(I*c*(e*x+d)^n)/g^2*x^2-1/2*I*b*Pi*csgn(I*c*(e*x+d)^n)^3*f^3/g
^4/(g*x+f)+1/2*a/g^2*x^2+3*b*ln(c)/g^4*f^2*ln(g*x+f)-3/2*I*b*Pi*csgn(I*c*(e
*x+d)^n)^3/g^4*f^2*ln(g*x+f)+3/2*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/g^4
*f^2*ln(g*x+f)-I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/g^3*x*f-I*b*P
i*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/g^3*x*f+1/4*I*b*Pi*csgn(I*(e*x+d)^n)*csgn
(I*c*(e*x+d)^n)^2/g^2*x^2+1/2*b*ln((e*x+d)^n)/g^2*x^2+1/2*b*ln(c)/g^2*x^2+a
*f^3/g^4/(g*x+f)+3*a/g^4*f^2*ln(g*x+f)+1/2*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d
)^n)^2*f^3/g^4/(g*x+f)-3/2*b/e*n/g^2/(d*g-e*f)*ln((g*x+f)*e+d*g-e*f)*d^2*f-
2*b*ln((e*x+d)^n)/g^3*x*f+3*b*ln((e*x+d)^n)/g^4*f^2*ln(g*x+f)+b*ln((e*x+d)^
n)*f^3/g^4/(g*x+f)+9/4*b*n/g^4*f^2-3*b*n/g^4*f^2*dilog(((g*x+f)*e+d*g-e*f)/
(d*g-e*f))+I*b*Pi*csgn(I*c*(e*x+d)^n)^3/g^3*x*f-1/2*b/e^2*n/g/(d*g-e*f)*ln(
(g*x+f)*e+d*g-e*f)*d^3+2*b*n/g^3/(d*g-e*f)*ln((g*x+f)*e+d*g-e*f)*d*f^2+b*e*
n/g^4/(d*g-e*f)*ln((g*x+f)*e+d*g-e*f)*f^3-b*e*n/g^4*f^3/(d*g-e*f)*ln(g*x+f)
+I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/g^3*x*f-1/2*I*b*Pi*
csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)*f^3/g^4/(g*x+f)-3/2*I*b*Pi*
csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/g^4*f^2*ln(g*x+f)+b*ln(c)*f
^3/g^4/(g*x+f)-2*b*ln(c)/g^3*x*f+1/2*b/e*n/g^3*d*f-1/4*I*b*Pi*csgn(I*c*(e*x
+d)^n)^3/g^2*x^2+1/4*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/g^2*x^2+2*b*f*n
*x/g^3+1/2*b*d*n*x/e/g^2-2*a*f*x/g^3-1/4*b*n*x^2/g^2
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(a+b*log(c*(e*x+d)^n))/(g*x+f)^2,x, algorithm="maxima")
```

```
[Out] 1/2*(2*f^3/(g^5*x + f*g^4) + 6*f^2*log(g*x + f)/g^4 + (g*x^2 - 4*f*x)/g^3)*
a + b*integrate((x^3*log((x*e + d)^n) + x^3*log(c))/(g^2*x^2 + 2*f*g*x + f^
2), x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(a+b*log(c*(e*x+d)^n))/(g*x+f)^2,x, algorithm="fricas")
```

```
[Out] integral((b*x^3*log((x*e + d)^n*c) + a*x^3)/(g^2*x^2 + 2*f*g*x + f^2), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^3(a + b\log{(c(d + ex)^n)})}{(f + gx)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(a+b*ln(c*(e*x+d)**n))/(g*x+f)**2,x)
```

```
[Out] Integral(x**3*(a + b*log(c*(d + e*x)**n))/(f + g*x)**2, x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(a+b*log(c*(e*x+d)^n))/(g*x+f)^2,x, algorithm="giac")
```

```
[Out] integrate((b*log((x*e + d)^n*c) + a)*x^3/(g*x + f)^2, x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x^3\,\left(a + b\,\ln\left(c\,{\left(d + e\,x\right)}^n\right)\right)}{{\left(f + g\,x\right)}^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^3*(a + b*log(c*(d + e*x)^n)))/(f + g*x)^2,x)
```

```
[Out] int((x^3*(a + b*log(c*(d + e*x)^n)))/(f + g*x)^2, x)
```

3.250 $\int \frac{x^2(a+b\log(c(d+ex)^n))}{(f+gx)^2}\,dx$

Optimal. Leaf size=186

$$\frac{ax}{g^2}-\frac{bnx}{g^2}+\frac{bef^2n\log(d+ex)}{g^3(ef-dg)}+\frac{b(d+ex)\log\left(c(d+ex)^n\right)}{eg^2}-\frac{f^2(a+b\log\left(c(d+ex)^n\right))}{g^3(f+gx)}-\frac{bef^2n\log(f+gx)}{g^3(ef-dg)}-$$

```
[Out] a*x/g^2-b*n*x/g^2+b*e*f^2*n*ln(e*x+d)/g^3/(-d*g+e*f)+b*(e*x+d)*ln(c*(e*x+d)
^n)/e/g^2-f^2*(a+b*ln(c*(e*x+d)^n))/g^3/(g*x+f)-b*e*f^2*n*ln(g*x+f)/g^3/(-d
*g+e*f)-2*f*(a+b*ln(c*(e*x+d)^n))*ln(e*(g*x+f)/(-d*g+e*f))/g^3-2*b*f*n*poly
log(2,-g*(e*x+d)/(-d*g+e*f))/g^3
```

Rubi [A]

time = 0.15, antiderivative size = 186, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 10, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.400, Rules used = {45, 2463, 2436, 2332, 2442, 36, 31, 2441, 2440, 2438}

$$-\frac{2bfn\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)}{g^3}-\frac{f^2(a+b\log\left(c(d+ex)^n\right))}{g^3(f+gx)}-\frac{2f\log\left(\frac{e(f+gx)}{ef-dg}\right)(a+b\log\left(c(d+ex)^n\right))}{g^3}+\frac{ax}{g^2}+\frac{b(d+ex)\log\left(c(d+ex)^n\right)}{eg^2}+\frac{bef^2n\log(d+ex)}{g^3(ef-dg)}-\frac{bef^2n\log(f+gx)}{g^3(ef-dg)}-\frac{bnx}{g^2}$$

Antiderivative was successfully verified.

```
[In] Int[(x^2*(a + b*Log[c*(d + e*x)^n]))/(f + g*x)^2,x]
```

```
[Out] (a*x)/g^2 - (b*n*x)/g^2 + (b*e*f^2*n*Log[d + e*x])/(g^3*(e*f - d*g)) + (b*(
d + e*x)*Log[c*(d + e*x)^n])/(e*g^2) - (f^2*(a + b*Log[c*(d + e*x)^n]))/(g^
3*(f + g*x)) - (b*e*f^2*n*Log[f + g*x])/(g^3*(e*f - d*g)) - (2*f*(a + b*Log
[c*(d + e*x)^n])*Log[(e*(f + g*x))/(e*f - d*g)])/g^3 - (2*b*f*n*PolyLog[2,
-((g*(d + e*x))/(e*f - d*g))])/g^3
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 36

```
Int[1/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))), x_Symbol] :> Dist[b/(b*c
 - a*d), Int[1/(a + b*x), x], x] - Dist[d/(b*c - a*d), Int[1/(c + d*x), x],
 x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0]
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2332

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2436

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + c*e*(x/g)])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2441

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d + e*x
)^n])/g), x] - Dist[b*e*(n/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2442

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[(f + g*x)^(q + 1)*((a + b*Log[c*(d + e*x)^n])/(
g*(q + 1))), x] - Dist[b*e*(n/(g*(q + 1))), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 2463

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rubi steps

$$\int \frac{x^2(a+b\log(c(d+ex)^n))}{(f+gx)^2}\,dx = \int \left(\frac{a+b\log(c(d+ex)^n)}{g^2} + \frac{f^2(a+b\log(c(d+ex)^n))}{g^2(f+gx)^2} - \frac{2f(a+b\log(\ldots}{g^2(f+\ldots}\right.$$

$$= \frac{\int (a+b\log(c(d+ex)^n))\,dx}{g^2} - \frac{(2f)\int \frac{a+b\log(c(d+ex)^n)}{f+gx}\,dx}{g^2} + \frac{f^2\int \frac{a+b\log(c(\ldots}{(f+g\ldots}}{g^2}$$

$$= \frac{ax}{g^2} - \frac{f^2(a+b\log(c(d+ex)^n))}{g^3(f+gx)} - \frac{2f(a+b\log(c(d+ex)^n))\log\left(\frac{e(f+gx\ldots}{ef-dg}\right.}{g^3}$$

$$= \frac{ax}{g^2} - \frac{f^2(a+b\log(c(d+ex)^n))}{g^3(f+gx)} - \frac{2f(a+b\log(c(d+ex)^n))\log\left(\frac{e(f+gx\ldots}{ef-dg}\right.}{g^3}$$

$$= \frac{ax}{g^2} - \frac{bnx}{g^2} + \frac{bef^2n\log(d+ex)}{g^3(ef-dg)} + \frac{b(d+ex)\log(c(d+ex)^n)}{eg^2} - \frac{f^2(a+b\ldots}{g\ldots}$$

Mathematica [A]
time = 0.10, size = 153, normalized size = 0.82

$$\frac{agx - bgnx + \frac{bg(d+ex)\log(c(d+ex)^n)}{e} - \frac{f^2(a+b\log(c(d+ex)^n))}{f+gx} + \frac{bef^2n(\log(d+ex)-\log(f+gx))}{ef-dg} - 2f(a+b\log(c(d+ex)^n))\log\left(\frac{e(f+gx)}{ef-dg}\right) - 2bfn\mathrm{Li}_2\left(\frac{g(d+ex)}{-ef+dg}\right)}{g^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^2*(a + b*Log[c*(d + e*x)^n]))/(f + g*x)^2,x]
```

```
[Out] (a*g*x - b*g*n*x + (b*g*(d + e*x)*Log[c*(d + e*x)^n])/e - (f^2*(a + b*Log[c
*(d + e*x)^n]))/(f + g*x) + (b*e*f^2*n*(Log[d + e*x] - Log[f + g*x]))/(e*f
- d*g) - 2*f*(a + b*Log[c*(d + e*x)^n])*Log[(e*(f + g*x))/(e*f - d*g)] - 2*
b*f*n*PolyLog[2, (g*(d + e*x))/(-(e*f) + d*g)])/g^3
```

Maple [C] Result contains higher order function than in optimal. Order 9 vs. order 4.
time = 0.40, size = 791, normalized size = 4.25

method	result
risch	$-\frac{b\ln(c)f^2}{g^3(gx+f)} - \frac{2b\ln(c)f\ln(gx+f)}{g^3} + \frac{2bnf\,\mathrm{dilog}\left(\frac{(gx+f)e+dg-ef}{dg-ef}\right)}{g^3} - \frac{ib\pi\,\mathrm{csgn}(ic)\mathrm{csgn}(ic(ex+d)^n)^2f^2}{2g^3(gx+f)} + \frac{b\ln((ex+d)^n)x}{g^2} - \ldots$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(a+b*ln(c*(e*x+d)^n))/(g*x+f)^2,x,method=_RETURNVERBOSE)
```

```
[Out] -b*ln(c)*f^2/g^3/(g*x+f)-2*b*ln(c)/g^3*f*ln(g*x+f)-I*b*Pi*csgn(I*(e*x+d)^n)
*csgn(I*c*(e*x+d)^n)^2/g^3*f*ln(g*x+f)-1/2*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*
c*(e*x+d)^n)^2*f^2/g^3/(g*x+f)-1/2*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(
```

```
I*c*(e*x+d)^n)/g^2*x+b*ln((e*x+d)^n)/g^2*x-1/2*I*b*Pi*csgn(I*c)*csgn(I*c*(e
*x+d)^n)^2*f^2/g^3/(g*x+f)+1/2*I*b*Pi*csgn(I*c*(e*x+d)^n)^3*f^2/g^3/(g*x+f)
+b*ln(c)/g^2*x-I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/g^3*f*ln(g*x+f)-2*a/g
^3*f*ln(g*x+f)-a*f^2/g^3/(g*x+f)+I*b*Pi*csgn(I*c*(e*x+d)^n)^3/g^3*f*ln(g*x+
f)-b*n/g^3*f-b*ln((e*x+d)^n)*f^2/g^3/(g*x+f)+a*x/g^2-b*n*x/g^2+2*b*n/g^3*f*
dilog(((g*x+f)*e+d*g-e*f)/(d*g-e*f))-2*b*ln((e*x+d)^n)/g^3*f*ln(g*x+f)+I*b*
Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/g^3*f*ln(g*x+f)+1/2*I*b*
Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)*f^2/g^3/(g*x+f)+1/2*I*b*
Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/g^2*x+1/2*I*b*Pi*csgn(I*c)*csgn(
I*c*(e*x+d)^n)^2/g^2*x+b*e*n/g^3*f^2/(d*g-e*f)*ln(g*x+f)+b/e*n/g/(d*g-e*f)*
ln((g*x+f)*e+d*g-e*f)*d^2-b*n/g^2/(d*g-e*f)*ln((g*x+f)*e+d*g-e*f)*d*f-b*e*n
/g^3/(d*g-e*f)*ln((g*x+f)*e+d*g-e*f)*f^2-1/2*I*b*Pi*csgn(I*c*(e*x+d)^n)^3/g
^2*x+2*b*n/g^3*f*ln(g*x+f)*ln(((g*x+f)*e+d*g-e*f)/(d*g-e*f))
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*log(c*(e*x+d)^n))/(g*x+f)^2,x, algorithm="maxima")
```

```
[Out] -a*(f^2/(g^4*x + f*g^3) - x/g^2 + 2*f*log(g*x + f)/g^3) + b*integrate((x^2*
log((x*e + d)^n) + x^2*log(c))/(g^2*x^2 + 2*f*g*x + f^2), x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*log(c*(e*x+d)^n))/(g*x+f)^2,x, algorithm="fricas")
```

```
[Out] integral((b*x^2*log((x*e + d)^n*c) + a*x^2)/(g^2*x^2 + 2*f*g*x + f^2), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^2(a + b\log\left(c(d + ex)^n\right))}{\left(f + gx\right)^2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(a+b*ln(c*(e*x+d)**n))/(g*x+f)**2,x)
```

```
[Out] Integral(x**2*(a + b*log(c*(d + e*x)**n))/(f + g*x)**2, x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*log(c*(e*x+d)^n))/(g*x+f)^2,x, algorithm="giac")
```

```
[Out] integrate((b*log((x*e + d)^n*c) + a)*x^2/(g*x + f)^2, x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{x^2\,\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)}{{\left(f+g\,x\right)}^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^2*(a + b*log(c*(d + e*x)^n)))/(f + g*x)^2,x)
```

```
[Out] int((x^2*(a + b*log(c*(d + e*x)^n)))/(f + g*x)^2, x)
```

3.251 $\int \frac{x(a+b\log(c(d+ex)^n))}{(f+gx)^2}\,dx$

Optimal. Leaf size=138

$$-\frac{befn\log(d+ex)}{g^2(ef-dg)}+\frac{f(a+b\log(c(d+ex)^n))}{g^2(f+gx)}+\frac{befn\log(f+gx)}{g^2(ef-dg)}+\frac{(a+b\log(c(d+ex)^n))\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g^2}+\frac{bn}{}$$

```
[Out] -b*e*f*n*ln(e*x+d)/g^2/(-d*g+e*f)+f*(a+b*ln(c*(e*x+d)^n))/g^2/(g*x+f)+b*e*f
*n*ln(g*x+f)/g^2/(-d*g+e*f)+(a+b*ln(c*(e*x+d)^n))*ln(e*(g*x+f)/(-d*g+e*f))/
g^2+b*n*polylog(2,-g*(e*x+d)/(-d*g+e*f))/g^2
```

Rubi [A]
time = 0.11, antiderivative size = 138, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 8, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.348$, Rules used = {45, 2463, 2442, 36, 31, 2441, 2440, 2438}

$$\frac{bn\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)}{g^2}+\frac{f(a+b\log(c(d+ex)^n))}{g^2(f+gx)}+\frac{\log\left(\frac{e(f+gx)}{ef-dg}\right)(a+b\log(c(d+ex)^n))}{g^2}-\frac{befn\log(d+ex)}{g^2(ef-dg)}+\frac{befn\log(f+gx)}{g^2(ef-dg)}$$

Antiderivative was successfully verified.

```
[In] Int[(x*(a + b*Log[c*(d + e*x)^n]))/(f + g*x)^2,x]
```

```
[Out] -((b*e*f*n*Log[d + e*x])/(g^2*(e*f - d*g))) + (f*(a + b*Log[c*(d + e*x)^n])
)/(g^2*(f + g*x)) + (b*e*f*n*Log[f + g*x])/(g^2*(e*f - d*g)) + ((a + b*Log[
c*(d + e*x)^n])*Log[(e*(f + g*x))/(e*f - d*g)])/g^2 + (b*n*PolyLog[2, -((g*
(d + e*x))/(e*f - d*g))])/g^2
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 36

```
Int[1/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))), x_Symbol] :> Dist[b/(b*c
 - a*d), Int[1/(a + b*x), x], x] - Dist[d/(b*c - a*d), Int[1/(c + d*x), x],
 x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0]
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + c*e*(x/g)])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2441

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d + e*x
)^n])/g), x] - Dist[b*e*(n/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2442

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[(f + g*x)^(q + 1)*((a + b*Log[c*(d + e*x)^n])/(
g*(q + 1))), x] - Dist[b*e*(n/(g*(q + 1))), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 2463

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rubi steps

$$\int \frac{x(a+b\log(c(d+ex)^n))}{(f+gx)^2}\,dx = \int \left(-\frac{f(a+b\log(c(d+ex)^n))}{g(f+gx)^2}+\frac{a+b\log(c(d+ex)^n)}{g(f+gx)}\right)dx$$
$$=\frac{\int \frac{a+b\log(c(d+ex)^n)}{f+gx}\,dx}{g}-\frac{f\int \frac{a+b\log(c(d+ex)^n)}{(f+gx)^2}\,dx}{g}$$
$$=\frac{f(a+b\log(c(d+ex)^n))}{g^2(f+gx)}+\frac{(a+b\log(c(d+ex)^n))\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g^2}-\frac{(ben)\,\int}{}$$
$$=\frac{f(a+b\log(c(d+ex)^n))}{g^2(f+gx)}+\frac{(a+b\log(c(d+ex)^n))\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g^2}-\frac{(bn)\mathrm{Su}}{}$$
$$=-\frac{befn\log(d+ex)}{g^2(ef-dg)}+\frac{f(a+b\log(c(d+ex)^n))}{g^2(f+gx)}+\frac{befn\log(f+gx)}{g^2(ef-dg)}+\frac{(a+}{}$$

Mathematica [A]
time = 0.07, size = 114, normalized size = 0.83

$$\frac{\frac{f(a+b\log(c(d+ex)^n))}{f+gx}-\frac{befn(\log(d+ex)-\log(f+gx))}{ef-dg}+(a+b\log(c(d+ex)^n))\log\left(\frac{e(f+gx)}{ef-dg}\right)+bn\mathrm{Li}_2\left(\frac{g(d+ex)}{-ef+dg}\right)}{g^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x*(a + b*Log[c*(d + e*x)^n]))/(f + g*x)^2,x]
```

```
[Out] ((f*(a + b*Log[c*(d + e*x)^n]))/(f + g*x) - (b*e*f*n*(Log[d + e*x] - Log[f
+ g*x]))/(e*f - d*g) + (a + b*Log[c*(d + e*x)^n])*Log[(e*(f + g*x))/(e*f -
d*g)] + b*n*PolyLog[2, (g*(d + e*x))/(-(e*f) + d*g)])/g^2
```

Maple [C] Result contains higher order function than in optimal. Order 9 vs. order 4.
time = 0.35, size = 519, normalized size = 3.76

method	result
risch	$\frac{b\ln((ex+d)^n)\ln(gx+f)}{g^2}+\frac{b\ln((ex+d)^n)f}{g^2(gx+f)}-\frac{bn\,\mathrm{dilog}\left(\frac{(gx+f)e+dg-ef}{dg-ef}\right)}{g^2}-\frac{bn\ln(gx+f)\ln\left(\frac{(gx+f)e+dg-ef}{dg-ef}\right)}{g^2}+\frac{benf\ln((gx+f)e}{g^2(dg-e}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(a+b*ln(c*(e*x+d)^n))/(g*x+f)^2,x,method=_RETURNVERBOSE)
```

```
[Out] b*ln((e*x+d)^n)/g^2*ln(g*x+f)+b*ln((e*x+d)^n)*f/g^2/(g*x+f)-b*n/g^2*dilog((
(g*x+f)*e+d*g-e*f)/(d*g-e*f))-b*n/g^2*ln(g*x+f)*ln(((g*x+f)*e+d*g-e*f)/(d*g
-e*f))+b*e*n/g^2*f/(d*g-e*f)*ln((g*x+f)*e+d*g-e*f)-b*e*n/g^2*f/(d*g-e*f)*ln
(g*x+f)-1/2*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/g^2*ln(g
```

```
*x+f)-1/2*I*b*Pi*csgn(I*c*(e*x+d)^n)^3/g^2*ln(g*x+f)+1/2*I*b*Pi*csgn(I*(e*x
+d)^n)*csgn(I*c*(e*x+d)^n)^2/g^2*ln(g*x+f)-1/2*I*b*Pi*csgn(I*c)*csgn(I*(e*x
+d)^n)*csgn(I*c*(e*x+d)^n)*f/g^2/(g*x+f)+1/2*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x
+d)^n)^2/g^2*ln(g*x+f)+1/2*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*f/g^2/(g*
x+f)+1/2*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2*f/g^2/(g*x+f)-1/2*I
*b*Pi*csgn(I*c*(e*x+d)^n)^3*f/g^2/(g*x+f)+b*ln(c)/g^2*ln(g*x+f)+b*ln(c)*f/g
^2/(g*x+f)+a/g^2*ln(g*x+f)+a*f/g^2/(g*x+f)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*log(c*(e*x+d)^n))/(g*x+f)^2,x, algorithm="maxima")
[Out] a*(f/(g^3*x + f*g^2) + log(g*x + f)/g^2) + b*integrate((x*log((x*e + d)^n)
+ x*log(c))/(g^2*x^2 + 2*f*g*x + f^2), x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*log(c*(e*x+d)^n))/(g*x+f)^2,x, algorithm="fricas")
[Out] integral((b*x*log((x*e + d)^n*c) + a*x)/(g^2*x^2 + 2*f*g*x + f^2), x)
```

Sympy [F(-1)] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*ln(c*(e*x+d)**n))/(g*x+f)**2,x)
[Out] Timed out
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*log(c*(e*x+d)^n))/(g*x+f)^2,x, algorithm="giac")
```

```
[Out] integrate((b*log((x*e + d)^n*c) + a)*x/(g*x + f)^2, x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{x\left(a+b\ln\left(c\left(d+e\,x\right)^n\right)\right)}{\left(f+g\,x\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x*(a + b*log(c*(d + e*x)^n)))/(f + g*x)^2,x)
[Out] int((x*(a + b*log(c*(d + e*x)^n)))/(f + g*x)^2, x)
```

3.252 $\int \frac{a+b\log(c(d+ex)^n)}{(f+gx)^2} dx$

Optimal. Leaf size=74

$$\frac{ben\log(d+ex)}{g(ef-dg)}-\frac{a+b\log\left(c(d+ex)^n\right)}{g(f+gx)}-\frac{ben\log(f+gx)}{g(ef-dg)}$$

```
[Out] b*e*n*ln(e*x+d)/g/(-d*g+e*f)+(-a-b*ln(c*(e*x+d)^n))/g/(g*x+f)-b*e*n*ln(g*x+
f)/g/(-d*g+e*f)
```

Rubi [A]
time = 0.02, antiderivative size = 74, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.136, Rules used = {2442, 36, 31}

$$-\frac{a+b\log\left(c(d+ex)^n\right)}{g(f+gx)}+\frac{ben\log(d+ex)}{g(ef-dg)}-\frac{ben\log(f+gx)}{g(ef-dg)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])/(f + g*x)^2,x]
```

```
[Out] (b*e*n*Log[d + e*x])/(g*(e*f - d*g)) - (a + b*Log[c*(d + e*x)^n])/(g*(f + g
*x)) - (b*e*n*Log[f + g*x])/(g*(e*f - d*g))
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 36

```
Int[1/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))), x_Symbol] :> Dist[b/(b*c
 - a*d), Int[1/(a + b*x), x], x] - Dist[d/(b*c - a*d), Int[1/(c + d*x), x],
 x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0]
```

Rule 2442

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[(f + g*x)^(q + 1)*((a + b*Log[c*(d + e*x)^n])/(
g*(q + 1))), x] - Dist[b*e*(n/(g*(q + 1))), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rubi steps

$$\int \frac{a+b\log\left(c(d+ex)^n\right)}{(f+gx)^2}\,dx = -\frac{a+b\log\left(c(d+ex)^n\right)}{g(f+gx)} + \frac{(ben)\int \frac{1}{(d+ex)(f+gx)}\,dx}{g}$$
$$= -\frac{a+b\log\left(c(d+ex)^n\right)}{g(f+gx)} - \frac{(ben)\int \frac{1}{f+gx}\,dx}{ef-dg} + \frac{(be^2n)\int \frac{1}{d+ex}\,dx}{g(ef-dg)}$$
$$= \frac{ben\log(d+ex)}{g(ef-dg)} - \frac{a+b\log\left(c(d+ex)^n\right)}{g(f+gx)} - \frac{ben\log(f+gx)}{g(ef-dg)}$$

Mathematica [A]
time = 0.04, size = 57, normalized size = 0.77

$$\frac{-\frac{a+b\log(c(d+ex)^n)}{f+gx} + \frac{ben(\log(d+ex)-\log(f+gx))}{ef-dg}}{g}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])/(f + g*x)^2,x]
```

```
[Out] (-((a + b*Log[c*(d + e*x)^n])/(f + g*x)) + (b*e*n*(Log[d + e*x] - Log[f + g
*x]))/(e*f - d*g))/g
```

Maple [C] Result contains higher order function than in optimal. Order 9 vs. order 3.
time = 0.23, size = 354, normalized size = 4.78

method	result
risch	$-\frac{b\ln((ex+d)^n)}{g(gx+f)} - \frac{i\pi bef\,\mathrm{csgn}(ic(ex+d)^n)^3+i\pi bdg\,\mathrm{csgn}(i(ex+d)^n)\mathrm{csgn}(ic(ex+d)^n)^2-i\pi bdg\mathrm{csgn}(ic(ex+d)^n)^3+i\pi bdg\,\mathrm{csgn}(ic)\mathrm{csgn}(i}{}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))/(g*x+f)^2,x,method=_RETURNVERBOSE)
```

```
[Out] -b/g/(g*x+f)*ln((e*x+d)^n)-1/2*(I*Pi*b*e*f*csgn(I*c*(e*x+d)^n)^3+I*Pi*b*d*g
*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-I*Pi*b*d*g*csgn(I*c*(e*x+d)^n)^3+I
*Pi*b*d*g*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-I*Pi*b*d*g*csgn(I*c)*csgn(I*(e*x+
d)^n)*csgn(I*c*(e*x+d)^n)+I*Pi*b*e*f*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(
e*x+d)^n)-I*Pi*b*e*f*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-I*Pi*b*e*f*csgn(I*(e*x
+d)^n)*csgn(I*c*(e*x+d)^n)^2-2*ln(-g*x-f)*b*e*g*n*x+2*ln(e*x+d)*b*e*g*n*x-2
*ln(-g*x-f)*b*e*f*n+2*ln(e*x+d)*b*e*f*n+2*ln(c)*b*d*g-2*ln(c)*b*e*f+2*a*d*g
-2*a*e*f)/(g*x+f)/g/(d*g-e*f)
```

Maxima [A]
time = 0.29, size = 90, normalized size = 1.22

$$bn\left(\frac{\log(gx+f)}{dg^2-fge} - \frac{\log(xe+d)}{dg^2-fge}\right)e - \frac{b\log\left((xe+d)^n c\right)}{g^2x+fg} - \frac{a}{g^2x+fg}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x+f)^2,x, algorithm="maxima")
```

```
[Out] b*n*(log(g*x + f)/(d*g^2 - f*g*e) - log(x*e + d)/(d*g^2 - f*g*e))*e - b*log
((x*e + d)^n*c)/(g^2*x + f*g) - a/(g^2*x + f*g)
```

Fricas [**A**]
time = 0.35, size = 99, normalized size = 1.34

$$-\frac{adg - afe - (bgnx + bfn)e\log(gx + f) + (bgnxe + bdgn)\log(xe + d) + (bdg - bfe)\log(c)}{dg^3x + dfg^2 - (fg^2x + f^2g)e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x+f)^2,x, algorithm="fricas")
```

```
[Out] -(a*d*g - a*f*e - (b*g*n*x + b*f*n)*e*log(g*x + f) + (b*g*n*x*e + b*d*g*n)*
log(x*e + d) + (b*d*g - b*f*e)*log(c))/(d*g^3*x + d*f*g^2 - (f*g^2*x + f^2*
g)*e)
```

Sympy [**F(-2)**]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: NotImplementedError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))/(g*x+f)**2,x)
```

```
[Out] Exception raised: NotImplementedError >> no valid subset found
```

Giac [**A**]
time = 4.15, size = 111, normalized size = 1.50

$$\frac{bgnxe\log(gx + f) - bgnxe\log(xe + d) + bfne\log(gx + f) - bdgn\log(xe + d) - bdg\log(c) + bfe\log(c) - adg + afe}{dg^3x - fg^2xe + dfg^2 - f^2ge}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x+f)^2,x, algorithm="giac")
```

```
[Out] (b*g*n*x*e*log(g*x + f) - b*g*n*x*e*log(x*e + d) + b*f*n*e*log(g*x + f) - b
*d*g*n*log(x*e + d) - b*d*g*log(c) + b*f*e*log(c) - a*d*g + a*f*e)/(d*g^3*x
 - f*g^2*x*e + d*f*g^2 - f^2*g*e)
```

Mupad [**B**]
time = 0.50, size = 84, normalized size = 1.14

$$-\frac{a}{x\,g^2+f\,g}-\frac{b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)}{g\,\left(f+g\,x\right)}+\frac{b\,e\,n\,\mathrm{atan}\left(\frac{e\,f\,2{}\mathrm{i}+e\,g\,x\,2{}\mathrm{i}}{d\,g-e\,f}+1{}\mathrm{i}\right)\,2{}\mathrm{i}}{g\,\left(d\,g-e\,f\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))/(f + g*x)^2,x)
```

```
[Out] (b*e*n*atan((e*f*2i + e*g*x*2i)/(d*g - e*f) + 1i)*2i)/(g*(d*g - e*f)) - (b*
log(c*(d + e*x)^n))/(g*(f + g*x)) - a/(f*g + g^2*x)
```

3.253 $\int \frac{a+b\log(c(d+ex)^n)}{x(f+gx)^2}\,dx$

Optimal. Leaf size=179

$$-\frac{ben\log(d+ex)}{f(ef-dg)}+\frac{a+b\log\left(c(d+ex)^n\right)}{f(f+gx)}+\frac{\log\left(-\frac{ex}{d}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{f^2}+\frac{ben\log(f+gx)}{f(ef-dg)}-\frac{(a+b\log}{}$$

```
[Out] -b*e*n*ln(e*x+d)/f/(-d*g+e*f)+(a+b*ln(c*(e*x+d)^n))/f/(g*x+f)+ln(-e*x/d)*(a
+b*ln(c*(e*x+d)^n))/f^2+b*e*n*ln(g*x+f)/f/(-d*g+e*f)-(a+b*ln(c*(e*x+d)^n))*
ln(e*(g*x+f)/(-d*g+e*f))/f^2-b*n*polylog(2,-g*(e*x+d)/(-d*g+e*f))/f^2+b*n*p
olylog(2,1+e*x/d)/f^2
```

Rubi [A]
time = 0.15, antiderivative size = 179, normalized size of antiderivative = 1.00, number of steps used = 11, number of rules used = 9, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.360$, Rules used = {46, 2463, 2441, 2352, 2442, 36, 31, 2440, 2438}

$$-\frac{bn\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)}{f^2}+\frac{bn\text{PolyLog}\left(2,\frac{ex}{d}+1\right)}{f^2}-\frac{\log\left(\frac{e(f+gx)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{f^2}+\frac{\log\left(-\frac{ex}{d}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{f^2}+\frac{a+b\log\left(c(d+ex)^n\right)}{f(f+gx)}-\frac{ben\log(d+ex)}{f(ef-dg)}+\frac{ben\log(f+gx)}{f(ef-dg)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])/(x*(f + g*x)^2),x]
```

```
[Out] -((b*e*n*Log[d + e*x])/(f*(e*f - d*g))) + (a + b*Log[c*(d + e*x)^n])/(f*(f
+ g*x)) + (Log[-((e*x)/d)]*(a + b*Log[c*(d + e*x)^n]))/f^2 + (b*e*n*Log[f +
 g*x])/(f*(e*f - d*g)) - ((a + b*Log[c*(d + e*x)^n])*Log[(e*(f + g*x))/(e*f
 - d*g)])/f^2 - (b*n*PolyLog[2, -((g*(d + e*x))/(e*f - d*g))])/f^2 + (b*n*P
olyLog[2, 1 + (e*x)/d])/f^2
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 36

```
Int[1/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))), x_Symbol] :> Dist[b/(b*c
 - a*d), Int[1/(a + b*x), x], x] - Dist[d/(b*c - a*d), Int[1/(c + d*x), x],
 x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0]
```

Rule 46

```
Int[((a_) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[E
xpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] && !(IGtQ[n, 0] && LtQ[m +
 n + 2, 0])
```

Rule 2352

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> Simp[(-e^(-1))*PolyLo
g[2, 1 - c*x], x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + c*e*(x/g)])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2441

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d + e*x
)^n])/g), x] - Dist[b*e*(n/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2442

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[(f + g*x)^(q + 1)*((a + b*Log[c*(d + e*x)^n])/(
g*(q + 1))), x] - Dist[b*e*(n/(g*(q + 1))), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 2463

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rubi steps

$$
\begin{aligned}
\int \frac{a+b\log\left(c(d+ex)^n\right)}{x(f+gx)^2}\,dx &= \int \left(\frac{a+b\log\left(c(d+ex)^n\right)}{f^2x} - \frac{g(a+b\log\left(c(d+ex)^n\right))}{f(f+gx)^2} - \frac{g(a+b\log\left(c(d+e\right.}{f^2(f+gx)}\right. \\
&= \frac{\int \frac{a+b\log(c(d+ex)^n)}{x}\,dx}{f^2} - \frac{g\int \frac{a+b\log(c(d+ex)^n)}{f+gx}\,dx}{f^2} - \frac{g\int \frac{a+b\log(c(d+ex)^n)}{(f+gx)^2}\,dx}{f} \\
&= \frac{a+b\log\left(c(d+ex)^n\right)}{f(f+gx)} + \frac{\log\left(-\frac{ex}{d}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{f^2} - \frac{(a+b\log\left(c(d\right.}{} \\
&= \frac{a+b\log\left(c(d+ex)^n\right)}{f(f+gx)} + \frac{\log\left(-\frac{ex}{d}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{f^2} - \frac{(a+b\log\left(c(d\right.}{} \\
&= -\frac{ben\log(d+ex)}{f(ef-dg)} + \frac{a+b\log\left(c(d+ex)^n\right)}{f(f+gx)} + \frac{\log\left(-\frac{ex}{d}\right)\left(a+b\log\left(c(d+ex)^{n}\right.\right.}{f^2}
\end{aligned}
$$

Mathematica [A]
time = 0.08, size = 152, normalized size = 0.85

$$
\frac{\frac{f(a+b\log(c(d+ex)^n))}{f+gx} + \log\left(-\frac{ex}{d}\right)\left(a+b\log\left(c(d+ex)^n\right)\right) - \frac{befn(\log(d+ex)-\log(f+gx))}{ef-dg} - \left(a+b\log\left(c(d+ex)^n\right)\right)\log\left(\frac{e(f+gx)}{ef-dg}\right) - bn\text{Li}_2\left(\frac{g(d+ex)}{-ef+dg}\right) + bn\text{Li}_2\left(1+\frac{ex}{d}\right)}{f^2}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])/(x*(f + g*x)^2),x]
```

```
[Out] ((f*(a + b*Log[c*(d + e*x)^n]))/(f + g*x) + Log[-((e*x)/d)]*(a + b*Log[c*(d
 + e*x)^n]) - (b*e*f*n*(Log[d + e*x] - Log[f + g*x]))/(e*f - d*g) - (a + b*
Log[c*(d + e*x)^n])*Log[(e*(f + g*x))/(e*f - d*g)] - b*n*PolyLog[2, (g*(d +
 e*x))/(-(e*f) + d*g)] + b*n*PolyLog[2, 1 + (e*x)/d])/f^2
```

Maple [C] Result contains higher order function than in optimal. Order 9 vs. order 4.
time = 0.33, size = 694, normalized size = 3.88

method	result
risch	$-\frac{ib\pi\text{csgn}(ic(ex+d)^n)^3\ln(x)}{2f^2} + \frac{ib\pi\text{csgn}(ic(ex+d)^n)^3\ln(gx+f)}{2f^2} - \frac{ib\pi\text{csgn}(ic(ex+d)^n)^3}{2f(gx+f)} - \frac{ben\ln(gx+f)}{f(dg-ef)} - \frac{b\ln((ex+d)^n)\ln(g}{f^2}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))/x/(g*x+f)^2,x,method=_RETURNVERBOSE)
```

```
[Out] -b*e*n/f/(d*g-e*f)*ln(g*x+f)+1/2*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^
n)^2/f/(g*x+f)-b*ln((e*x+d)^n)/f^2*ln(g*x+f)+b*ln((e*x+d)^n)/f/(g*x+f)-1/2*
I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/f^2*ln(g*x+f)-1/2*I*b*Pi*csgn(I*c)*c
```

```
sgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/f/(g*x+f)+a/f^2*ln(x)+a/f/(g*x+f)-a/f^
2*ln(g*x+f)-b*n/f^2*dilog((e*x+d)/d)+b*n/f^2*dilog(((g*x+f)*e+d*g-e*f)/(d*g
-e*f))+b*ln((e*x+d)^n)/f^2*ln(x)-1/2*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csg
n(I*c*(e*x+d)^n)/f^2*ln(x)-b*ln(c)/f^2*ln(g*x+f)+b*ln(c)/f/(g*x+f)+b*ln(c)/
f^2*ln(x)+1/2*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/f^2*ln
(g*x+f)+1/2*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/f^2*ln(x)-1/2*I*
b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/f^2*ln(g*x+f)-b*n/f^2*ln(x)*ln
((e*x+d)/d)+b*n/f^2*ln(g*x+f)*ln(((g*x+f)*e+d*g-e*f)/(d*g-e*f))-1/2*I*b*Pi*
csgn(I*c*(e*x+d)^n)^3/f^2*ln(x)+b*e*n/f/(d*g-e*f)*ln(e*x+d)+1/2*I*b*Pi*csgn
(I*c*(e*x+d)^n)^3/f^2*ln(g*x+f)+1/2*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/
f^2*ln(x)-1/2*I*b*Pi*csgn(I*c*(e*x+d)^n)^3/f/(g*x+f)+1/2*I*b*Pi*csgn(I*c)*c
sgn(I*c*(e*x+d)^n)^2/f/(g*x+f)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/x/(g*x+f)^2,x, algorithm="maxima")
[Out] a*(1/(f*g*x + f^2) - log(g*x + f)/f^2 + log(x)/f^2) + b*integrate((log((x*e
 + d)^n) + log(c))/(g^2*x^3 + 2*f*g*x^2 + f^2*x), x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/x/(g*x+f)^2,x, algorithm="fricas")
[Out] integral((b*log((x*e + d)^n*c) + a)/(g^2*x^3 + 2*f*g*x^2 + f^2*x), x)
```

Sympy [F(-1)] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))/x/(g*x+f)**2,x)
[Out] Timed out
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/x/(g*x+f)^2,x, algorithm="giac")
```

```
[Out] integrate((b*log((x*e + d)^n*c) + a)/((g*x + f)^2*x), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)}{x\,{\left(f+g\,x\right)}^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))/(x*(f + g*x)^2),x)
```

```
[Out] int((a + b*log(c*(d + e*x)^n))/(x*(f + g*x)^2), x)
```

3.254 $\int \frac{a+b\log(c(d+ex)^n)}{x^2(f+gx)^2}\,dx$

Optimal. Leaf size=240

$$\frac{ben\log(x)}{df^2}-\frac{ben\log(d+ex)}{df^2}+\frac{begn\log(d+ex)}{f^2(ef-dg)}-\frac{a+b\log\left(c(d+ex)^n\right)}{f^2x}-\frac{g(a+b\log\left(c(d+ex)^n\right))}{f^2(f+gx)}-\frac{2g\log\left(-\right.}{}$$

```
[Out] b*e*n*ln(x)/d/f^2-b*e*n*ln(e*x+d)/d/f^2+b*e*g*n*ln(e*x+d)/f^2/(-d*g+e*f)+(-
a-b*ln(c*(e*x+d)^n))/f^2/x-g*(a+b*ln(c*(e*x+d)^n))/f^2/(g*x+f)-2*g*ln(-e*x/
d)*(a+b*ln(c*(e*x+d)^n))/f^3-b*e*g*n*ln(g*x+f)/f^2/(-d*g+e*f)+2*g*(a+b*ln(c
*(e*x+d)^n))*ln(e*(g*x+f)/(-d*g+e*f))/f^3+2*b*g*n*polylog(2,-g*(e*x+d)/(-d*
g+e*f))/f^3-2*b*g*n*polylog(2,1+e*x/d)/f^3
```

Rubi [A]
time = 0.18, antiderivative size = 240, normalized size of antiderivative = 1.00, number of steps used = 15, number of rules used = 10, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.400$, Rules used = {46, 2463, 2442, 36, 29, 31, 2441, 2352, 2440, 2438}

$$\frac{2bgn\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)}{f^3}-\frac{2bgn\text{PolyLog}\left(2,\frac{ex}{d}+1\right)}{f^3}-\frac{2g\log\left(-\frac{ex}{d}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{f^3}+\frac{2g\log\left(\frac{e(f+gx)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{f^3}-\frac{g(a+b\log\left(c(d+ex)^n\right))}{f^2(f+gx)}-\frac{a+b\log\left(c(d+ex)^n\right)}{f^2x}+\frac{begn\log(d+ex)}{f^2(ef-dg)}-\frac{begn\log(f+gx)}{f^2(ef-dg)}+\frac{ben\log(x)}{df^2}-\frac{ben\log(d+ex)}{df^2}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])/(x^2*(f + g*x)^2),x]
```

```
[Out] (b*e*n*Log[x])/(d*f^2) - (b*e*n*Log[d + e*x])/(d*f^2) + (b*e*g*n*Log[d + e*
x])/(f^2*(e*f - d*g)) - (a + b*Log[c*(d + e*x)^n])/(f^2*x) - (g*(a + b*Log[
c*(d + e*x)^n]))/(f^2*(f + g*x)) - (2*g*Log[-((e*x)/d)]*(a + b*Log[c*(d + e
*x)^n]))/f^3 - (b*e*g*n*Log[f + g*x])/(f^2*(e*f - d*g)) + (2*g*(a + b*Log[c
*(d + e*x)^n])*Log[(e*(f + g*x))/(e*f - d*g)])/f^3 + (2*b*g*n*PolyLog[2, -(
(g*(d + e*x))/(e*f - d*g))])/f^3 - (2*b*g*n*PolyLog[2, 1 + (e*x)/d])/f^3
```

Rule 29

```
Int[(x_)^(-1), x_Symbol] :> Simp[Log[x], x]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 36

```
Int[1/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))), x_Symbol] :> Dist[b/(b*c
 - a*d), Int[1/(a + b*x), x], x] - Dist[d/(b*c - a*d), Int[1/(c + d*x), x],
 x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0]
```

Rule 46

```
Int[((a_) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[E
xpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m +
 n + 2, 0])
```

Rule 2352

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> Simp[(-e^(-1))*PolyLo
g[2, 1 - c*x], x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + c*e*(x/g)])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2441

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d + e*x
)^n])/g), x] - Dist[b*e*(n/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2442

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[(f + g*x)^(q + 1)*((a + b*Log[c*(d + e*x)^n])/(
g*(q + 1))), x] - Dist[b*e*(n/(g*(q + 1))), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 2463

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rubi steps

$$\int \frac{a+b\log\left(c(d+ex)^n\right)}{x^2(f+gx)^2}\,dx = \int \left(\frac{a+b\log\left(c(d+ex)^n\right)}{f^2x^2} - \frac{2g\left(a+b\log\left(c(d+ex)^n\right)\right)}{f^3x} + \frac{g^2\left(a+b\log\left(c(d+\right.\right.}{f^2(f+gx)^2}\right.$$

$$= \frac{\int \frac{a+b\log(c(d+ex)^n)}{x^2}\,dx}{f^2} - \frac{(2g)\int \frac{a+b\log(c(d+ex)^n)}{x}\,dx}{f^3} + \frac{(2g^2)\int \frac{a+b\log(c(d+ex)^n)}{f+gx}\,dx}{f^3} +$$

$$= -\frac{a+b\log\left(c(d+ex)^n\right)}{f^2x} - \frac{g\left(a+b\log\left(c(d+ex)^n\right)\right)}{f^2(f+gx)} - \frac{2g\log\left(-\frac{ex}{d}\right)\left(a+b\log\right.}{f^3}$$

$$= -\frac{a+b\log\left(c(d+ex)^n\right)}{f^2x} - \frac{g\left(a+b\log\left(c(d+ex)^n\right)\right)}{f^2(f+gx)} - \frac{2g\log\left(-\frac{ex}{d}\right)\left(a+b\log\right.}{f^3}$$

$$= \frac{ben\log(x)}{df^2} - \frac{ben\log(d+ex)}{df^2} + \frac{begn\log(d+ex)}{f^2(ef-dg)} - \frac{a+b\log\left(c(d+ex)^n\right)}{f^2x} - \frac{g}{}$$

Mathematica [A]
time = 0.13, size = 199, normalized size = 0.83

$$\frac{\frac{befn(\log(x)-\log(d+ex))}{d} - \frac{f(a+b\log(c(d+ex)^n))}{x} - \frac{fg(a+b\log(c(d+ex)^n))}{f+gx} - 2g\log\left(-\frac{ex}{d}\right)\left(a+b\log\left(c(d+ex)^n\right)\right) + \frac{befgn(\log(d+ex)-\log(f+gx))}{ef-dg} + 2g\left(a+b\log\left(c(d+ex)^n\right)\right)\log\left(\frac{e(f+gx)}{ef-dg}\right) + 2bgn\mathrm{Li}_2\left(\frac{g(d+ex)}{-ef+dg}\right) - 2bgn\mathrm{Li}_2\left(1+\frac{ex}{d}\right)}{f^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])/(x^2*(f + g*x)^2),x]
```

```
[Out] ((b*e*f*n*(Log[x] - Log[d + e*x]))/d - (f*(a + b*Log[c*(d + e*x)^n]))/x - (
f*g*(a + b*Log[c*(d + e*x)^n]))/(f + g*x) - 2*g*Log[-((e*x)/d)]*(a + b*Log[
c*(d + e*x)^n]) + (b*e*f*g*n*(Log[d + e*x] - Log[f + g*x]))/(e*f - d*g) + 2
*g*(a + b*Log[c*(d + e*x)^n])*Log[(e*(f + g*x))/(e*f - d*g)] + 2*b*g*n*Poly
Log[2, (g*(d + e*x))/(-(e*f) + d*g)] - 2*b*g*n*PolyLog[2, 1 + (e*x)/d])/f^3
```

Maple [C] Result contains higher order function than in optimal. Order 9 vs. order 4.
time = 0.38, size = 936, normalized size = 3.90

method	result	size
risch	Expression too large to display	936

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))/x^2/(g*x+f)^2,x,method=_RETURNVERBOSE)
```

```
[Out] -1/2*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/f^2*g/(g*x+f)-1/2*I*b*P
i*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/f^2*g/(g*x+f)+1/2*I*b*Pi*csgn(I*c)*csgn(I
```

```
*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/f^2/x-b*ln(c)/f^2/x-a/f^2/x-a/f^2*g/(g*x+f)
+2*a/f^3*g*ln(g*x+f)-2*a/f^3*g*ln(x)+I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x
+d)^n)^2/f^3*g*ln(g*x+f)-b*ln((e*x+d)^n)/f^2/x-I*b*Pi*csgn(I*c)*csgn(I*c*(e
*x+d)^n)^2/f^3*g*ln(x)+I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/f^3*g*ln(g*x+
f)-I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/f^3*g*ln(x)-1/2*I*b*Pi*cs
gn(I*c)*csgn(I*c*(e*x+d)^n)^2/f^2/x-1/2*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(
e*x+d)^n)^2/f^2/x+2*b*n/f^3*g*dilog((e*x+d)/d)-2*b*n/f^3*g*dilog(((g*x+f)*e
+d*g-e*f)/(d*g-e*f))+2*b*ln((e*x+d)^n)/f^3*g*ln(g*x+f)-2*b*ln((e*x+d)^n)/f^
3*g*ln(x)+2*b*n/f^3*g*ln(x)*ln((e*x+d)/d)-2*b*n/f^3*g*ln(g*x+f)*ln(((g*x+f)
*e+d*g-e*f)/(d*g-e*f))+1/2*I*b*Pi*csgn(I*c*(e*x+d)^n)^3/f^2*g/(g*x+f)+b*e*n
/f^2*g/(d*g-e*f)*ln(g*x+f)-2*b*e*n/f^2/(d*g-e*f)*ln(e*x+d)*g+b*e^2*n/f/d/(d
*g-e*f)*ln(e*x+d)-I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/f^
3*g*ln(g*x+f)-b*ln(c)/f^2*g/(g*x+f)+2*b*ln(c)/f^3*g*ln(g*x+f)-2*b*ln(c)/f^3
*g*ln(x)+I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/f^3*g*ln(x)
+1/2*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/f^2*g/(g*x+f)-b
*ln((e*x+d)^n)/f^2*g/(g*x+f)+I*b*Pi*csgn(I*c*(e*x+d)^n)^3/f^3*g*ln(x)-I*b*P
i*csgn(I*c*(e*x+d)^n)^3/f^3*g*ln(g*x+f)+1/2*I*b*Pi*csgn(I*c*(e*x+d)^n)^3/f^
2/x+b*e*n*ln(x)/d/f^2
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/x^2/(g*x+f)^2,x, algorithm="maxima")
```

```
[Out] -a*((2*g*x + f)/(f^2*g*x^2 + f^3*x) - 2*g*log(g*x + f)/f^3 + 2*g*log(x)/f^3
) + b*integrate((log((x*e + d)^n) + log(c))/(g^2*x^4 + 2*f*g*x^3 + f^2*x^2)
, x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/x^2/(g*x+f)^2,x, algorithm="fricas")
```

```
[Out] integral((b*log((x*e + d)^n*c) + a)/(g^2*x^4 + 2*f*g*x^3 + f^2*x^2), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{a + b\log\left(c(d + ex)^n\right)}{x^2\left(f + gx\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))/x**2/(g*x+f)**2,x)
```

```
[Out] Integral((a + b*log(c*(d + e*x)**n))/(x**2*(f + g*x)**2), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/x^2/(g*x+f)^2,x, algorithm="giac")
```

```
[Out] integrate((b*log((x*e + d)^n*c) + a)/((g*x + f)^2*x^2), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)}{x^2\,{\left(f+g\,x\right)}^2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))/(x^2*(f + g*x)^2),x)
```

```
[Out] int((a + b*log(c*(d + e*x)^n))/(x^2*(f + g*x)^2), x)
```

3.255 $\int \frac{a+b\log(c(d+ex)^n)}{x^3(f+gx)^2}\,dx$

Optimal. Leaf size=335

$$-\frac{ben}{2df^2x}-\frac{be^2n\log(x)}{2d^2f^2}-\frac{2begn\log(x)}{df^3}+\frac{be^2n\log(d+ex)}{2d^2f^2}+\frac{2begn\log(d+ex)}{df^3}-\frac{beg^2n\log(d+ex)}{f^3(ef-dg)}-\frac{a+b\log(\cdots}{2f\cdots}$$

```
[Out] -1/2*b*e*n/d/f^2/x-1/2*b*e^2*n*ln(x)/d^2/f^2-2*b*e*g*n*ln(x)/d/f^3+1/2*b*e^
2*n*ln(e*x+d)/d^2/f^2+2*b*e*g*n*ln(e*x+d)/d/f^3-b*e*g^2*n*ln(e*x+d)/f^3/(-d
*g+e*f)+1/2*(-a-b*ln(c*(e*x+d)^n))/f^2/x^2+2*g*(a+b*ln(c*(e*x+d)^n))/f^3/x+
g^2*(a+b*ln(c*(e*x+d)^n))/f^3/(g*x+f)+3*g^2*ln(-e*x/d)*(a+b*ln(c*(e*x+d)^n)
)/f^4+b*e*g^2*n*ln(g*x+f)/f^3/(-d*g+e*f)-3*g^2*(a+b*ln(c*(e*x+d)^n))*ln(e*(
g*x+f)/(-d*g+e*f))/f^4-3*b*g^2*n*polylog(2,-g*(e*x+d)/(-d*g+e*f))/f^4+3*b*g
^2*n*polylog(2,1+e*x/d)/f^4
```

Rubi [A]
time = 0.23, antiderivative size = 335, normalized size of antiderivative = 1.00, number of steps used = 18, number of rules used = 10, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.400$, Rules used = {46, 2463, 2442, 36, 29, 31, 2441, 2352, 2440, 2438}

$$-\frac{3bg^2n\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)}{f^4}+\frac{3bg^2n\text{PolyLog}\left(2,\frac{ex}{d}+1\right)}{f^4}+\frac{3g^2\log\left(-\frac{ex}{d}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{f^4}-\frac{3g^2\log\left(\frac{e(f+gx)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{f^4}+\frac{g^2\left(a+b\log\left(c(d+ex)^n\right)\right)}{f^3(f+gx)}+\frac{2g\left(a+b\log\left(c(d+ex)^n\right)\right)}{f^3x}-\frac{a+b\log\left(c(d+ex)^n\right)}{2f^2x^2}-\frac{be^2n\log(x)}{2d^2f^2}+\frac{be^2n\log(d+ex)}{2d^2f^2}-\frac{beg^2n\log(d+ex)}{f^3(ef-dg)}+\frac{beg^2n\log(f+gx)}{f^3(ef-dg)}-\frac{2begn\log(x)}{df^3}+\frac{2begn\log(d+ex)}{df^3}-\frac{ben}{2df^2x}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])/(x^3*(f + g*x)^2),x]
```

```
[Out] -1/2*(b*e*n)/(d*f^2*x) - (b*e^2*n*Log[x])/(2*d^2*f^2) - (2*b*e*g*n*Log[x])/
(d*f^3) + (b*e^2*n*Log[d + e*x])/(2*d^2*f^2) + (2*b*e*g*n*Log[d + e*x])/(d*
f^3) - (b*e*g^2*n*Log[d + e*x])/(f^3*(e*f - d*g)) - (a + b*Log[c*(d + e*x)^
n])/(2*f^2*x^2) + (2*g*(a + b*Log[c*(d + e*x)^n]))/(f^3*x) + (g^2*(a + b*Lo
g[c*(d + e*x)^n]))/(f^3*(f + g*x)) + (3*g^2*Log[-((e*x)/d)]*(a + b*Log[c*(d
 + e*x)^n]))/f^4 + (b*e*g^2*n*Log[f + g*x])/(f^3*(e*f - d*g)) - (3*g^2*(a +
 b*Log[c*(d + e*x)^n])*Log[(e*(f + g*x))/(e*f - d*g)])/f^4 - (3*b*g^2*n*Pol
yLog[2, -((g*(d + e*x))/(e*f - d*g))])/f^4 + (3*b*g^2*n*PolyLog[2, 1 + (e*x
)/d])/f^4
```

Rule 29

```
Int[(x_)^(-1), x_Symbol] :> Simp[Log[x], x]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 36

```
Int[1/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))), x_Symbol] :> Dist[b/(b*c
 - a*d), Int[1/(a + b*x), x], x] - Dist[d/(b*c - a*d), Int[1/(c + d*x), x],
 x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0]
```

Rule 46

```
Int[((a_) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[E
xpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m +
 n + 2, 0])
```

Rule 2352

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> Simp[(-e^(-1))*PolyLo
g[2, 1 - c*x], x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + c*e*(x/g)])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2441

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d + e*x
)^n])/g), x] - Dist[b*e*(n/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2442

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[(f + g*x)^(q + 1)*((a + b*Log[c*(d + e*x)^n])/(
g*(q + 1))), x] - Dist[b*e*(n/(g*(q + 1))), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 2463

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
```

```
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rubi steps

$$\begin{aligned}
\int \frac{a+b\log(c(d+ex)^n)}{x^3(f+gx)^2}\,dx &= \int \left(\frac{a+b\log(c(d+ex)^n)}{f^2x^3} - \frac{2g(a+b\log(c(d+ex)^n))}{f^3x^2} + \frac{3g^2(a+b\log(c(d\right.\\
&= \frac{\int \frac{a+b\log(c(d+ex)^n)}{x^3}\,dx}{f^2} - \frac{(2g)\int \frac{a+b\log(c(d+ex)^n)}{x^2}\,dx}{f^3} + \frac{(3g^2)\int \frac{a+b\log(c(d+ex)^n)}{x}\,dx}{f^4}\\
&= -\frac{a+b\log(c(d+ex)^n)}{2f^2x^2} + \frac{2g(a+b\log(c(d+ex)^n))}{f^3x} + \frac{g^2(a+b\log(c(d+e}{f^3(f+gx)}\\
&= -\frac{a+b\log(c(d+ex)^n)}{2f^2x^2} + \frac{2g(a+b\log(c(d+ex)^n))}{f^3x} + \frac{g^2(a+b\log(c(d+e}{f^3(f+gx)}\\
&= -\frac{ben}{2df^2x} - \frac{be^2n\log(x)}{2d^2f^2} - \frac{2begn\log(x)}{df^3} + \frac{be^2n\log(d+ex)}{2d^2f^2} + \frac{2begn\log(d+e}{df^3}
\end{aligned}$$

Mathematica [A]
time = 0.27, size = 269, normalized size = 0.80

$$-\frac{\frac{4befgn(\log(x)-\log(d+ex))}{d}+\frac{bef^2n(d+ex\log(x)-ex\log(d+ex))}{d^2x}+\frac{f^2(a+b\log(c(d+ex)^n))}{x^2}-\frac{4fg(a+b\log(c(d+ex)^n))}{x}-\frac{2fg^2(a+b\log(c(d+ex)^n))}{f+gx}-6g^2\log\left(-\frac{ex}{d}\right)(a+b\log(c(d+ex)^n))+\frac{2befg^2n(\log(d+ex)-\log(f+gx))}{ef-dg}+6g^2(a+b\log(c(d+ex)^n))\log\left(\frac{e(f+gx)}{ef-dg}\right)+6bg^2n\text{Li}_2\left(\frac{g(d+ex)}{-ef+dg}\right)-6bg^2n\text{Li}_2\left(1+\frac{ex}{d}\right)}{2f^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])/(x^3*(f + g*x)^2),x]
```

```
[Out] -1/2*((4*b*e*f*g*n*(Log[x] - Log[d + e*x]))/d + (b*e*f^2*n*(d + e*x*Log[x]
- e*x*Log[d + e*x]))/(d^2*x) + (f^2*(a + b*Log[c*(d + e*x)^n]))/x^2 - (4*f*
g*(a + b*Log[c*(d + e*x)^n]))/x - (2*f*g^2*(a + b*Log[c*(d + e*x)^n]))/(f +
 g*x) - 6*g^2*Log[-((e*x)/d)]*(a + b*Log[c*(d + e*x)^n]) + (2*b*e*f*g^2*n*(
Log[d + e*x] - Log[f + g*x]))/(e*f - d*g) + 6*g^2*(a + b*Log[c*(d + e*x)^n]
)*Log[(e*(f + g*x))/(e*f - d*g)] + 6*b*g^2*n*PolyLog[2, (g*(d + e*x))/(-(e*
f) + d*g)] - 6*b*g^2*n*PolyLog[2, 1 + (e*x)/d])/f^4
```

Maple [C] Result contains higher order function than in optimal. Order 9 vs. order 4.
time = 0.44, size = 1224, normalized size = 3.65

method	result	size
risch	Expression too large to display	1224

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))/x^3/(g*x+f)^2,x,method=_RETURNVERBOSE)
```

```
[Out] b*ln((e*x+d)^n)/f^3*g^2/(g*x+f)+3*b*ln((e*x+d)^n)/f^4*g^2*ln(x)+2*b*ln((e*x
+d)^n)/f^3*g/x-1/2*b*ln((e*x+d)^n)/f^2/x^2+3*b*ln(c)/f^4*g^2*ln(x)+2*b*ln(c
)/f^3*g/x-3*b*ln(c)/f^4*g^2*ln(g*x+f)+b*ln(c)/f^3*g^2/(g*x+f)-1/2*b*ln(c)/f
^2/x^2-3/2*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/f^4*g^2*ln(g*x+f)-1/2*a/f
^2/x^2-3/2*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/f^4*g^2*ln(g*x+f)
-3*b*ln((e*x+d)^n)/f^4*g^2*ln(g*x+f)+1/4*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)
*csgn(I*c*(e*x+d)^n)/f^2/x^2-3/2*b*e^2*n/f^2/(d*g-e*f)/d*ln(e*x+d)*g-3*a/f^
4*g^2*ln(g*x+f)+a/f^3*g^2/(g*x+f)+3*a/f^4*g^2*ln(x)+2*a/f^3*g/x-1/4*I*b*Pi*
csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/f^2/x^2+I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(
e*x+d)^n)^2/f^3*g/x+3/2*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/f^4*
g^2*ln(x)+I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/f^3*g/x+1/2*I*b*Pi*csgn(I*
(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/f^3*g^2/(g*x+f)+1/2*I*b*Pi*csgn(I*c)*csgn(
I*c*(e*x+d)^n)^2/f^3*g^2/(g*x+f)+3/2*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2
/f^4*g^2*ln(x)+3*b*n/f^4*g^2*dilog(((g*x+f)*e+d*g-e*f)/(d*g-e*f))-1/4*I*b*P
i*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/f^2/x^2+3/2*I*b*Pi*csgn(I*c*(e*x+
d)^n)^3/f^4*g^2*ln(g*x+f)-1/2*I*b*Pi*csgn(I*c*(e*x+d)^n)^3/f^3*g^2/(g*x+f)-
3/2*I*b*Pi*csgn(I*c*(e*x+d)^n)^3/f^4*g^2*ln(x)-3*b*n/f^4*g^2*ln(x)*ln((e*x+
d)/d)+3*b*n/f^4*g^2*ln(g*x+f)*ln(((g*x+f)*e+d*g-e*f)/(d*g-e*f))-b*e*n/f^3*g
^2/(d*g-e*f)*ln(g*x+f)+3*b*e*n/f^3/(d*g-e*f)*ln(e*x+d)*g^2-1/2*b*e^3*n/f/(d
*g-e*f)/d^2*ln(e*x+d)-I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n
)/f^3*g/x-3*b*n/f^4*g^2*dilog((e*x+d)/d)+3/2*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d
)^n)*csgn(I*c*(e*x+d)^n)/f^4*g^2*ln(g*x+f)-I*b*Pi*csgn(I*c*(e*x+d)^n)^3/f^3
*g/x+1/4*I*b*Pi*csgn(I*c*(e*x+d)^n)^3/f^2/x^2-3/2*I*b*Pi*csgn(I*c)*csgn(I*(
e*x+d)^n)*csgn(I*c*(e*x+d)^n)/f^4*g^2*ln(x)-1/2*I*b*Pi*csgn(I*c)*csgn(I*(e*
x+d)^n)*csgn(I*c*(e*x+d)^n)/f^3*g^2/(g*x+f)-2*b*e*g*n*ln(x)/d/f^3-1/2*b*e^2
*n*ln(x)/d^2/f^2-1/2*b*e*n/d/f^2/x
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/x^3/(g*x+f)^2,x, algorithm="maxima")
```

```
[Out] 1/2*a*((6*g^2*x^2 + 3*f*g*x - f^2)/(f^3*g*x^3 + f^4*x^2) - 6*g^2*log(g*x +
f)/f^4 + 6*g^2*log(x)/f^4) + b*integrate((log((x*e + d)^n) + log(c))/(g^2*x
^5 + 2*f*g*x^4 + f^2*x^3), x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/x^3/(g*x+f)^2,x, algorithm="fricas")
```

```
[Out] integral((b*log((x*e + d)^n*c) + a)/(g^2*x^5 + 2*f*g*x^4 + f^2*x^3), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{a + b\log\left(c(d+ex)^{n}\right)}{x^{3}\left(f+gx\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))/x**3/(g*x+f)**2,x)
```

```
[Out] Integral((a + b*log(c*(d + e*x)**n))/(x**3*(f + g*x)**2), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/x^3/(g*x+f)^2,x, algorithm="giac")
```

```
[Out] integrate((b*log((x*e + d)^n*c) + a)/((g*x + f)^2*x^3), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{a + b\,\ln\left(c\,{\left(d+e\,x\right)}^{n}\right)}{x^{3}\,{\left(f+g\,x\right)}^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))/(x^3*(f + g*x)^2),x)
```

```
[Out] int((a + b*log(c*(d + e*x)^n))/(x^3*(f + g*x)^2), x)
```

3.256 $\int \frac{x^5(a+b\log(c(d+ex)^n))}{f+gx^2}\,dx$

Optimal. Leaf size=397

$$-\frac{bdfnx}{2eg^2}+\frac{bd^3nx}{4e^3g}+\frac{bfnx^2}{4g^2}-\frac{bd^2nx^2}{8e^2g}+\frac{bdnx^3}{12eg}-\frac{bnx^4}{16g}+\frac{bd^2fn\log(d+ex)}{2e^2g^2}-\frac{bd^4n\log(d+ex)}{4e^4g}-\frac{fx^2(a+b\log(c(d$$

```
[Out] -1/2*b*d*f*n*x/e/g^2+1/4*b*d^3*n*x/e^3/g+1/4*b*f*n*x^2/g^2-1/8*b*d^2*n*x^2/
e^2/g+1/12*b*d*n*x^3/e/g-1/16*b*n*x^4/g+1/2*b*d^2*f*n*ln(e*x+d)/e^2/g^2-1/4
*b*d^4*n*ln(e*x+d)/e^4/g-1/2*f*x^2*(a+b*ln(c*(e*x+d)^n))/g^2+1/4*x^4*(a+b*l
n(c*(e*x+d)^n))/g+1/2*f^2*(a+b*ln(c*(e*x+d)^n))*ln(e*((-f)^(1/2)-x*g^(1/2))
/(e*(-f)^(1/2)+d*g^(1/2)))/g^3+1/2*f^2*(a+b*ln(c*(e*x+d)^n))*ln(e*((-f)^(1/
2)+x*g^(1/2))/(e*(-f)^(1/2)-d*g^(1/2)))/g^3+1/2*b*f^2*n*polylog(2,-(e*x+d)*
g^(1/2)/(e*(-f)^(1/2)-d*g^(1/2)))/g^3+1/2*b*f^2*n*polylog(2,(e*x+d)*g^(1/2)
/(e*(-f)^(1/2)+d*g^(1/2)))/g^3
```

Rubi [A]
time = 0.36, antiderivative size = 397, normalized size of antiderivative = 1.00, number of steps used = 16, number of rules used = 8, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.296$, Rules used = {272, 45, 2463, 2442, 266, 2441, 2440, 2438}

$$\frac{bf^2n\text{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)}{2g^3}+\frac{bf^2n\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+e\sqrt{-f}}\right)}{2g^3}+\frac{f^2\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}x\right)}{d\sqrt{g}+e\sqrt{-f}}\right)(a+b\log(c(d+ex)^n))}{2g^3}+\frac{f^2\log\left(\frac{e\left(\sqrt{-f}+\sqrt{g}x\right)}{e\sqrt{-f}-d\sqrt{g}}\right)(a+b\log(c(d+ex)^n))}{2g^3}-\frac{fx^2(a+b\log(c(d+ex)^n))}{2g^2}+\frac{x^4(a+b\log(c(d+ex)^n))}{4g}-\frac{bd^4n\log(d+ex)}{4e^4g}+\frac{bd^3nx}{4e^3g}+\frac{bd^2fn\log(d+ex)}{2e^2g^2}-\frac{bd^2nx^2}{8e^2g}-\frac{bdfnx}{2eg^2}+\frac{bdnx^3}{12eg}+\frac{bfnx^2}{4g^2}-\frac{bnx^4}{16g}$$

Antiderivative was successfully verified.

```
[In] Int[(x^5*(a + b*Log[c*(d + e*x)^n]))/(f + g*x^2),x]
```

```
[Out] -1/2*(b*d*f*n*x)/(e*g^2) + (b*d^3*n*x)/(4*e^3*g) + (b*f*n*x^2)/(4*g^2) - (b
*d^2*n*x^2)/(8*e^2*g) + (b*d*n*x^3)/(12*e*g) - (b*n*x^4)/(16*g) + (b*d^2*f*
n*Log[d + e*x])/(2*e^2*g^2) - (b*d^4*n*Log[d + e*x])/(4*e^4*g) - (f*x^2*(a
+ b*Log[c*(d + e*x)^n]))/(2*g^2) + (x^4*(a + b*Log[c*(d + e*x)^n]))/(4*g) +
 (f^2*(a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[-f]
 + d*Sqrt[g])])/(2*g^3) + (f^2*(a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f]
+ Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g])])/(2*g^3) + (b*f^2*n*PolyLog[2, -((S
qrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/(2*g^3) + (b*f^2*n*PolyLog[2,
 (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(2*g^3)
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 266

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 272

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + c*e*(x/g)])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2441

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d + e*x
)^n])/g), x] - Dist[b*e*(n/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2442

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[(f + g*x)^(q + 1)*((a + b*Log[c*(d + e*x)^n])/(
g*(q + 1))), x] - Dist[b*e*(n/(g*(q + 1))), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 2463

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rubi steps

$$\int \frac{x^5(a+b\log(c(d+ex)^n))}{f+gx^2}\,dx = \int \left(-\frac{fx(a+b\log(c(d+ex)^n))}{g^2}+\frac{x^3(a+b\log(c(d+ex)^n))}{g}+\frac{f^2x(a+\cdots}{g^2\cdots}\right.$$

$$= -\frac{f\int x(a+b\log(c(d+ex)^n))\,dx}{g^2}+\frac{f^2\int\frac{x(a+b\log(c(d+ex)^n))}{f+gx^2}\,dx}{g^2}+\frac{\int x^3(a+\cdots}{\cdots}$$

$$= -\frac{fx^2(a+b\log(c(d+ex)^n))}{2g^2}+\frac{x^4(a+b\log(c(d+ex)^n))}{4g}+\frac{f^2\int\left(-\frac{\cdots}{2\sqrt{g}\cdots}\right.}{\cdots}$$

$$= -\frac{fx^2(a+b\log(c(d+ex)^n))}{2g^2}+\frac{x^4(a+b\log(c(d+ex)^n))}{4g}-\frac{f^2\int\frac{a+b\log(c(\cdots}{\sqrt{-f}\cdots}}{2g^{5/\cdots}}$$

$$= -\frac{bdfnx}{2eg^2}+\frac{bd^3nx}{4e^3g}+\frac{bfnx^2}{4g^2}-\frac{bd^2nx^2}{8e^2g}+\frac{bdnx^3}{12eg}-\frac{bnx^4}{16g}+\frac{bd^2fn\log(d+e\cdots}{2e^2g^2}$$

$$= -\frac{bdfnx}{2eg^2}+\frac{bd^3nx}{4e^3g}+\frac{bfnx^2}{4g^2}-\frac{bd^2nx^2}{8e^2g}+\frac{bdnx^3}{12eg}-\frac{bnx^4}{16g}+\frac{bd^2fn\log(d+e\cdots}{2e^2g^2}$$

$$= -\frac{bdfnx}{2eg^2}+\frac{bd^3nx}{4e^3g}+\frac{bfnx^2}{4g^2}-\frac{bd^2nx^2}{8e^2g}+\frac{bdnx^3}{12eg}-\frac{bnx^4}{16g}+\frac{bd^2fn\log(d+e\cdots}{2e^2g^2}$$

Mathematica [A]
time = 0.20, size = 331, normalized size = 0.83

$$\frac{\frac{12bfgn(ex(-2d+ex)+2d^2\log(d+ex))}{e^2}-\frac{bg^2n(ex(-12d^3+6d^2ex-4de^2x^2+3e^3x^3)+12d^4\log(d+ex))}{e^4}-24fgx^2(a+b\log(c(d+ex)^n))+12g^2x^4(a+b\log(c(d+ex)^n))+24f^2(a+b\log(c(d+ex)^n))\log\left(\frac{e(\sqrt{-f}-\sqrt{g}x)}{e\sqrt{-f}+d\sqrt{g}}\right)+24f^2(a+b\log(c(d+ex)^n))\log\left(\frac{e(\sqrt{-f}+\sqrt{g}x)}{e\sqrt{-f}-d\sqrt{g}}\right)+24bf^2n\operatorname{Li}_2\left(-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)+24bf^2n\operatorname{Li}_2\left(\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}+d\sqrt{g}}\right)}{48g^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^5*(a + b*Log[c*(d + e*x)^n]))/(f + g*x^2),x]
```

```
[Out] ((12*b*f*g*n*(e*x*(-2*d + e*x) + 2*d^2*Log[d + e*x]))/e^2 - (b*g^2*n*(e*x*(
-12*d^3 + 6*d^2*e*x - 4*d*e^2*x^2 + 3*e^3*x^3) + 12*d^4*Log[d + e*x]))/e^4
- 24*f*g*x^2*(a + b*Log[c*(d + e*x)^n]) + 12*g^2*x^4*(a + b*Log[c*(d + e*x)
^n]) + 24*f^2*(a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*
Sqrt[-f] + d*Sqrt[g])] + 24*f^2*(a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f]
 + Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g])] + 24*b*f^2*n*PolyLog[2, -((Sqrt[g]
```

```
*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))] + 24*b*f^2*n*PolyLog[2, (Sqrt[g]*(d
+ e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(48*g^3)
```

Maple [C] Result contains higher order function than in optimal. Order 9 vs. order 4.
time = 0.70, size = 905, normalized size = 2.28

method	result
risch	$-\frac{b\ln(c) f\,x^2}{2g^2}+\frac{b\ln(c)x^4}{4g}+\frac{ib\pi\,\mathrm{csgn}(ic)\mathrm{csgn}(i(ex+d)^n)\mathrm{csgn}(ic(ex+d)^n) f\,x^2}{4g^2}-\frac{bn\,f^2\ln(ex+d)\ln(g\,x^2+f)}{2g^3}+\frac{bn\,f^2\ln(ex+d)\,\mathrm{l}}{}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^5*(a+b*ln(c*(e*x+d)^n))/(g*x^2+f),x,method=_RETURNVERBOSE)
```

```
[Out] -1/2*b*ln(c)/g^2*f*x^2+1/4*b*ln(c)/g*x^4-1/2*b*n*f^2/g^3*ln(e*x+d)*ln(g*x^2
+f)+1/2*b*n*f^2/g^3*ln(e*x+d)*ln((e*(-f*g)^(1/2)-g*(e*x+d)+d*g)/(e*(-f*g)^(
1/2)+d*g))+1/2*b*n*f^2/g^3*ln(e*x+d)*ln((e*(-f*g)^(1/2)+g*(e*x+d)-d*g)/(e*(
-f*g)^(1/2)-d*g))-1/8*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n
)/g*x^4+1/4*b*ln((e*x+d)^n)/g*x^4-1/2*a/g^2*f*x^2+1/2*a*f^2/g^3*ln(g*x^2+f)
-1/2*b*ln((e*x+d)^n)/g^2*f*x^2+1/4*a/g*x^4+1/2*b*n*f^2/g^3*dilog((e*(-f*g)^
(1/2)-g*(e*x+d)+d*g)/(e*(-f*g)^(1/2)+d*g))+1/2*b*n*f^2/g^3*dilog((e*(-f*g)^
(1/2)+g*(e*x+d)-d*g)/(e*(-f*g)^(1/2)-d*g))+1/8*I*b*Pi*csgn(I*(e*x+d)^n)*csg
n(I*c*(e*x+d)^n)^2/g*x^4-1/4*I*b*Pi*csgn(I*c*(e*x+d)^n)^3*f^2/g^3*ln(g*x^2+
f)-1/4*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/g^2*f*x^2-1/4*I*b*Pi*csgn(I*(
e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/g^2*f*x^2-1/8*I*b*Pi*csgn(I*c*(e*x+d)^n)^3/
g*x^4+1/4*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*f^2/g^3*ln(g*x^2+f)+1/4*I*
b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2*f^2/g^3*ln(g*x^2+f)+1/2*b*ln((
e*x+d)^n)*f^2/g^3*ln(g*x^2+f)+1/4*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I
*c*(e*x+d)^n)/g^2*f*x^2+1/2*b*ln(c)*f^2/g^3*ln(g*x^2+f)+1/12*b*d*n*x^3/e/g-
1/4*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)*f^2/g^3*ln(g*x^2
+f)+1/4*I*b*Pi*csgn(I*c*(e*x+d)^n)^3/g^2*f*x^2+1/8*I*b*Pi*csgn(I*c)*csgn(I*
c*(e*x+d)^n)^2/g*x^4-1/2*b*d*f*n*x/e/g^2+1/2*b*d^2*f*n*ln(e*x+d)/e^2/g^2-1/
4*b*d^4*n*ln(e*x+d)/e^4/g+1/4*b*f*n*x^2/g^2+1/4*b*d^3*n*x/e^3/g-1/8*b*d^2*n
*x^2/e^2/g-1/16*b*n*x^4/g
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(a+b*log(c*(e*x+d)^n))/(g*x^2+f),x, algorithm="maxima")
```

```
[Out] 1/4*a*(2*f^2*log(g*x^2 + f)/g^3 + (g*x^4 - 2*f*x^2)/g^2) + b*integrate((x^5
*log((x*e + d)^n) + x^5*log(c))/(g*x^2 + f), x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(a+b*log(c*(e*x+d)^n))/(g*x^2+f),x, algorithm="fricas")
[Out] integral((b*x^5*log((x*e + d)^n*c) + a*x^5)/(g*x^2 + f), x)
```

Sympy [F(-1)] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**5*(a+b*ln(c*(e*x+d)**n))/(g*x**2+f),x)
[Out] Timed out
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(a+b*log(c*(e*x+d)^n))/(g*x^2+f),x, algorithm="giac")
[Out] integrate((b*log((x*e + d)^n*c) + a)*x^5/(g*x^2 + f), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x^5\,\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)}{g\,x^2+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^5*(a + b*log(c*(d + e*x)^n)))/(f + g*x^2),x)
[Out] int((x^5*(a + b*log(c*(d + e*x)^n)))/(f + g*x^2), x)
```

3.257 $\int \frac{x^3(a+b\log(c(d+ex)^n))}{f+gx^2}\,dx$

Optimal. Leaf size=278

$$\frac{bdnx}{2eg}-\frac{bnx^2}{4g}-\frac{bd^2n\log(d+ex)}{2e^2g}+\frac{x^2(a+b\log(c(d+ex)^n))}{2g}-\frac{f(a+b\log(c(d+ex)^n))\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}\,x\right)}{e\sqrt{-f}+d\sqrt{g}}\right)}{2g^2}$$

```
[Out] 1/2*b*d*n*x/e/g-1/4*b*n*x^2/g-1/2*b*d^2*n*ln(e*x+d)/e^2/g+1/2*x^2*(a+b*ln(c
*(e*x+d)^n))/g-1/2*f*(a+b*ln(c*(e*x+d)^n))*ln(e*((-f)^(1/2)-x*g^(1/2))/(e*(
-f)^(1/2)+d*g^(1/2)))/g^2-1/2*f*(a+b*ln(c*(e*x+d)^n))*ln(e*((-f)^(1/2)+x*g^
(1/2))/(e*(-f)^(1/2)-d*g^(1/2)))/g^2-1/2*b*f*n*polylog(2,-(e*x+d)*g^(1/2)/(
e*(-f)^(1/2)-d*g^(1/2)))/g^2-1/2*b*f*n*polylog(2,(e*x+d)*g^(1/2)/(e*(-f)^(1
/2)+d*g^(1/2)))/g^2
```

Rubi [A]

time = 0.24, antiderivative size = 278, normalized size of antiderivative = 1.00, number of steps used = 13, number of rules used = 8, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.296$, Rules used = {272, 45, 2463, 2442, 266, 2441, 2440, 2438}

$$-\frac{bfn\text{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)}{2g^2}-\frac{bfn\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+e\sqrt{-f}}\right)}{2g^2}-\frac{f\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}x\right)}{d\sqrt{g}+e\sqrt{-f}}\right)(a+b\log(c(d+ex)^n))}{2g^2}-\frac{f\log\left(\frac{e\left(\sqrt{-f}+\sqrt{g}x\right)}{e\sqrt{-f}-d\sqrt{g}}\right)(a+b\log(c(d+ex)^n))}{2g^2}+\frac{x^2(a+b\log(c(d+ex)^n))}{2g}-\frac{bd^2n\log(d+ex)}{2e^2g}+\frac{bdnx}{2eg}-\frac{bnx^2}{4g}$$

Antiderivative was successfully verified.

```
[In] Int[(x^3*(a + b*Log[c*(d + e*x)^n]))/(f + g*x^2),x]
```

```
[Out] (b*d*n*x)/(2*e*g) - (b*n*x^2)/(4*g) - (b*d^2*n*Log[d + e*x])/(2*e^2*g) + (x
^2*(a + b*Log[c*(d + e*x)^n]))/(2*g) - (f*(a + b*Log[c*(d + e*x)^n])*Log[(e
*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(2*g^2) - (f*(a + b*Log
[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g])])/
(2*g^2) - (b*f*n*PolyLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))
])/(2*g^2) - (b*f*n*PolyLog[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])
])/(2*g^2)
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 266

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 272

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + c*e*(x/g)])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2441

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d + e*x
)^n])/g), x] - Dist[b*e*(n/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2442

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[(f + g*x)^(q + 1)*((a + b*Log[c*(d + e*x)^n])/(
g*(q + 1))), x] - Dist[b*e*(n/(g*(q + 1))), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 2463

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rubi steps

$$\int \frac{x^3(a+b\log(c(d+ex)^n))}{f+gx^2}\,dx = \int \left(\frac{x(a+b\log(c(d+ex)^n))}{g} - \frac{fx(a+b\log(c(d+ex)^n))}{g(f+gx^2)}\right) dx$$

$$= \frac{\int x(a+b\log(c(d+ex)^n))\,dx}{g} - \frac{f\int \frac{x(a+b\log(c(d+ex)^n))}{f+gx^2}\,dx}{g}$$

$$= \frac{x^2(a+b\log(c(d+ex)^n))}{2g} - \frac{f\int \left(-\frac{a+b\log(c(d+ex)^n)}{2\sqrt{g}\left(\sqrt{-f}-\sqrt{g}\,x\right)} + \frac{a+b\log(c(\ldots}{2\sqrt{g}\left(\sqrt{-\ldots}\right.}\right.}{g}$$

$$= \frac{x^2(a+b\log(c(d+ex)^n))}{2g} + \frac{f\int \frac{a+b\log(c(d+ex)^n)}{\sqrt{-f}-\sqrt{g}\,x}\,dx}{2g^{3/2}} - \frac{f\int \frac{a+b\log(c(d+ex)^n)}{\sqrt{-f}+\sqrt{g}\,x}\ldots}{2g^{3/2}}$$

$$= \frac{bdnx}{2eg} - \frac{bnx^2}{4g} - \frac{bd^2n\log(d+ex)}{2e^2g} + \frac{x^2(a+b\log(c(d+ex)^n))}{2g} - \frac{f(a+\ldots}{\ldots}$$

$$= \frac{bdnx}{2eg} - \frac{bnx^2}{4g} - \frac{bd^2n\log(d+ex)}{2e^2g} + \frac{x^2(a+b\log(c(d+ex)^n))}{2g} - \frac{f(a+\ldots}{\ldots}$$

$$= \frac{bdnx}{2eg} - \frac{bnx^2}{4g} - \frac{bd^2n\log(d+ex)}{2e^2g} + \frac{x^2(a+b\log(c(d+ex)^n))}{2g} - \frac{f(a+\ldots}{\ldots}$$

Mathematica [A]
time = 0.11, size = 243, normalized size = 0.87

$$-\frac{\frac{bgn(ex(-2d+ex)+2d^2\log(d+ex))}{e^2} - 2gx^2(a+b\log(c(d+ex)^n)) + 2f(a+b\log(c(d+ex)^n))\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}\,x\right)}{e\sqrt{-f}+d\sqrt{g}}\right) + 2f(a+b\log(c(d+ex)^n))\log\left(\frac{e\left(\sqrt{-f}+\sqrt{g}\,x\right)}{e\sqrt{-f}-d\sqrt{g}}\right) + 2bfn\mathrm{Li}_2\left(-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right) + 2bfn\mathrm{Li}_2\left(\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}+d\sqrt{g}}\right)}{4g^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^3*(a + b*Log[c*(d + e*x)^n]))/(f + g*x^2),x]
```

```
[Out] -1/4*((b*g*n*(e*x*(-2*d + e*x) + 2*d^2*Log[d + e*x]))/e^2 - 2*g*x^2*(a + b*
Log[c*(d + e*x)^n]) + 2*f*(a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] - Sqr
t[g]*x))/(e*Sqrt[-f] + d*Sqrt[g])] + 2*f*(a + b*Log[c*(d + e*x)^n])*Log[(e*
(Sqrt[-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g])] + 2*b*f*n*PolyLog[2, -((S
qrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))] + 2*b*f*n*PolyLog[2, (Sqrt[g]*
(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/g^2
```

Maple [C] Result contains higher order function than in optimal. Order 9 vs. order 4.
time = 0.39, size = 631, normalized size = 2.27

method	result
risch	$\frac{b\ln((ex+d)^n)x^2}{2g} - \frac{b\ln((ex+d)^n)f\ln(g\,x^2+f)}{2g^2} - \frac{bn\,x^2}{4g} + \frac{bdnx}{2eg} - \frac{b\,d^2n\ln(ex+d)}{2e^2g} + \frac{bnf\ln(ex+d)\ln(g\,x^2+f)}{2g^2} - \frac{bnf\ln(ex+}{}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(a+b*ln(c*(e*x+d)^n))/(g*x^2+f),x,method=_RETURNVERBOSE)
```

```
[Out] 1/2*b*ln((e*x+d)^n)/g*x^2-1/2*b*ln((e*x+d)^n)*f/g^2*ln(g*x^2+f)-1/4*b*n*x^2
/g+1/2*b*d*n*x/e/g-1/2*b*d^2*n*ln(e*x+d)/e^2/g+1/2*b*n*f/g^2*ln(e*x+d)*ln(g
*x^2+f)-1/2*b*n*f/g^2*ln(e*x+d)*ln((e*(-f*g)^(1/2)-g*(e*x+d)+d*g)/(e*(-f*g)
^(1/2)+d*g))-1/2*b*n*f/g^2*ln(e*x+d)*ln((e*(-f*g)^(1/2)+g*(e*x+d)-d*g)/(e*(
-f*g)^(1/2)-d*g))-1/2*b*n*f/g^2*dilog((e*(-f*g)^(1/2)-g*(e*x+d)+d*g)/(e*(-f
*g)^(1/2)+d*g))-1/2*b*n*f/g^2*dilog((e*(-f*g)^(1/2)+g*(e*x+d)-d*g)/(e*(-f*g
)^(1/2)-d*g))+1/4*I*b*Pi*csgn(I*c*(e*x+d)^n)^3*f/g^2*ln(g*x^2+f)-1/4*I*b*Pi
*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*f/g^2*ln(g*x^2+f)+1/4*I*b*Pi*csgn(I*c)*csg
n(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)*f/g^2*ln(g*x^2+f)+1/4*I*b*Pi*csgn(I*c)*c
sgn(I*c*(e*x+d)^n)^2/g*x^2-1/4*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*
(e*x+d)^n)/g*x^2-1/4*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2*f/g^2*l
n(g*x^2+f)+1/4*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/g*x^2-1/4*I*b
*Pi*csgn(I*c*(e*x+d)^n)^3/g*x^2+1/2*b*ln(c)/g*x^2-1/2*b*ln(c)*f/g^2*ln(g*x^
2+f)+1/2*a/g*x^2-1/2*a*f/g^2*ln(g*x^2+f)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(a+b*log(c*(e*x+d)^n))/(g*x^2+f),x, algorithm="maxima")
```

```
[Out] 1/2*a*(x^2/g - f*log(g*x^2 + f)/g^2) + b*integrate((x^3*log((x*e + d)^n) +
x^3*log(c))/(g*x^2 + f), x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(a+b*log(c*(e*x+d)^n))/(g*x^2+f),x, algorithm="fricas")
```

```
[Out] integral((b*x^3*log((x*e + d)^n*c) + a*x^3)/(g*x^2 + f), x)
```

Sympy [**F(-1)**] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(a+b*ln(c*(e*x+d)**n))/(g*x**2+f),x)
[Out] Timed out
```

Giac [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(a+b*log(c*(e*x+d)^n))/(g*x^2+f),x, algorithm="giac")
[Out] integrate((b*log((x*e + d)^n*c) + a)*x^3/(g*x^2 + f), x)
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x^3\,\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)}{g\,x^2+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^3*(a + b*log(c*(d + e*x)^n)))/(f + g*x^2),x)
[Out] int((x^3*(a + b*log(c*(d + e*x)^n)))/(f + g*x^2), x)
```

3.258 $\int \frac{x(a+b\log(c(d+ex)^n))}{f+gx^2}\,dx$

Optimal. Leaf size=203

$$\frac{(a+b\log(c(d+ex)^n))\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}\,x\right)}{e\sqrt{-f}+d\sqrt{g}}\right)}{2g}+\frac{(a+b\log(c(d+ex)^n))\log\left(\frac{e\left(\sqrt{-f}+\sqrt{g}\,x\right)}{e\sqrt{-f}-d\sqrt{g}}\right)}{2g}+\frac{bn\mathrm{Li}_2\left(-\right.}{}$$

```
[Out] 1/2*(a+b*ln(c*(e*x+d)^n))*ln(e*((-f)^(1/2)-x*g^(1/2))/(e*(-f)^(1/2)+d*g^(1/
2)))/g+1/2*(a+b*ln(c*(e*x+d)^n))*ln(e*((-f)^(1/2)+x*g^(1/2))/(e*(-f)^(1/2)-
d*g^(1/2)))/g+1/2*b*n*polylog(2,-(e*x+d)*g^(1/2)/(e*(-f)^(1/2)-d*g^(1/2)))/
g+1/2*b*n*polylog(2,(e*x+d)*g^(1/2)/(e*(-f)^(1/2)+d*g^(1/2)))/g
```

Rubi [A]
time = 0.14, antiderivative size = 203, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 5, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.200$, Rules used = {266, 2463, 2441, 2440, 2438}

$$\frac{bn\,\mathrm{PolyLog}\left(2,-\frac{\sqrt{g}\,(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)}{2g}+\frac{bn\,\mathrm{PolyLog}\left(2,\frac{\sqrt{g}\,(d+ex)}{d\sqrt{g}+e\sqrt{-f}}\right)}{2g}+\frac{\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}\,x\right)}{d\sqrt{g}+e\sqrt{-f}}\right)(a+b\log(c(d+ex)^n))}{2g}+\frac{\log\left(\frac{e\left(\sqrt{-f}+\sqrt{g}\,x\right)}{e\sqrt{-f}-d\sqrt{g}}\right)(a+b\log(c(d+ex)^n))}{2g}$$

Antiderivative was successfully verified.

```
[In] Int[(x*(a + b*Log[c*(d + e*x)^n]))/(f + g*x^2),x]
```

```
[Out] ((a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[-f] + d*
Sqrt[g])])/(2*g) + ((a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] + Sqrt[g]*x
))/(e*Sqrt[-f] - d*Sqrt[g])])/(2*g) + (b*n*PolyLog[2, -((Sqrt[g]*(d + e*x))
/(e*Sqrt[-f] - d*Sqrt[g]))])/(2*g) + (b*n*PolyLog[2, (Sqrt[g]*(d + e*x))/(e
*Sqrt[-f] + d*Sqrt[g])])/(2*g)
```

Rule 266

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + c*e*(x/g)])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
```

```
(e*f - d*g), 0]
```

Rule 2441

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d + e*x
)^n])/g), x] - Dist[b*e*(n/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2463

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rubi steps

$$\int \frac{x(a+b\log(c(d+ex)^n))}{f+gx^2}\,dx = \int \left(-\frac{a+b\log(c(d+ex)^n)}{2\sqrt{g}\left(\sqrt{-f}-\sqrt{g}\,x\right)}+\frac{a+b\log(c(d+ex)^n)}{2\sqrt{g}\left(\sqrt{-f}+\sqrt{g}\,x\right)}\right)dx$$

$$= -\frac{\int \frac{a+b\log(c(d+ex)^n)}{\sqrt{-f}-\sqrt{g}\,x}\,dx}{2\sqrt{g}}+\frac{\int \frac{a+b\log(c(d+ex)^n)}{\sqrt{-f}+\sqrt{g}\,x}\,dx}{2\sqrt{g}}$$

$$= \frac{(a+b\log(c(d+ex)^n))\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}\,x\right)}{e\sqrt{-f}+d\sqrt{g}}\right)}{2g}+\frac{(a+b\log(c(d+ex)^n)}{}$$

$$= \frac{(a+b\log(c(d+ex)^n))\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}\,x\right)}{e\sqrt{-f}+d\sqrt{g}}\right)}{2g}+\frac{(a+b\log(c(d+ex)^n)}{}$$

$$= \frac{(a+b\log(c(d+ex)^n))\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}\,x\right)}{e\sqrt{-f}+d\sqrt{g}}\right)}{2g}+\frac{(a+b\log(c(d+ex)^n)}{}$$

Mathematica [A]

time = 0.03, size = 172, normalized size = 0.85

$$\frac{(a+b\log(c(d+ex)^n))\left(\log\left(\frac{e(\sqrt{-f}-\sqrt{g}\,x)}{e\sqrt{-f}+d\sqrt{g}}\right)+\log\left(\frac{e(\sqrt{-f}+\sqrt{g}\,x)}{e\sqrt{-f}-d\sqrt{g}}\right)\right)+bn\text{Li}_2\left(-\frac{\sqrt{g}\,(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)+bn\text{Li}_2\left(\frac{\sqrt{g}\,(d+ex)}{e\sqrt{-f}+d\sqrt{g}}\right)}{2g}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x*(a + b*Log[c*(d + e*x)^n]))/(f + g*x^2),x]
```

```
[Out] ((a + b*Log[c*(d + e*x)^n])*(Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[-f] + d
*Sqrt[g])] + Log[(e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g])]) + b*
n*PolyLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))] + b*n*PolyLog
[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(2*g)
```

Maple [C] Result contains higher order function than in optimal. Order 9 vs. order 4.
time = 0.34, size = 411, normalized size = 2.02

method	result
risch	$\frac{b\ln(g\,x^2+f)\ln((ex+d)^n)}{2g}-\frac{bn\ln(ex+d)\ln(g\,x^2+f)}{2g}+\frac{bn\ln(ex+d)\ln\left(\frac{e\sqrt{-fg}-g(ex+d)+dg}{e\sqrt{-fg}+dg}\right)}{2g}+\frac{bn\ln(ex+d)\ln\left(\frac{e\sqrt{-fg}}{e\sqrt{-}}\right.}{2g}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(a+b*ln(c*(e*x+d)^n))/(g*x^2+f),x,method=_RETURNVERBOSE)
```

```
[Out] 1/2*b/g*ln(g*x^2+f)*ln((e*x+d)^n)-1/2*b/g*n*ln(e*x+d)*ln(g*x^2+f)+1/2*b/g*n
*ln(e*x+d)*ln((e*(-f*g)^(1/2)-g*(e*x+d)+d*g)/(e*(-f*g)^(1/2)+d*g))+1/2*b/g*
n*ln(e*x+d)*ln((e*(-f*g)^(1/2)+g*(e*x+d)-d*g)/(e*(-f*g)^(1/2)-d*g))+1/2*b/g
*n*dilog((e*(-f*g)^(1/2)-g*(e*x+d)+d*g)/(e*(-f*g)^(1/2)+d*g))+1/2*b/g*n*dil
og((e*(-f*g)^(1/2)+g*(e*x+d)-d*g)/(e*(-f*g)^(1/2)-d*g))-1/4*I/g*ln(g*x^2+f)
*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+1/4*I/g*ln(g*x^2+f)*b
*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+1/4*I/g*ln(g*x^2+f)*b*Pi*csgn(I*(e*x+d)
^n)*csgn(I*c*(e*x+d)^n)^2-1/4*I/g*ln(g*x^2+f)*b*Pi*csgn(I*c*(e*x+d)^n)^3+1/
2/g*ln(g*x^2+f)*b*ln(c)+1/2*a/g*ln(g*x^2+f)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*log(c*(e*x+d)^n))/(g*x^2+f),x, algorithm="maxima")
```

```
[Out] b*integrate((x*log((x*e + d)^n) + x*log(c))/(g*x^2 + f), x) + 1/2*a*log(g*x
^2 + f)/g
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*log(c*(e*x+d)^n))/(g*x^2+f),x, algorithm="fricas")
[Out] integral((b*x*log((x*e + d)^n*c) + a*x)/(g*x^2 + f), x)
```

Sympy [F(-1)] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*ln(c*(e*x+d)**n))/(g*x**2+f),x)
[Out] Timed out
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*log(c*(e*x+d)^n))/(g*x^2+f),x, algorithm="giac")
[Out] integrate((b*log((x*e + d)^n*c) + a)*x/(g*x^2 + f), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x\,\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)}{g\,x^2+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x*(a + b*log(c*(d + e*x)^n)))/(f + g*x^2),x)
[Out] int((x*(a + b*log(c*(d + e*x)^n)))/(f + g*x^2), x)
```

3.259 $\int \frac{a+b\log(c(d+ex)^n)}{x(f+gx^2)}\,dx$

Optimal. Leaf size=245

$$\frac{\log\left(-\frac{ex}{d}\right)(a+b\log(c(d+ex)^n))}{f}-\frac{(a+b\log(c(d+ex)^n))\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}\,x\right)}{e\sqrt{-f}+d\sqrt{g}}\right)}{2f}-\frac{(a+b\log(c(d+ex)^n)}{}$$

```
[Out] ln(-e*x/d)*(a+b*ln(c*(e*x+d)^n))/f-1/2*(a+b*ln(c*(e*x+d)^n))*ln(e*((-f)^(1/
2)-x*g^(1/2))/(e*(-f)^(1/2)+d*g^(1/2)))/f-1/2*(a+b*ln(c*(e*x+d)^n))*ln(e*((
-f)^(1/2)+x*g^(1/2))/(e*(-f)^(1/2)-d*g^(1/2)))/f+b*n*polylog(2,1+e*x/d)/f-1
/2*b*n*polylog(2,-(e*x+d)*g^(1/2)/(e*(-f)^(1/2)-d*g^(1/2)))/f-1/2*b*n*polyl
og(2,(e*x+d)*g^(1/2)/(e*(-f)^(1/2)+d*g^(1/2)))/f
```

Rubi [A]
time = 0.23, antiderivative size = 245, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 10, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.370$, Rules used = {272, 36, 29, 31, 2463, 2441, 2352, 266, 2440, 2438}

$$-\frac{bn\text{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)}{2f}-\frac{bn\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+e\sqrt{-f}}\right)}{2f}+\frac{bn\text{PolyLog}\left(2,\frac{ex}{d}+1\right)}{f}-\frac{\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}x\right)}{d\sqrt{g}+e\sqrt{-f}}\right)(a+b\log(c(d+ex)^n))}{2f}-\frac{\log\left(\frac{e\left(\sqrt{-f}+\sqrt{g}x\right)}{e\sqrt{-f}-d\sqrt{g}}\right)(a+b\log(c(d+ex)^n))}{2f}+\frac{\log\left(-\frac{ex}{d}\right)(a+b\log(c(d+ex)^n))}{f}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])/(x*(f + g*x^2)),x]
```

```
[Out] (Log[-((e*x)/d)]*(a + b*Log[c*(d + e*x)^n]))/f - ((a + b*Log[c*(d + e*x)^n]
)*Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(2*f) - ((a + b
*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g]
)])/(2*f) - (b*n*PolyLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))
])/(2*f) - (b*n*PolyLog[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(
2*f) + (b*n*PolyLog[2, 1 + (e*x)/d])/f
```

Rule 29

```
Int[(x_)^(-1), x_Symbol] :> Simp[Log[x], x]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 36

```
Int[1/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))), x_Symbol] :> Dist[b/(b*c
 - a*d), Int[1/(a + b*x), x], x] - Dist[d/(b*c - a*d), Int[1/(c + d*x), x],
```

```
x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0]
```

Rule 266

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 272

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 2352

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> Simp[(-e^(-1))*PolyLo
g[2, 1 - c*x], x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + c*e*(x/g)])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2441

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d + e*x
)^n])/g), x] - Dist[b*e*(n/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2463

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rubi steps

$$\int \frac{a+b\log\left(c(d+ex)^n\right)}{x\left(f+gx^2\right)}\,dx = \int \left(\frac{a+b\log\left(c(d+ex)^n\right)}{fx} - \frac{gx\left(a+b\log\left(c(d+ex)^n\right)\right)}{f\left(f+gx^2\right)}\right)dx$$

$$= \frac{\int \frac{a+b\log(c(d+ex)^n)}{x}\,dx}{f} - \frac{g\int \frac{x(a+b\log(c(d+ex)^n))}{f+gx^2}\,dx}{f}$$

$$= \frac{\log\left(-\frac{ex}{d}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{f} - \frac{g\int\left(-\frac{a+b\log(c(d+ex)^n)}{2\sqrt{g}\left(\sqrt{-f}-\sqrt{g}\,x\right)} + \frac{a+b\log(\cdots}{2\sqrt{g}\left(\sqrt{\cdots}\right.}\right.}{f}$$

$$= \frac{\log\left(-\frac{ex}{d}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{f} + \frac{bn\operatorname{Li}_2\left(1+\frac{ex}{d}\right)}{f} + \frac{\sqrt{g}\int \frac{a+b\log(c(d+ex)^n)}{\sqrt{-f}-\sqrt{g}\,x}\,dx \cdots}{2f}$$

$$= \frac{\log\left(-\frac{ex}{d}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{f} - \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)\log\left(\frac{e\left(\sqrt{-f}-\cdots\right.}{e\sqrt{-f}+d\cdots}\right.}{2f}$$

$$= \frac{\log\left(-\frac{ex}{d}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{f} - \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)\log\left(\frac{e\left(\sqrt{-f}-\cdots\right.}{e\sqrt{-f}+d\cdots}\right.}{2f}$$

$$= \frac{\log\left(-\frac{ex}{d}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{f} - \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)\log\left(\frac{e\left(\sqrt{-f}-\cdots\right.}{e\sqrt{-f}+d\cdots}\right.}{2f}$$

Mathematica [A]
time = 0.06, size = 224, normalized size = 0.91

$$-\frac{-2\log\left(-\frac{ex}{d}\right)\left(a+b\log\left(c(d+ex)^n\right)\right) + \left(a+b\log\left(c(d+ex)^n\right)\right)\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}\,x\right)}{e\sqrt{-f}+d\sqrt{g}}\right) + \left(a+b\log\left(c(d+ex)^n\right)\right)\log\left(\frac{e\left(\sqrt{-f}+\sqrt{g}\,x\right)}{e\sqrt{-f}-d\sqrt{g}}\right) + bn\operatorname{Li}_2\left(-\frac{\sqrt{g}\,(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right) + bn\operatorname{Li}_2\left(\frac{\sqrt{g}\,(d+ex)}{e\sqrt{-f}+d\sqrt{g}}\right) - 2bn\operatorname{Li}_2\left(1+\frac{ex}{d}\right)}{2f}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])/(x*(f + g*x^2)),x]
```

```
[Out] -1/2*(-2*Log[-((e*x)/d)]*(a + b*Log[c*(d + e*x)^n]) + (a + b*Log[c*(d + e*x
)^n])*Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[-f] + d*Sqrt[g])] + (a + b*Log
[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g])] +
 b*n*PolyLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))] + b*n*Poly
Log[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])] - 2*b*n*PolyLog[2, 1 +
 (e*x)/d])/f
```

Maple [C] Result contains higher order function than in optimal. Order 9 vs. order 4.
time = 0.33, size = 604, normalized size = 2.47

method	result
risch	$-\frac{b\ln\left((ex+d)^{n}\right)\ln\left(g\,x^{2}+f\right)}{2f}+\frac{b\ln\left((ex+d)^{n}\right)\ln\left(x\right)}{f}-\frac{bn\,\mathrm{dilog}\left(\frac{ex+d}{d}\right)}{f}-\frac{bn\ln\left(x\right)\ln\left(\frac{ex+d}{d}\right)}{f}+\frac{bn\ln\left(ex+d\right)\ln\left(g\,x^{2}+f\right)}{2f}-$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))/x/(g*x^2+f),x,method=_RETURNVERBOSE)
```

```
[Out] -1/2*b*ln((e*x+d)^n)/f*ln(g*x^2+f)+b*ln((e*x+d)^n)/f*ln(x)-b*n/f*dilog((e*x
+d)/d)-b*n/f*ln(x)*ln((e*x+d)/d)+1/2*b*n/f*ln(e*x+d)*ln(g*x^2+f)-1/2*b*n/f*
ln(e*x+d)*ln((e*(-f*g)^(1/2)-g*(e*x+d)+d*g)/(e*(-f*g)^(1/2)+d*g))-1/2*b*n/f
*ln(e*x+d)*ln((e*(-f*g)^(1/2)+g*(e*x+d)-d*g)/(e*(-f*g)^(1/2)-d*g))-1/2*b*n/
f*dilog((e*(-f*g)^(1/2)-g*(e*x+d)+d*g)/(e*(-f*g)^(1/2)+d*g))-1/2*b*n/f*dilo
g((e*(-f*g)^(1/2)+g*(e*x+d)-d*g)/(e*(-f*g)^(1/2)-d*g))-1/2*I*b*Pi*csgn(I*c*
(e*x+d)^n)^3/f*ln(x)+1/2*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/f*ln(x)+1/2
*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/f*ln(x)+1/4*I*b*Pi*csgn(I*c
*(e*x+d)^n)^3/f*ln(g*x^2+f)-1/4*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/f*ln
(g*x^2+f)-1/4*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/f*ln(g*x^2+f)+
1/4*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/f*ln(g*x^2+f)-1/
2*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/f*ln(x)-1/2*b*ln(c
)/f*ln(g*x^2+f)+b*ln(c)/f*ln(x)-1/2*a/f*ln(g*x^2+f)+a/f*ln(x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/x/(g*x^2+f),x, algorithm="maxima")
```

```
[Out] -1/2*a*(log(g*x^2 + f)/f - 2*log(x)/f) + b*integrate((log((x*e + d)^n) + lo
g(c))/(g*x^3 + f*x), x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/x/(g*x^2+f),x, algorithm="fricas")
```

```
[Out] integral((b*log((x*e + d)^n*c) + a)/(g*x^3 + f*x), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{a + b\log\left(c(d+ex)^n\right)}{x\left(f + gx^2\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))/x/(g*x**2+f),x)
[Out] Integral((a + b*log(c*(d + e*x)**n))/(x*(f + g*x**2)), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/x/(g*x^2+f),x, algorithm="giac")
[Out] integrate((b*log((x*e + d)^n*c) + a)/((g*x^2 + f)*x), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{a + b\,\ln\left(c\,{\left(d + e\,x\right)}^n\right)}{x\,\left(g\,x^2 + f\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))/(x*(f + g*x^2)),x)
[Out] int((a + b*log(c*(d + e*x)^n))/(x*(f + g*x^2)), x)
```

3.260 $\int \frac{a+b\log(c(d+ex)^n)}{x^3(f+gx^2)}\,dx$

Optimal. Leaf size=331

$$-\frac{ben}{2dfx}-\frac{be^2n\log(x)}{2d^2f}+\frac{be^2n\log(d+ex)}{2d^2f}-\frac{a+b\log\left(c(d+ex)^n\right)}{2fx^2}-\frac{g\log\left(-\frac{ex}{d}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{f^2}+\frac{g(a+$$

```
[Out] -1/2*b*e*n/d/f/x-1/2*b*e^2*n*ln(x)/d^2/f+1/2*b*e^2*n*ln(e*x+d)/d^2/f+1/2*(-
a-b*ln(c*(e*x+d)^n))/f/x^2-g*ln(-e*x/d)*(a+b*ln(c*(e*x+d)^n))/f^2+1/2*g*(a+
b*ln(c*(e*x+d)^n))*ln(e*((-f)^(1/2)-x*g^(1/2))/(e*(-f)^(1/2)+d*g^(1/2)))/f^
2+1/2*g*(a+b*ln(c*(e*x+d)^n))*ln(e*((-f)^(1/2)+x*g^(1/2))/(e*(-f)^(1/2)-d*g
^(1/2)))/f^2-b*g*n*polylog(2,1+e*x/d)/f^2+1/2*b*g*n*polylog(2,-(e*x+d)*g^(1
/2)/(e*(-f)^(1/2)-d*g^(1/2)))/f^2+1/2*b*g*n*polylog(2,(e*x+d)*g^(1/2)/(e*(-
f)^(1/2)+d*g^(1/2)))/f^2
```

Rubi [A]

time = 0.28, antiderivative size = 331, normalized size of antiderivative = 1.00, number of steps used = 15, number of rules used = 9, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.333$, Rules used = {272, 46, 2463, 2442, 2441, 2352, 266, 2440, 2438}

$$\frac{bgn\text{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)}{2f^2}+\frac{bgn\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+e\sqrt{-f}}\right)}{2f^2}-\frac{bgn\text{PolyLog}\left(2,\frac{ex}{d}+1\right)}{f^2}-\frac{g\log\left(-\frac{ex}{d}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{f^2}+\frac{g\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}x\right)}{d\sqrt{g}+e\sqrt{-f}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{2f^2}+\frac{g\log\left(\frac{e\left(\sqrt{-f}+\sqrt{g}x\right)}{e\sqrt{-f}-d\sqrt{g}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{2f^2}-\frac{a+b\log\left(c(d+ex)^n\right)}{2fx^2}-\frac{be^2n\log(x)}{2d^2f}+\frac{be^2n\log(d+ex)}{2d^2f}-\frac{ben}{2dfx}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])/(x^3*(f + g*x^2)),x]
```

```
[Out] -1/2*(b*e*n)/(d*f*x) - (b*e^2*n*Log[x])/(2*d^2*f) + (b*e^2*n*Log[d + e*x])/
(2*d^2*f) - (a + b*Log[c*(d + e*x)^n])/(2*f*x^2) - (g*Log[-((e*x)/d)]*(a +
b*Log[c*(d + e*x)^n]))/f^2 + (g*(a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f]
 - Sqrt[g]*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(2*f^2) + (g*(a + b*Log[c*(d + e*
x)^n])*Log[(e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g])])/(2*f^2) +
(b*g*n*PolyLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/(2*f^2)
 + (b*g*n*PolyLog[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(2*f^2)
 - (b*g*n*PolyLog[2, 1 + (e*x)/d])/f^2
```

Rule 46

```
Int[((a_) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[E
xpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m +
 n + 2, 0])
```

Rule 266

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 272

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 2352

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> Simp[(-e^(-1))*PolyLo
g[2, 1 - c*x], x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + c*e*(x/g)])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2441

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d + e*x
)^n])/g), x] - Dist[b*e*(n/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2442

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[(f + g*x)^(q + 1)*((a + b*Log[c*(d + e*x)^n])/(
g*(q + 1))), x] - Dist[b*e*(n/(g*(q + 1))), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 2463

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
```

```
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rubi steps

$$\int \frac{a+b\log\left(c(d+ex)^n\right)}{x^3\left(f+gx^2\right)}\,dx = \int \left(\frac{a+b\log\left(c(d+ex)^n\right)}{fx^3} - \frac{g(a+b\log\left(c(d+ex)^n\right))}{f^2x} + \frac{g^2x(a+b\log\left(c(d+\right.}{f^2\left(f+gx^2\right.}\right.$$

$$= \frac{\int \frac{a+b\log(c(d+ex)^n)}{x^3}\,dx}{f} - \frac{g\int \frac{a+b\log(c(d+ex)^n)}{x}\,dx}{f^2} + \frac{g^2\int \frac{x(a+b\log(c(d+ex)^n))}{f+gx^2}\,dx}{f^2}$$

$$= -\frac{a+b\log\left(c(d+ex)^n\right)}{2fx^2} - \frac{g\log\left(-\frac{ex}{d}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{f^2} + \frac{g^2\int\left(-\frac{}{2\sqrt{}}\right.}{}$$

$$= -\frac{a+b\log\left(c(d+ex)^n\right)}{2fx^2} - \frac{g\log\left(-\frac{ex}{d}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{f^2} - \frac{bgn\mathrm{Li}_2(1+}{f^2}$$

$$= -\frac{ben}{2dfx} - \frac{be^2n\log(x)}{2d^2f} + \frac{be^2n\log(d+ex)}{2d^2f} - \frac{a+b\log\left(c(d+ex)^n\right)}{2fx^2} - \frac{g\log\left(-\right.}{}$$

$$= -\frac{ben}{2dfx} - \frac{be^2n\log(x)}{2d^2f} + \frac{be^2n\log(d+ex)}{2d^2f} - \frac{a+b\log\left(c(d+ex)^n\right)}{2fx^2} - \frac{g\log\left(-\right.}{}$$

$$= -\frac{ben}{2dfx} - \frac{be^2n\log(x)}{2d^2f} + \frac{be^2n\log(d+ex)}{2d^2f} - \frac{a+b\log\left(c(d+ex)^n\right)}{2fx^2} - \frac{g\log\left(-\right.}{}$$

Mathematica [A]
time = 0.12, size = 279, normalized size = 0.84

$$\frac{-\frac{befn(d+ex\log(x)-ex\log(d+ex))}{d^2x} - \frac{f(a+b\log(c(d+ex)^n))}{x^2} - 2g\log\left(-\frac{ex}{d}\right)\left(a+b\log\left(c(d+ex)^n\right)\right) + g(a+b\log\left(c(d+ex)^n\right))\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}\,x\right)}{e\sqrt{-f}+d\sqrt{g}}\right) + g(a+b\log\left(c(d+ex)^n\right))\log\left(\frac{e\left(\sqrt{-f}+\sqrt{g}\,x\right)}{e\sqrt{-f}-d\sqrt{g}}\right) + bgn\mathrm{Li}_2\left(-\frac{\sqrt{g}\,(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right) + bgn\mathrm{Li}_2\left(\frac{\sqrt{g}\,(d+ex)}{e\sqrt{-f}+d\sqrt{g}}\right) - 2bgn\mathrm{Li}_2\left(1+\frac{ex}{d}\right)}{2f^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])/(x^3*(f + g*x^2)),x]
```

```
[Out] (-((b*e*f*n*(d + e*x*Log[x] - e*x*Log[d + e*x]))/(d^2*x)) - (f*(a + b*Log[c
*(d + e*x)^n]))/x^2 - 2*g*Log[-((e*x)/d)]*(a + b*Log[c*(d + e*x)^n]) + g*(a
```

```
 + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[-f] + d*Sqr
t[g])] + g*(a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sqr
t[-f] - d*Sqrt[g])] + b*g*n*PolyLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] -
d*Sqrt[g]))] + b*g*n*PolyLog[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g]
)] - 2*b*g*n*PolyLog[2, 1 + (e*x)/d])/(2*f^2)
```

Maple [C] Result contains higher order function than in optimal. Order 9 vs. order 4.
time = 0.32, size = 841, normalized size = 2.54

method	result
risch	$-\frac{ib\pi\,\mathrm{csgn}(i(ex+d)^n)\mathrm{csgn}(ic(ex+d)^n)^2 g\ln(x)}{2f^2}-\frac{a}{2f\,x^2}-\frac{b\ln(c)g\ln(x)}{f^2}+\frac{bng\,\mathrm{dilog}\left(\frac{ex+d}{d}\right)}{f^2}-\frac{b\ln((ex+d)^n)}{2f\,x^2}-\frac{b\ln(c)}{2f\,x^2}+ib\pi$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))/x^3/(g*x^2+f),x,method=_RETURNVERBOSE)
```

```
[Out] -1/2*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/f^2*g*ln(x)+b*n/f^2*g*d
ilog((e*x+d)/d)-1/4*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/
f^2*g*ln(g*x^2+f)+1/4*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/f^2*g*ln(g*x^2
+f)-1/2*a/f/x^2-b*ln(c)/f^2*g*ln(x)-1/2*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n
)^2/f^2*g*ln(x)+1/4*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/f^2*g*ln
(g*x^2+f)-1/2*b*ln((e*x+d)^n)/f/x^2-1/4*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(
e*x+d)^n)^2/f/x^2-1/2*b*ln(c)/f/x^2+b*n/f^2*g*ln(x)*ln((e*x+d)/d)+1/4*I*b*P
i*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/f/x^2-a/f^2*g*ln(x)+1/2*a
/f^2*g*ln(g*x^2+f)-1/2*b*n/f^2*g*ln(e*x+d)*ln(g*x^2+f)+1/2*b*ln((e*x+d)^n)/
f^2*g*ln(g*x^2+f)+1/2*b*n/f^2*g*ln(e*x+d)*ln((e*(-f*g)^(1/2)-g*(e*x+d)+d*g)
/(e*(-f*g)^(1/2)+d*g))+1/2*b*n/f^2*g*ln(e*x+d)*ln((e*(-f*g)^(1/2)+g*(e*x+d)
-d*g)/(e*(-f*g)^(1/2)-d*g))+1/2*b*n/f^2*g*dilog((e*(-f*g)^(1/2)-g*(e*x+d)+d
*g)/(e*(-f*g)^(1/2)+d*g))+1/2*b*n/f^2*g*dilog((e*(-f*g)^(1/2)+g*(e*x+d)-d*g
)/(e*(-f*g)^(1/2)-d*g))-1/4*I*b*Pi*csgn(I*c*(e*x+d)^n)^3/f^2*g*ln(g*x^2+f)-
b*ln((e*x+d)^n)/f^2*g*ln(x)+1/2*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c
*(e*x+d)^n)/f^2*g*ln(x)+1/2*b*ln(c)/f^2*g*ln(g*x^2+f)+1/2*I*b*Pi*csgn(I*c*(
e*x+d)^n)^3/f^2*g*ln(x)+1/4*I*b*Pi*csgn(I*c*(e*x+d)^n)^3/f/x^2-1/4*I*b*Pi*c
sgn(I*c)*csgn(I*c*(e*x+d)^n)^2/f/x^2-1/2*b*e^2*n*ln(x)/d^2/f+1/2*b*e^2*n*ln
(e*x+d)/d^2/f-1/2*b*e*n/d/f/x
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/x^3/(g*x^2+f),x, algorithm="maxima")
```

```
[Out] 1/2*a*(g*log(g*x^2 + f)/f^2 - 2*g*log(x)/f^2 - 1/(f*x^2)) + b*integrate((lo
g((x*e + d)^n) + log(c))/(g*x^5 + f*x^3), x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/x^3/(g*x^2+f),x, algorithm="fricas")
[Out] integral((b*log((x*e + d)^n*c) + a)/(g*x^5 + f*x^3), x)
```

Sympy [F(-1)] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))/x**3/(g*x**2+f),x)
[Out] Timed out
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/x^3/(g*x^2+f),x, algorithm="giac")
[Out] integrate((b*log((x*e + d)^n*c) + a)/((g*x^2 + f)*x^3), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)}{x^3\,\left(g\,x^2+f\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))/(x^3*(f + g*x^2)),x)
[Out] int((a + b*log(c*(d + e*x)^n))/(x^3*(f + g*x^2)), x)
```

3.261 $\int \frac{x^4(a+b\log(c(d+ex)^n))}{f+gx^2}\,dx$

Optimal. Leaf size=369

$$-\frac{afx}{g^2}+\frac{bfnx}{g^2}-\frac{bd^2nx}{3e^2g}+\frac{bdnx^2}{6eg}-\frac{bnx^3}{9g}+\frac{bd^3n\log(d+ex)}{3e^3g}-\frac{bf(d+ex)\log\left(c(d+ex)^n\right)}{eg^2}+\frac{x^3(a+b\log(c(d+ex}{3g}$$

```
[Out] -a*f*x/g^2+b*f*n*x/g^2-1/3*b*d^2*n*x/e^2/g+1/6*b*d*n*x^2/e/g-1/9*b*n*x^3/g+
1/3*b*d^3*n*ln(e*x+d)/e^3/g-b*f*(e*x+d)*ln(c*(e*x+d)^n)/e/g^2+1/3*x^3*(a+b*
ln(c*(e*x+d)^n))/g+1/2*(-f)^(3/2)*(a+b*ln(c*(e*x+d)^n))*ln(e*((-f)^(1/2)-x*
g^(1/2))/(e*(-f)^(1/2)+d*g^(1/2)))/g^(5/2)-1/2*(-f)^(3/2)*(a+b*ln(c*(e*x+d)
^n))*ln(e*((-f)^(1/2)+x*g^(1/2))/(e*(-f)^(1/2)-d*g^(1/2)))/g^(5/2)-1/2*b*(-
f)^(3/2)*n*polylog(2,-(e*x+d)*g^(1/2)/(e*(-f)^(1/2)-d*g^(1/2)))/g^(5/2)+1/2
*b*(-f)^(3/2)*n*polylog(2,(e*x+d)*g^(1/2)/(e*(-f)^(1/2)+d*g^(1/2)))/g^(5/2)
```

Rubi [A]
time = 0.30, antiderivative size = 369, normalized size of antiderivative = 1.00, number of steps used = 16, number of rules used = 11, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.407$, Rules used = {308, 211, 2463, 2436, 2332, 2442, 45, 2456, 2441, 2440, 2438}

$$-\frac{b(-f)^{3/2}n\,\text{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)}{2g^{5/2}}+\frac{b(-f)^{3/2}n\,\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+e\sqrt{-f}}\right)}{2g^{5/2}}+\frac{(-f)^{3/2}\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}x\right)}{d\sqrt{g}+e\sqrt{-f}}\right)(a+b\log(c(d+ex)^n))}{2g^{5/2}}-\frac{(-f)^{3/2}\log\left(\frac{e\left(\sqrt{-f}+\sqrt{g}x\right)}{e\sqrt{-f}-d\sqrt{g}}\right)(a+b\log(c(d+ex)^n))}{2g^{5/2}}+\frac{x^3(a+b\log(c(d+ex)^n))}{3g}-\frac{afx}{g^2}-\frac{bf(d+ex)\log(c(d+ex)^n)}{eg^2}+\frac{bd^3n\log(d+ex)}{3e^3g}-\frac{bd^2nx}{3e^2g}+\frac{bdnx^2}{6eg}+\frac{bfnx}{g^2}-\frac{bnx^3}{9g}$$

Antiderivative was successfully verified.

```
[In] Int[(x^4*(a + b*Log[c*(d + e*x)^n]))/(f + g*x^2),x]
```

```
[Out] -((a*f*x)/g^2) + (b*f*n*x)/g^2 - (b*d^2*n*x)/(3*e^2*g) + (b*d*n*x^2)/(6*e*g
) - (b*n*x^3)/(9*g) + (b*d^3*n*Log[d + e*x])/(3*e^3*g) - (b*f*(d + e*x)*Log
[c*(d + e*x)^n])/(e*g^2) + (x^3*(a + b*Log[c*(d + e*x)^n]))/(3*g) + ((-f)^(
3/2)*(a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[-f]
+ d*Sqrt[g])])/(2*g^(5/2)) - ((-f)^(3/2)*(a + b*Log[c*(d + e*x)^n])*Log[(e*
(Sqrt[-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g])])/(2*g^(5/2)) - (b*(-f)^(3
/2)*n*PolyLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/(2*g^(5/
2)) + (b*(-f)^(3/2)*n*PolyLog[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g
])])/(2*g^(5/2))
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 211

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]/a)*ArcTan[x/R
t[a/b, 2]], x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 308

```
Int[(x_)^(m_)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Int[PolynomialDivide[x
^m, a + b*x^n, x], x] /; FreeQ[{a, b}, x] && IGtQ[m, 0] && IGtQ[n, 0] && Gt
Q[m, 2*n - 1]
```

Rule 2332

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2436

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + c*e*(x/g)])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2441

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d + e*x
)^n])/g), x] - Dist[b*e*(n/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2442

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[(f + g*x)^(q + 1)*((a + b*Log[c*(d + e*x)^n])/(
g*(q + 1))), x] - Dist[b*e*(n/(g*(q + 1))), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 2456

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_)^(r_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a + b*Log[c*(d + e*x)
^n])^p, (f + g*x^r)^q, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, r}, x] && I
GtQ[p, 0] && IntegerQ[q] && (GtQ[q, 0] || (IntegerQ[r] && NeQ[r, 1]))
```

Rule 2463

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rubi steps

$$\int \frac{x^4(a+b\log(c(d+ex)^n))}{f+gx^2}\,dx = \int \left(-\frac{f(a+b\log(c(d+ex)^n))}{g^2}+\frac{x^2(a+b\log(c(d+ex)^n))}{g}+\frac{f^2(a+b\,\mathrm{lo}}{g^2(}\right.$$

$$= -\frac{f\int(a+b\log(c(d+ex)^n))\,dx}{g^2}+\frac{f^2\int\frac{a+b\log(c(d+ex)^n)}{f+gx^2}\,dx}{g^2}+\frac{\int x^2(a+b\,\mathrm{lo}}{}$$

$$= -\frac{afx}{g^2}+\frac{x^3(a+b\log(c(d+ex)^n))}{3g}-\frac{(bf)\int\log(c(d+ex)^n)\,dx}{g^2}+\frac{f^2\int\Big(}{}$$

$$= -\frac{afx}{g^2}+\frac{x^3(a+b\log(c(d+ex)^n))}{3g}-\frac{(-f)^{3/2}\int\frac{a+b\log(c(d+ex)^n)}{\sqrt{-f}-\sqrt{g}\,x}\,dx}{2g^2}-\frac{(-f)}{}$$

$$= -\frac{afx}{g^2}+\frac{bfnx}{g^2}-\frac{bd^2nx}{3e^2g}+\frac{bdnx^2}{6eg}-\frac{bnx^3}{9g}+\frac{bd^3n\log(d+ex)}{3e^3g}-\frac{bf(d+ex}{}$$

$$= -\frac{afx}{g^2}+\frac{bfnx}{g^2}-\frac{bd^2nx}{3e^2g}+\frac{bdnx^2}{6eg}-\frac{bnx^3}{9g}+\frac{bd^3n\log(d+ex)}{3e^3g}-\frac{bf(d+ex}{}$$

$$= -\frac{afx}{g^2}+\frac{bfnx}{g^2}-\frac{bd^2nx}{3e^2g}+\frac{bdnx^2}{6eg}-\frac{bnx^3}{9g}+\frac{bd^3n\log(d+ex)}{3e^3g}-\frac{bf(d+ex}{}$$

Mathematica [A]
time = 0.22, size = 339, normalized size = 0.92

$$\frac{-18af\sqrt{g}\,x+18bf\sqrt{g}\,nx-\frac{bg^{3/2}n(ex(6d^2-3dex+2e^2x^2)-6d^3\log(d+ex))}{e^3}-\frac{18bf\sqrt{g}\,(d+ex)\log(c(d+ex)^n)}{e}+6g^{3/2}x^3(a+b\log(c(d+ex)^n))+9(-f)^{3/2}\,(a+b\log(c(d+ex)^n))\log\left(\frac{e(\sqrt{-f}-\sqrt{g}\,x)}{e\sqrt{-f}+d\sqrt{g}}\right)+9\sqrt{-f}\,f(a+b\log(c(d+ex)^n))\log\left(\frac{e(\sqrt{-f}+\sqrt{g}\,x)}{e\sqrt{-f}-d\sqrt{g}}\right)-9b(-f)^{3/2}n\mathrm{Li}_2\left(-\frac{\sqrt{g}\,(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)+9b(-f)^{3/2}n\mathrm{Li}_2\left(\frac{\sqrt{g}\,(d+ex)}{e\sqrt{-f}+d\sqrt{g}}\right)}{18g^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^4*(a + b*Log[c*(d + e*x)^n]))/(f + g*x^2),x]
```

```
[Out] (-18*a*f*Sqrt[g]*x + 18*b*f*Sqrt[g]*n*x - (b*g^(3/2)*n*(e*x*(6*d^2 - 3*d*e*
x + 2*e^2*x^2) - 6*d^3*Log[d + e*x]))/e^3 - (18*b*f*Sqrt[g]*(d + e*x)*Log[c
*(d + e*x)^n])/e + 6*g^(3/2)*x^3*(a + b*Log[c*(d + e*x)^n]) + 9*(-f)^(3/2)*
(a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[-f] + d*S
qrt[g])] + 9*Sqrt[-f]*f*(a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] + Sqrt[
g]*x))/(e*Sqrt[-f] - d*Sqrt[g])] - 9*b*(-f)^(3/2)*n*PolyLog[2, -((Sqrt[g]*(
d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))] + 9*b*(-f)^(3/2)*n*PolyLog[2, (Sqrt[g]
*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(18*g^(5/2))
```

Maple [C] Result contains higher order function than in optimal. Order 9 vs. order 4.
time = 0.42, size = 982, normalized size = 2.66

method	result
risch	$-\frac{ib\pi\,\mathrm{csgn}(ic)\mathrm{csgn}(i(ex+d)^n)\mathrm{csgn}(ic(ex+d)^n)x^3}{6g}-\frac{b\ln(c)xf}{g^2}+\frac{ib\pi\,\mathrm{csgn}(ic)\mathrm{csgn}(i(ex+d)^n)\mathrm{csgn}(ic(ex+d)^n)xf}{2g^2}-\frac{11bn\,d^3}{18e^3g}+$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(a+b*ln(c*(e*x+d)^n))/(g*x^2+f),x,method=_RETURNVERBOSE)
```

```
[Out] 1/2*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/g^2*x*f-b*ln(c)/
g^2*x*f-1/2*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/g^2*x*f-11/18*b/
e^3*n/g*d^3+a*f^2/g^2/(f*g)^(1/2)*arctan(x*g/(f*g)^(1/2))+1/3*a/g*x^3-1/6*I
*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/g*x^3+1/3*b*ln((e*x+d
)^n)/g*x^3+1/3*b*ln(c)/g*x^3-1/2*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/g^2
*x*f-1/2*I*b*Pi*csgn(I*c*(e*x+d)^n)^3*f^2/g^2/(f*g)^(1/2)*arctan(x*g/(f*g)^
(1/2))+1/2*I*b*Pi*csgn(I*c*(e*x+d)^n)^3/g^2*x*f+b*f^2/g^2/(f*g)^(1/2)*arcta
n(1/2*(2*g*(e*x+d)-2*d*g)/e/(f*g)^(1/2))*ln((e*x+d)^n)-b*ln((e*x+d)^n)/g^2*
x*f-b/e/g^2*f*d*ln((e*x+d)^n)+1/2*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)
^n)^2*f^2/g^2/(f*g)^(1/2)*arctan(x*g/(f*g)^(1/2))+1/2*I*b*Pi*csgn(I*c)*csgn
(I*c*(e*x+d)^n)^2*f^2/g^2/(f*g)^(1/2)*arctan(x*g/(f*g)^(1/2))+1/2*b*n*f^2/g
^2/(-f*g)^(1/2)*dilog((e*(-f*g)^(1/2)-g*(e*x+d)+d*g)/(e*(-f*g)^(1/2)+d*g))-
1/2*b*n*f^2/g^2/(-f*g)^(1/2)*dilog((e*(-f*g)^(1/2)+g*(e*x+d)-d*g)/(e*(-f*g)
^(1/2)-d*g))+1/2*b*n*f^2/g^2*ln(e*x+d)/(-f*g)^(1/2)*ln((e*(-f*g)^(1/2)-g*(e
*x+d)+d*g)/(e*(-f*g)^(1/2)+d*g))-b*f^2/g^2/(f*g)^(1/2)*arctan(1/2*(2*g*(e*x
+d)-2*d*g)/e/(f*g)^(1/2))*n*ln(e*x+d)-1/2*b*n*f^2/g^2*ln(e*x+d)/(-f*g)^(1/2
```

```
)*ln((e*(-f*g)^(1/2)+g*(e*x+d)-d*g)/(e*(-f*g)^(1/2)-d*g))+b*ln(c)*f^2/g^2/(
f*g)^(1/2)*arctan(x*g/(f*g)^(1/2))+b/e*n/g^2*d*f+1/3*b/e^3/g*d^3*ln((e*x+d)
^n)-1/6*I*b*Pi*csgn(I*c*(e*x+d)^n)^3/g*x^3+1/6*I*b*Pi*csgn(I*(e*x+d)^n)*csg
n(I*c*(e*x+d)^n)^2/g*x^3+1/6*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/g*x^3-a
*f*x/g^2+b*f*n*x/g^2-1/3*b*d^2*n*x/e^2/g+1/6*b*d*n*x^2/e/g-1/9*b*n*x^3/g-1/
2*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)*f^2/g^2/(f*g)^(1/2
)*arctan(x*g/(f*g)^(1/2))
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(a+b*log(c*(e*x+d)^n))/(g*x^2+f),x, algorithm="maxima")
```

```
[Out] 1/3*a*(3*f^2*arctan(g*x/sqrt(f*g))/(sqrt(f*g)*g^2) + (g*x^3 - 3*f*x)/g^2) +
 b*integrate((x^4*log((x*e + d)^n) + x^4*log(c))/(g*x^2 + f), x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(a+b*log(c*(e*x+d)^n))/(g*x^2+f),x, algorithm="fricas")
```

```
[Out] integral((b*x^4*log((x*e + d)^n*c) + a*x^4)/(g*x^2 + f), x)
```

Sympy [F(-1)] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**4*(a+b*ln(c*(e*x+d)**n))/(g*x**2+f),x)
```

```
[Out] Timed out
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(a+b*log(c*(e*x+d)^n))/(g*x^2+f),x, algorithm="giac")
```

```
[Out] integrate((b*log((x*e + d)^n*c) + a)*x^4/(g*x^2 + f), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x^4\,\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)}{g\,x^2+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^4*(a + b*log(c*(d + e*x)^n)))/(f + g*x^2),x)
[Out] int((x^4*(a + b*log(c*(d + e*x)^n)))/(f + g*x^2), x)
```

3.262 $\int \frac{x^2(a+b\log(c(d+ex)^n))}{f+gx^2}\,dx$

Optimal. Leaf size=276

$$\frac{ax}{g}-\frac{bnx}{g}+\frac{b(d+ex)\log\left(c(d+ex)^n\right)}{eg}+\frac{\sqrt{-f}\,\left(a+b\log\left(c(d+ex)^n\right)\right)\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}\,x\right)}{e\sqrt{-f}+d\sqrt{g}}\right)}{2g^{3/2}}-\frac{\sqrt{-f}\,(a+b}{}$$

[Out] a*x/g-b*n*x/g+b*(e*x+d)*ln(c*(e*x+d)^n)/e/g+1/2*(a+b*ln(c*(e*x+d)^n))*ln(e*((-f)^(1/2)-x*g^(1/2))/(e*(-f)^(1/2)+d*g^(1/2)))*(-f)^(1/2)/g^(3/2)-1/2*(a+b*ln(c*(e*x+d)^n))*ln(e*((-f)^(1/2)+x*g^(1/2))/(e*(-f)^(1/2)-d*g^(1/2)))*(-f)^(1/2)/g^(3/2)-1/2*b*n*polylog(2,-(e*x+d)*g^(1/2)/(e*(-f)^(1/2)-d*g^(1/2)))*(-f)^(1/2)/g^(3/2)+1/2*b*n*polylog(2,(e*x+d)*g^(1/2)/(e*(-f)^(1/2)+d*g^(1/2)))*(-f)^(1/2)/g^(3/2)

Rubi [A]
time = 0.25, antiderivative size = 276, normalized size of antiderivative = 1.00, number of steps used = 13, number of rules used = 9, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.333, Rules used = {327, 211, 2463, 2436, 2332, 2456, 2441, 2440, 2438}

$$-\frac{b\sqrt{-f}\,n\,\text{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)}{2g^{3/2}}+\frac{b\sqrt{-f}\,n\,\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+e\sqrt{-f}}\right)}{2g^{3/2}}+\frac{\sqrt{-f}\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}\,x\right)}{d\sqrt{g}+e\sqrt{-f}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{2g^{3/2}}-\frac{\sqrt{-f}\log\left(\frac{e\left(\sqrt{-f}+\sqrt{g}\,x\right)}{e\sqrt{-f}-d\sqrt{g}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{2g^{3/2}}+\frac{ax}{g}+\frac{b(d+ex)\log\left(c(d+ex)^n\right)}{eg}-\frac{bnx}{g}$$

Antiderivative was successfully verified.

[In] Int[(x^2*(a + b*Log[c*(d + e*x)^n]))/(f + g*x^2),x]

[Out] (a*x)/g - (b*n*x)/g + (b*(d + e*x)*Log[c*(d + e*x)^n])/(e*g) + (Sqrt[-f]*(a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(2*g^(3/2)) - (Sqrt[-f]*(a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g])])/(2*g^(3/2)) - (b*Sqrt[-f]*n*PolyLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/(2*g^(3/2)) + (b*Sqrt[-f]*n*PolyLog[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(2*g^(3/2))

Rule 211

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]/a)*ArcTan[x/Rt[a/b, 2]], x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 327

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[c^(n - 1)*(c*x)^(m - n + 1)*((a + b*x^n)^(p + 1)/(b*(m + n*p + 1))), x] - Dist[a*c^n*((m - n + 1)/(b*(m + n*p + 1))), Int[(c*x)^(m - n)*(a + b*x^n)^p, x], x] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && GtQ[m, n - 1] && NeQ[m + n*p
```

```
 + 1, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 2332

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2436

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + c*e*(x/g)])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2441

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d + e*x
)^n])/g), x] - Dist[b*e*(n/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2456

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_)^(r_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a + b*Log[c*(d + e*x)
^n])^p, (f + g*x^r)^q, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, r}, x] && I
GtQ[p, 0] && IntegerQ[q] && (GtQ[q, 0] || (IntegerQ[r] && NeQ[r, 1]))
```

Rule 2463

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rubi steps

$$
\begin{aligned}
\int \frac{x^2(a+b\log(c(d+ex)^n))}{f+gx^2}\,dx &= \int \left(\frac{a+b\log(c(d+ex)^n)}{g} - \frac{f(a+b\log(c(d+ex)^n))}{g(f+gx^2)}\right)\,dx \\
&= \frac{\int (a+b\log(c(d+ex)^n))\,dx}{g} - \frac{f\int \frac{a+b\log(c(d+ex)^n)}{f+gx^2}\,dx}{g} \\
&= \frac{ax}{g} + \frac{b\int \log(c(d+ex)^n)\,dx}{g} - \frac{f\int \left(\frac{\sqrt{-f}\,(a+b\log(c(d+ex)^n))}{2f\left(\sqrt{-f}-\sqrt{g}\,x\right)} + \frac{\sqrt{-f}\,(a+b\ldots}{2f\left(\sqrt{-\ldots}\right.}\right.}{g} \\
&= \frac{ax}{g} + \frac{b\text{Subst}\left(\int \log(cx^n)\,dx, x, d+ex\right)}{eg} - \frac{\sqrt{-f}\int \frac{a+b\log(c(d+ex)^n)}{\sqrt{-f}-\sqrt{g}\,x}\,dx}{2g} - \ldots \\
&= \frac{ax}{g} - \frac{bnx}{g} + \frac{b(d+ex)\log(c(d+ex)^n)}{eg} + \frac{\sqrt{-f}\,(a+b\log(c(d+ex)^n))\,\text{lo}\ldots}{2g^{3/2}} \\
&= \frac{ax}{g} - \frac{bnx}{g} + \frac{b(d+ex)\log(c(d+ex)^n)}{eg} + \frac{\sqrt{-f}\,(a+b\log(c(d+ex)^n))\,\text{lo}\ldots}{2g^{3/2}} \\
&= \frac{ax}{g} - \frac{bnx}{g} + \frac{b(d+ex)\log(c(d+ex)^n)}{eg} + \frac{\sqrt{-f}\,(a+b\log(c(d+ex)^n))\,\text{lo}\ldots}{2g^{3/2}}
\end{aligned}
$$

Mathematica [A]
time = 0.10, size = 263, normalized size = 0.95

$$
\frac{2a\sqrt{g}\,x - 2b\sqrt{g}\,nx + \frac{2b\sqrt{g}\,(d+ex)\log(c(d+ex)^n)}{e} + \sqrt{-f}\,(a+b\log(c(d+ex)^n))\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}\,x\right)}{e\sqrt{-f}+d\sqrt{g}}\right) - \sqrt{-f}\,(a+b\log(c(d+ex)^n))\log\left(\frac{e\left(\sqrt{-f}+\sqrt{g}\,x\right)}{e\sqrt{-f}-d\sqrt{g}}\right) - b\sqrt{-f}\,n\text{Li}_2\left(-\frac{\sqrt{g}\,(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right) + b\sqrt{-f}\,n\text{Li}_2\left(\frac{\sqrt{g}\,(d+ex)}{e\sqrt{-f}+d\sqrt{g}}\right)}{2g^{3/2}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^2*(a + b*Log[c*(d + e*x)^n]))/(f + g*x^2),x]
```

```
[Out] (2*a*Sqrt[g]*x - 2*b*Sqrt[g]*n*x + (2*b*Sqrt[g]*(d + e*x)*Log[c*(d + e*x)^n
])/e + Sqrt[-f]*(a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(
e*Sqrt[-f] + d*Sqrt[g])] - Sqrt[-f]*(a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt
[-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g])] - b*Sqrt[-f]*n*PolyLog[2, -((S
```

qrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))] + b*Sqrt[-f]*n*PolyLog[2, (Sqr
t[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(2*g^(3/2))

Maple [C] Result contains higher order function than in optimal. Order 9 vs. order 4.
time = 0.39, size = 710, normalized size = 2.57

method	result
risch	$\frac{b\ln((ex+d)^n)x}{g} + \frac{bd\ln((ex+d)^n)}{eg} + \frac{bf\arctan\left(\frac{2g(ex+d)-2dg}{2e\sqrt{fg}}\right)n\ln(ex+d)}{g\sqrt{fg}} - \frac{bf\arctan\left(\frac{2g(ex+d)-2dg}{2e\sqrt{fg}}\right)\ln((ex+d)^n)}{g\sqrt{fg}} - \frac{bnx}{g}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(a+b*ln(c*(e*x+d)^n))/(g*x^2+f),x,method=_RETURNVERBOSE)
```

```
[Out] b*ln((e*x+d)^n)*x/g+b/e/g*d*ln((e*x+d)^n)+b*f/g/(f*g)^(1/2)*arctan(1/2*(2*g
*(e*x+d)-2*d*g)/e/(f*g)^(1/2))*n*ln(e*x+d)-b*f/g/(f*g)^(1/2)*arctan(1/2*(2*
g*(e*x+d)-2*d*g)/e/(f*g)^(1/2))*ln((e*x+d)^n)-b*n*x/g-b/e*n/g*d-1/2*b*n*f/g
*ln(e*x+d)/(-f*g)^(1/2)*ln((e*(-f*g)^(1/2)-g*(e*x+d)+d*g)/(e*(-f*g)^(1/2)+d
*g))+1/2*b*n*f/g*ln(e*x+d)/(-f*g)^(1/2)*ln((e*(-f*g)^(1/2)+g*(e*x+d)-d*g)/(
e*(-f*g)^(1/2)-d*g))-1/2*b*n*f/g/(-f*g)^(1/2)*dilog((e*(-f*g)^(1/2)-g*(e*x+
d)+d*g)/(e*(-f*g)^(1/2)+d*g))+1/2*b*n*f/g/(-f*g)^(1/2)*dilog((e*(-f*g)^(1/2
)+g*(e*x+d)-d*g)/(e*(-f*g)^(1/2)-d*g))-1/2*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*
c*(e*x+d)^n)^2*f/g/(f*g)^(1/2)*arctan(x*g/(f*g)^(1/2))-1/2*I*b*Pi*csgn(I*c)
*csgn(I*c*(e*x+d)^n)^2*f/g/(f*g)^(1/2)*arctan(x*g/(f*g)^(1/2))-1/2*I*b*Pi*c
sgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)*x/g-1/2*I*b*Pi*csgn(I*c*(e*x
+d)^n)^3*x/g+1/2*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)*f/g
/(f*g)^(1/2)*arctan(x*g/(f*g)^(1/2))+1/2*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^
n)^2*x/g+1/2*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2*x/g+1/2*I*b*Pi*
csgn(I*c*(e*x+d)^n)^3*f/g/(f*g)^(1/2)*arctan(x*g/(f*g)^(1/2))+b*ln(c)*x/g-b
*ln(c)*f/g/(f*g)^(1/2)*arctan(x*g/(f*g)^(1/2))+a*x/g-a*f/g/(f*g)^(1/2)*arct
an(x*g/(f*g)^(1/2))
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*log(c*(e*x+d)^n))/(g*x^2+f),x, algorithm="maxima")
```

```
[Out] -a*(f*arctan(g*x/sqrt(f*g))/(sqrt(f*g)*g) - x/g) + b*integrate((x^2*log((x*
e + d)^n) + x^2*log(c))/(g*x^2 + f), x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*log(c*(e*x+d)^n))/(g*x^2+f),x, algorithm="fricas")
```

```
[Out] integral((b*x^2*log((x*e + d)^n*c) + a*x^2)/(g*x^2 + f), x)
```

Sympy [**F(-1)**] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(a+b*ln(c*(e*x+d)**n))/(g*x**2+f),x)
```

```
[Out] Timed out
```

Giac [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*log(c*(e*x+d)^n))/(g*x^2+f),x, algorithm="giac")
```

```
[Out] integrate((b*log((x*e + d)^n*c) + a)*x^2/(g*x^2 + f), x)
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x^2\,\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)}{g\,x^2+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^2*(a + b*log(c*(d + e*x)^n)))/(f + g*x^2),x)
```

```
[Out] int((x^2*(a + b*log(c*(d + e*x)^n)))/(f + g*x^2), x)
```

3.263 $\int \frac{a+b\log(c(d+ex)^n)}{f+gx^2}\,dx$

Optimal. Leaf size=239

$$\frac{(a+b\log(c(d+ex)^n))\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}\,x\right)}{e\sqrt{-f}+d\sqrt{g}}\right)}{2\sqrt{-f}\sqrt{g}}-\frac{(a+b\log(c(d+ex)^n))\log\left(\frac{e\left(\sqrt{-f}+\sqrt{g}\,x\right)}{e\sqrt{-f}-d\sqrt{g}}\right)}{2\sqrt{-f}\sqrt{g}}-\frac{bn\mathrm{Li}_2(}{}$$

```
[Out] 1/2*(a+b*ln(c*(e*x+d)^n))*ln(e*((-f)^(1/2)-x*g^(1/2))/(e*(-f)^(1/2)+d*g^(1/
2)))/(-f)^(1/2)/g^(1/2)-1/2*(a+b*ln(c*(e*x+d)^n))*ln(e*((-f)^(1/2)+x*g^(1/2
))/(e*(-f)^(1/2)-d*g^(1/2)))/(-f)^(1/2)/g^(1/2)-1/2*b*n*polylog(2,-(e*x+d)*
g^(1/2)/(e*(-f)^(1/2)-d*g^(1/2)))/(-f)^(1/2)/g^(1/2)+1/2*b*n*polylog(2,(e*x
+d)*g^(1/2)/(e*(-f)^(1/2)+d*g^(1/2)))/(-f)^(1/2)/g^(1/2)
```

Rubi [A]
time = 0.14, antiderivative size = 239, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.167$, Rules used = {2456, 2441, 2440, 2438}

$$-\frac{bn\text{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)}{2\sqrt{-f}\sqrt{g}}+\frac{bn\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+e\sqrt{-f}}\right)}{2\sqrt{-f}\sqrt{g}}+\frac{\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}\,x\right)}{d\sqrt{g}+e\sqrt{-f}}\right)(a+b\log(c(d+ex)^n))}{2\sqrt{-f}\sqrt{g}}-\frac{\log\left(\frac{e\left(\sqrt{-f}+\sqrt{g}\,x\right)}{e\sqrt{-f}-d\sqrt{g}}\right)(a+b\log(c(d+ex)^n))}{2\sqrt{-f}\sqrt{g}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])/(f + g*x^2),x]
```

```
[Out] ((a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[-f] + d*
Sqrt[g])])/(2*Sqrt[-f]*Sqrt[g]) - ((a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[
-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g])])/(2*Sqrt[-f]*Sqrt[g]) - (b*n*Po
lyLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/(2*Sqrt[-f]*Sqrt
[g]) + (b*n*PolyLog[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(2*Sq
rt[-f]*Sqrt[g])
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + c*e*(x/g)])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2441

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d + e*x
)^n])/g), x] - Dist[b*e*(n/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2456

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_)^(r_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a + b*Log[c*(d + e*x)
^n])^p, (f + g*x^r)^q, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, r}, x] && I
GtQ[p, 0] && IntegerQ[q] && (GtQ[q, 0] || (IntegerQ[r] && NeQ[r, 1]))
```

Rubi steps

$$\int \frac{a+b\log\left(c(d+ex)^n\right)}{f+gx^2}\,dx = \int \left(\frac{\sqrt{-f}\left(a+b\log\left(c(d+ex)^n\right)\right)}{2f\left(\sqrt{-f}-\sqrt{g}\,x\right)} + \frac{\sqrt{-f}\left(a+b\log\left(c(d+ex)^n\right)\right)}{2f\left(\sqrt{-f}+\sqrt{g}\,x\right)}\right)dx$$

$$= -\frac{\int \frac{a+b\log\left(c(d+ex)^n\right)}{\sqrt{-f}-\sqrt{g}\,x}\,dx}{2\sqrt{-f}} - \frac{\int \frac{a+b\log\left(c(d+ex)^n\right)}{\sqrt{-f}+\sqrt{g}\,x}\,dx}{2\sqrt{-f}}$$

$$= \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}\,x\right)}{e\sqrt{-f}+d\sqrt{g}}\right)}{2\sqrt{-f}\sqrt{g}} - \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)\log \cdots}{2\sqrt{-f}\cdots}$$

$$= \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}\,x\right)}{e\sqrt{-f}+d\sqrt{g}}\right)}{2\sqrt{-f}\sqrt{g}} - \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)\log \cdots}{2\sqrt{-f}\cdots}$$

$$= \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}\,x\right)}{e\sqrt{-f}+d\sqrt{g}}\right)}{2\sqrt{-f}\sqrt{g}} - \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)\log \cdots}{2\sqrt{-f}\cdots}$$

Mathematica [A]
time = 0.03, size = 184, normalized size = 0.77

$$\frac{\left(a+b\log\left(c(d+ex)^n\right)\right)\left(\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}\,x\right)}{e\sqrt{-f}+d\sqrt{g}}\right)-\log\left(\frac{e\left(\sqrt{-f}+\sqrt{g}\,x\right)}{e\sqrt{-f}-d\sqrt{g}}\right)\right)-bn\text{Li}_2\left(-\frac{\sqrt{g}\,(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)+bn\text{Li}_2\left(\frac{\sqrt{g}\,(d+ex)}{e\sqrt{-f}+d\sqrt{g}}\right)}{2\sqrt{-f}\sqrt{g}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])/(f + g*x^2),x]
```

```
[Out] ((a + b*Log[c*(d + e*x)^n])*(Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[-f] + d
*Sqrt[g])] - Log[(e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g])]) - b*
n*PolyLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))] + b*n*PolyLog
[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(2*Sqrt[-f]*Sqrt[g])
```

Maple [C] Result contains higher order function than in optimal. Order 9 vs. order 4.
time = 0.46, size = 474, normalized size = 1.98

method	result
risch	$-\frac{b\arctan\left(\frac{2g(ex+d)-2dg}{2e\sqrt{fg}}\right)n\ln(ex+d)}{\sqrt{fg}}+\frac{b\arctan\left(\frac{2g(ex+d)-2dg}{2e\sqrt{fg}}\right)\ln((ex+d)^n)}{\sqrt{fg}}+\frac{bn\ln(ex+d)\ln\left(\frac{e\sqrt{-fg}-g(ex+d)+dg}{e\sqrt{-fg}+dg}\right)}{2\sqrt{-fg}}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))/(g*x^2+f),x,method=_RETURNVERBOSE)
```

```
[Out] -b/(f*g)^(1/2)*arctan(1/2*(2*g*(e*x+d)-2*d*g)/e/(f*g)^(1/2))*n*ln(e*x+d)+b/
(f*g)^(1/2)*arctan(1/2*(2*g*(e*x+d)-2*d*g)/e/(f*g)^(1/2))*ln((e*x+d)^n)+1/2
*b*n*ln(e*x+d)/(-f*g)^(1/2)*ln((e*(-f*g)^(1/2)-g*(e*x+d)+d*g)/(e*(-f*g)^(1/
2)+d*g))-1/2*b*n*ln(e*x+d)/(-f*g)^(1/2)*ln((e*(-f*g)^(1/2)+g*(e*x+d)-d*g)/(
e*(-f*g)^(1/2)-d*g))+1/2*b*n/(-f*g)^(1/2)*dilog((e*(-f*g)^(1/2)-g*(e*x+d)+d
*g)/(e*(-f*g)^(1/2)+d*g))-1/2*b*n/(-f*g)^(1/2)*dilog((e*(-f*g)^(1/2)+g*(e*x
+d)-d*g)/(e*(-f*g)^(1/2)-d*g))-1/2*I/(f*g)^(1/2)*arctan(x*g/(f*g)^(1/2))*b*
Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+1/2*I/(f*g)^(1/2)*arctan
(x*g/(f*g)^(1/2))*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+1/2*I/(f*g)^(1/2)*ar
ctan(x*g/(f*g)^(1/2))*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-1/2*I/(f
*g)^(1/2)*arctan(x*g/(f*g)^(1/2))*b*Pi*csgn(I*c*(e*x+d)^n)^3+1/(f*g)^(1/2)*
arctan(x*g/(f*g)^(1/2))*b*ln(c)+a/(f*g)^(1/2)*arctan(x*g/(f*g)^(1/2))
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x^2+f),x, algorithm="maxima")
```

```
[Out] b*integrate((log((x*e + d)^n) + log(c))/(g*x^2 + f), x) + a*arctan(g*x/sqrt
(f*g))/sqrt(f*g)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x^2+f),x, algorithm="fricas")
```

```
[Out] integral((b*log((x*e + d)^n*c) + a)/(g*x^2 + f), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{a + b\log\left(c(d+ex)^n\right)}{f + gx^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))/(g*x**2+f),x)
```

```
[Out] Integral((a + b*log(c*(d + e*x)**n))/(f + g*x**2), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x^2+f),x, algorithm="giac")
```

```
[Out] integrate((b*log((x*e + d)^n*c) + a)/(g*x^2 + f), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{a + b\,\ln\left(c\,{\left(d + e\,x\right)}^n\right)}{g\,x^2 + f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))/(f + g*x^2),x)
```

```
[Out] int((a + b*log(c*(d + e*x)^n))/(f + g*x^2), x)
```

3.264 $\int \frac{a+b\log(c(d+ex)^n)}{x^2(f+gx^2)}\,dx$

Optimal. Leaf size=290

$$\frac{ben\log(x)}{df}-\frac{ben\log(d+ex)}{df}-\frac{a+b\log\left(c(d+ex)^n\right)}{fx}+\frac{\sqrt{g}\left(a+b\log\left(c(d+ex)^n\right)\right)\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}\,x\right)}{e\sqrt{-f}+d\sqrt{g}}\right)}{2(-f)^{3/2}}-$$

```
[Out] b*e*n*ln(x)/d/f-b*e*n*ln(e*x+d)/d/f+(-a-b*ln(c*(e*x+d)^n))/f/x+1/2*(a+b*ln(
c*(e*x+d)^n))*ln(e*((-f)^(1/2)-x*g^(1/2))/(e*(-f)^(1/2)+d*g^(1/2)))*g^(1/2)
/(-f)^(3/2)-1/2*(a+b*ln(c*(e*x+d)^n))*ln(e*((-f)^(1/2)+x*g^(1/2))/(e*(-f)^(
1/2)-d*g^(1/2)))*g^(1/2)/(-f)^(3/2)-1/2*b*n*polylog(2,-(e*x+d)*g^(1/2)/(e*(
-f)^(1/2)-d*g^(1/2)))*g^(1/2)/(-f)^(3/2)+1/2*b*n*polylog(2,(e*x+d)*g^(1/2)/
(e*(-f)^(1/2)+d*g^(1/2)))*g^(1/2)/(-f)^(3/2)
```

Rubi [A]
time = 0.24, antiderivative size = 290, normalized size of antiderivative = 1.00, number of steps used = 14, number of rules used = 11, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.407$, Rules used = {331, 211, 2463, 2442, 36, 29, 31, 2456, 2441, 2440, 2438}

$$-\frac{b\sqrt{g}\,n\,\text{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)}{2(-f)^{3/2}}+\frac{b\sqrt{g}\,n\,\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+e\sqrt{-f}}\right)}{2(-f)^{3/2}}+\frac{\sqrt{g}\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}\,x\right)}{d\sqrt{g}+e\sqrt{-f}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{2(-f)^{3/2}}-\frac{\sqrt{g}\log\left(\frac{e\left(\sqrt{-f}+\sqrt{g}\,x\right)}{e\sqrt{-f}-d\sqrt{g}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{2(-f)^{3/2}}-\frac{a+b\log\left(c(d+ex)^n\right)}{fx}+\frac{ben\log(x)}{df}-\frac{ben\log(d+ex)}{df}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])/(x^2*(f + g*x^2)),x]
```

```
[Out] (b*e*n*Log[x])/(d*f) - (b*e*n*Log[d + e*x])/(d*f) - (a + b*Log[c*(d + e*x)^
n])/(f*x) + (Sqrt[g]*(a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] - Sqrt[g]*
x))/(e*Sqrt[-f] + d*Sqrt[g])])/(2*(-f)^(3/2)) - (Sqrt[g]*(a + b*Log[c*(d +
e*x)^n])*Log[(e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g])])/(2*(-f)^
(3/2)) - (b*Sqrt[g]*n*PolyLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt
[g]))])/(2*(-f)^(3/2)) + (b*Sqrt[g]*n*PolyLog[2, (Sqrt[g]*(d + e*x))/(e*Sqr
t[-f] + d*Sqrt[g])])/(2*(-f)^(3/2))
```

Rule 29

```
Int[(x_)^(-1), x_Symbol] :> Simp[Log[x], x]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 36

```
Int[1/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))), x_Symbol] :> Dist[b/(b*c
 - a*d), Int[1/(a + b*x), x], x] - Dist[d/(b*c - a*d), Int[1/(c + d*x), x],
 x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0]
```

Rule 211

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]/a)*ArcTan[x/R
t[a/b, 2]], x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 331

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(c*x
)^(m + 1)*((a + b*x^n)^(p + 1)/(a*c*(m + 1))), x] - Dist[b*((m + n*(p + 1)
+ 1)/(a*c^n*(m + 1))), Int[(c*x)^(m + n)*(a + b*x^n)^p, x], x] /; FreeQ[{a,
 b, c, p}, x] && IGtQ[n, 0] && LtQ[m, -1] && IntBinomialQ[a, b, c, n, m, p,
 x]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + c*e*(x/g)])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2441

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d + e*x
)^n])/g), x] - Dist[b*e*(n/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2442

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[(f + g*x)^(q + 1)*((a + b*Log[c*(d + e*x)^n])/(
g*(q + 1))), x] - Dist[b*e*(n/(g*(q + 1))), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 2456

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_)^(r_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a + b*Log[c*(d + e*x)
^n])^p, (f + g*x^r)^q, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, r}, x] && I
GtQ[p, 0] && IntegerQ[q] && (GtQ[q, 0] || (IntegerQ[r] && NeQ[r, 1]))
```

Rule 2463

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rubi steps

$$\int \frac{a+b\log\left(c(d+ex)^n\right)}{x^2\left(f+gx^2\right)}\,dx = \int\left(\frac{a+b\log\left(c(d+ex)^n\right)}{fx^2}-\frac{g\left(a+b\log\left(c(d+ex)^n\right)\right)}{f\left(f+gx^2\right)}\right)dx$$

$$=\frac{\int\frac{a+b\log(c(d+ex)^n)}{x^2}\,dx}{f}-\frac{g\int\frac{a+b\log(c(d+ex)^n)}{f+gx^2}\,dx}{f}$$

$$=-\frac{a+b\log\left(c(d+ex)^n\right)}{fx}-\frac{g\int\left(\frac{\sqrt{-f}\,(a+b\log(c(d+ex)^n))}{2f\left(\sqrt{-f}-\sqrt{g}\,x\right)}+\frac{\sqrt{-f}\,(a+b\log(c(d+ex}{2f\left(\sqrt{-f}+\sqrt{g}\,x\right.}\right.}{f}$$

$$=-\frac{a+b\log\left(c(d+ex)^n\right)}{fx}-\frac{g\int\frac{a+b\log(c(d+ex)^n)}{\sqrt{-f}-\sqrt{g}\,x}\,dx}{2(-f)^{3/2}}-\frac{g\int\frac{a+b\log(c(d+ex)^n)}{\sqrt{-f}+\sqrt{g}\,x}\,dx}{2(-f)^{3/2}}+\frac{(}{}$$

$$=\frac{ben\log(x)}{df}-\frac{ben\log(d+ex)}{df}-\frac{a+b\log\left(c(d+ex)^n\right)}{fx}+\frac{\sqrt{g}\,\left(a+b\log\left(c(d\right.\right.}{}$$

$$=\frac{ben\log(x)}{df}-\frac{ben\log(d+ex)}{df}-\frac{a+b\log\left(c(d+ex)^n\right)}{fx}+\frac{\sqrt{g}\,\left(a+b\log\left(c(d\right.\right.}{}$$

$$=\frac{ben\log(x)}{df}-\frac{ben\log(d+ex)}{df}-\frac{a+b\log\left(c(d+ex)^n\right)}{fx}+\frac{\sqrt{g}\,\left(a+b\log\left(c(d\right.\right.}{}$$

Mathematica [A]

time = 0.12, size = 280, normalized size = 0.97

$$\frac{f\left(2be(-f)^{3/2}nx(\log(x)-\log(d+ex))+2d\sqrt{-f}\,f(a+b\log(c(d+ex)^n))+df\sqrt{g}\,x(a+b\log(c(d+ex)^n))\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}\,x\right)}{e\sqrt{-f}+d\sqrt{g}}\right)-df\sqrt{g}\,x(a+b\log(c(d+ex)^n))\log\left(\frac{e\left(\sqrt{-f}+\sqrt{g}\,x\right)}{e\sqrt{-f}-d\sqrt{g}}\right)-bdf\sqrt{g}\,nx\text{Li}_2\left(-\frac{\sqrt{g}\,(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)+bdf\sqrt{g}\,nx\text{Li}_2\left(\frac{\sqrt{g}\,(d+ex)}{e\sqrt{-f}+d\sqrt{g}}\right)\right)}{2d(-f)^{7/2}x}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])/(x^2*(f + g*x^2)),x]
```

```
[Out] (f*(2*b*e*(-f)^(3/2)*n*x*(Log[x] - Log[d + e*x]) + 2*d*Sqrt[-f]*f*(a + b*Lo
g[c*(d + e*x)^n]) + d*f*Sqrt[g]*x*(a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-
f] - Sqrt[g]*x))/(e*Sqrt[-f] + d*Sqrt[g])] - d*f*Sqrt[g]*x*(a + b*Log[c*(d
+ e*x)^n])*Log[(e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g])] - b*d*f
*Sqrt[g]*n*x*PolyLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))] +
b*d*f*Sqrt[g]*n*x*PolyLog[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])
)/(2*d*(-f)^(7/2)*x)
```

Maple [C] Result contains higher order function than in optimal. Order 9 vs. order 4.
time = 0.42, size = 722, normalized size = 2.49

method	result
risch	$-\frac{b\ln((ex+d)^n)}{fx}+\frac{bg\arctan\left(\frac{2g(ex+d)-2dg}{2e\sqrt{fg}}\right)n\ln(ex+d)}{f\sqrt{fg}}-\frac{bg\arctan\left(\frac{2g(ex+d)-2dg}{2e\sqrt{fg}}\right)\ln((ex+d)^n)}{f\sqrt{fg}}+\frac{ben\ln(ex)}{fd}-\frac{ben\ln(ex+}{df}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))/x^2/(g*x^2+f),x,method=_RETURNVERBOSE)
```

```
[Out] -b*ln((e*x+d)^n)/f/x+b/f*g/(f*g)^(1/2)*arctan(1/2*(2*g*(e*x+d)-2*d*g)/e/(f*
g)^(1/2))*n*ln(e*x+d)-b/f*g/(f*g)^(1/2)*arctan(1/2*(2*g*(e*x+d)-2*d*g)/e/(f
*g)^(1/2))*ln((e*x+d)^n)+b*e*n/f/d*ln(e*x)-b*e*n*ln(e*x+d)/d/f-1/2*b*n/f*g*
ln(e*x+d)/(-f*g)^(1/2)*ln((e*(-f*g)^(1/2)-g*(e*x+d)+d*g)/(e*(-f*g)^(1/2)+d*
g))+1/2*b*n/f*g*ln(e*x+d)/(-f*g)^(1/2)*ln((e*(-f*g)^(1/2)+g*(e*x+d)-d*g)/(e
*(-f*g)^(1/2)-d*g))-1/2*b*n/f*g/(-f*g)^(1/2)*dilog((e*(-f*g)^(1/2)-g*(e*x+d
)+d*g)/(e*(-f*g)^(1/2)+d*g))+1/2*b*n/f*g/(-f*g)^(1/2)*dilog((e*(-f*g)^(1/2)
+g*(e*x+d)-d*g)/(e*(-f*g)^(1/2)-d*g))-1/2*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)
^n)^2/f*g/(f*g)^(1/2)*arctan(x*g/(f*g)^(1/2))-1/2*I*b*Pi*csgn(I*c)*csgn(I*c
*(e*x+d)^n)^2/f/x+1/2*I*b*Pi*csgn(I*c*(e*x+d)^n)^3/f*g/(f*g)^(1/2)*arctan(x
*g/(f*g)^(1/2))-1/2*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/f/x+1/2*
I*b*Pi*csgn(I*c*(e*x+d)^n)^3/f/x-1/2*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x
+d)^n)^2/f*g/(f*g)^(1/2)*arctan(x*g/(f*g)^(1/2))+1/2*I*b*Pi*csgn(I*c)*csgn(
I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/f*g/(f*g)^(1/2)*arctan(x*g/(f*g)^(1/2))+1/
2*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/f/x-b*ln(c)/f*g/(f
*g)^(1/2)*arctan(x*g/(f*g)^(1/2))-b*ln(c)/f/x-a/f*g/(f*g)^(1/2)*arctan(x*g/
(f*g)^(1/2))-a/f/x
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/x^2/(g*x^2+f),x, algorithm="maxima")
[Out] -a*(g*arctan(g*x/sqrt(f*g))/(sqrt(f*g)*f) + 1/(f*x)) + b*integrate((log((x*
e + d)^n) + log(c))/(g*x^4 + f*x^2), x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/x^2/(g*x^2+f),x, algorithm="fricas")
[Out] integral((b*log((x*e + d)^n*c) + a)/(g*x^4 + f*x^2), x)
```

Sympy [F(-1)] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))/x**2/(g*x**2+f),x)
[Out] Timed out
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/x^2/(g*x^2+f),x, algorithm="giac")
[Out] integrate((b*log((x*e + d)^n*c) + a)/((g*x^2 + f)*x^2), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)}{x^2\,\left(g\,x^2+f\right)} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))/(x^2*(f + g*x^2)),x)
[Out] int((a + b*log(c*(d + e*x)^n))/(x^2*(f + g*x^2)), x)
```

3.265 $\int \frac{a+b\log(c(d+ex)^n)}{x^4(f+gx^2)}\,dx$

Optimal. Leaf size=388

$$-\frac{ben}{6dfx^2}+\frac{be^2n}{3d^2fx}+\frac{be^3n\log(x)}{3d^3f}-\frac{begn\log(x)}{df^2}-\frac{be^3n\log(d+ex)}{3d^3f}+\frac{begn\log(d+ex)}{df^2}-\frac{a+b\log\left(c(d+ex)^n\right)}{3fx^3}+\frac{g(}{}$$

```
[Out] -1/6*b*e*n/d/f/x^2+1/3*b*e^2*n/d^2/f/x+1/3*b*e^3*n*ln(x)/d^3/f-b*e*g*n*ln(x
)/d/f^2-1/3*b*e^3*n*ln(e*x+d)/d^3/f+b*e*g*n*ln(e*x+d)/d/f^2+1/3*(-a-b*ln(c*
(e*x+d)^n))/f/x^3+g*(a+b*ln(c*(e*x+d)^n))/f^2/x+1/2*g^(3/2)*(a+b*ln(c*(e*x+
d)^n))*ln(e*((-f)^(1/2)-x*g^(1/2))/(e*(-f)^(1/2)+d*g^(1/2)))/(-f)^(5/2)-1/2
*g^(3/2)*(a+b*ln(c*(e*x+d)^n))*ln(e*((-f)^(1/2)+x*g^(1/2))/(e*(-f)^(1/2)-d*
g^(1/2)))/(-f)^(5/2)-1/2*b*g^(3/2)*n*polylog(2,-(e*x+d)*g^(1/2)/(e*(-f)^(1/
2)-d*g^(1/2)))/(-f)^(5/2)+1/2*b*g^(3/2)*n*polylog(2,(e*x+d)*g^(1/2)/(e*(-f)
^(1/2)+d*g^(1/2)))/(-f)^(5/2)
```

Rubi [A]
time = 0.30, antiderivative size = 388, normalized size of antiderivative = 1.00, number of steps used = 17, number of rules used = 12, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.444$, Rules used = {331, 211, 2463, 2442, 46, 36, 29, 31, 2456, 2441, 2440, 2438}

$$-\frac{bg^{3/2}n\text{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)}{2(-f)^{5/2}}+\frac{bg^{3/2}n\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+e\sqrt{-f}}\right)}{2(-f)^{5/2}}+\frac{g(a+b\log(c(d+ex)^n))}{f^2x}+\frac{g^{3/2}\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}x\right)}{d\sqrt{g}+e\sqrt{-f}}\right)(a+b\log(c(d+ex)^n))}{2(-f)^{5/2}}-\frac{g^{3/2}\log\left(\frac{e\left(\sqrt{-f}+\sqrt{g}x\right)}{e\sqrt{-f}-d\sqrt{g}}\right)(a+b\log(c(d+ex)^n))}{2(-f)^{5/2}}-\frac{a+b\log(c(d+ex)^n)}{3fx^3}+\frac{be^3n\log(x)}{3d^3f}-\frac{be^3n\log(d+ex)}{3d^3f}+\frac{be^2n}{3d^2fx}-\frac{begn\log(x)}{df^2}+\frac{begn\log(d+ex)}{df^2}-\frac{ben}{6dfx^2}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])/(x^4*(f + g*x^2)),x]
```

```
[Out] -1/6*(b*e*n)/(d*f*x^2) + (b*e^2*n)/(3*d^2*f*x) + (b*e^3*n*Log[x])/(3*d^3*f)
 - (b*e*g*n*Log[x])/(d*f^2) - (b*e^3*n*Log[d + e*x])/(3*d^3*f) + (b*e*g*n*L
og[d + e*x])/(d*f^2) - (a + b*Log[c*(d + e*x)^n])/(3*f*x^3) + (g*(a + b*Log
[c*(d + e*x)^n]))/(f^2*x) + (g^(3/2)*(a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqr
t[-f] - Sqrt[g]*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(2*(-f)^(5/2)) - (g^(3/2)*(a
 + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqr
t[g])])/(2*(-f)^(5/2)) - (b*g^(3/2)*n*PolyLog[2, -((Sqrt[g]*(d + e*x))/(e*S
qrt[-f] - d*Sqrt[g]))])/(2*(-f)^(5/2)) + (b*g^(3/2)*n*PolyLog[2, (Sqrt[g]*(
d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(2*(-f)^(5/2))
```

Rule 29

```
Int[(x_)^(-1), x_Symbol] :> Simp[Log[x], x]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 36

```
Int[1/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))), x_Symbol] :> Dist[b/(b*c
 - a*d), Int[1/(a + b*x), x], x] - Dist[d/(b*c - a*d), Int[1/(c + d*x), x],
 x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0]
```

Rule 46

```
Int[((a_) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[E
xpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m +
 n + 2, 0])
```

Rule 211

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]/a)*ArcTan[x/R
t[a/b, 2]], x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 331

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(c*x
)^(m + 1)*((a + b*x^n)^(p + 1)/(a*c*(m + 1))), x] - Dist[b*((m + n*(p + 1)
+ 1)/(a*c^n*(m + 1))), Int[(c*x)^(m + n)*(a + b*x^n)^p, x], x] /; FreeQ[{a,
 b, c, p}, x] && IGtQ[n, 0] && LtQ[m, -1] && IntBinomialQ[a, b, c, n, m, p,
 x]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + c*e*(x/g)])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2441

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d + e*x
)^n])/g), x] - Dist[b*e*(n/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2442

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[(f + g*x)^(q + 1)*((a + b*Log[c*(d + e*x)^n])/(
g*(q + 1))), x] - Dist[b*e*(n/(g*(q + 1))), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 2456

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_)^(r_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a + b*Log[c*(d + e*x)
^n])^p, (f + g*x^r)^q, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, r}, x] && I
GtQ[p, 0] && IntegerQ[q] && (GtQ[q, 0] || (IntegerQ[r] && NeQ[r, 1]))
```

Rule 2463

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rubi steps

$$\int \frac{a+b\log \left(c(d+ex)^n\right)}{x^4 \left(f+gx^2\right)}\,dx = \int \left(\frac{a+b\log \left(c(d+ex)^n\right)}{fx^4} - \frac{g(a+b\log \left(c(d+ex)^n\right))}{f^2x^2} + \frac{g^2(a+b\log \left(c(d+\right.}{f^2 \left(f+gx^2\right)}\right.$$

$$= \frac{\int \frac{a+b\log(c(d+ex)^n)}{x^4}\,dx}{f} - \frac{g\int \frac{a+b\log(c(d+ex)^n)}{x^2}\,dx}{f^2} + \frac{g^2\int \frac{a+b\log(c(d+ex)^n)}{f+gx^2}\,dx}{f^2}$$

$$= -\frac{a+b\log \left(c(d+ex)^n\right)}{3fx^3} + \frac{g(a+b\log \left(c(d+ex)^n\right))}{f^2x} + \frac{g^2\int \left(\frac{\sqrt{-f}\,(a+b\log(c(\right.}{2f\left(\sqrt{-f}-\sqrt{\right.}}$$

$$= -\frac{a+b\log \left(c(d+ex)^n\right)}{3fx^3} + \frac{g(a+b\log \left(c(d+ex)^n\right))}{f^2x} - \frac{g^2\int \frac{a+b\log(c(d+ex)^n)}{\sqrt{-f}-\sqrt{g}\,x}\,dx}{2(-f)^{5/2}}$$

$$= -\frac{ben}{6dfx^2} + \frac{be^2n}{3d^2fx} + \frac{be^3n\log(x)}{3d^3f} - \frac{begn\log(x)}{df^2} - \frac{be^3n\log(d+ex)}{3d^3f} + \frac{begn\log}{}$$

$$= -\frac{ben}{6dfx^2} + \frac{be^2n}{3d^2fx} + \frac{be^3n\log(x)}{3d^3f} - \frac{begn\log(x)}{df^2} - \frac{be^3n\log(d+ex)}{3d^3f} + \frac{begn\log}{}$$

$$= -\frac{ben}{6dfx^2} + \frac{be^2n}{3d^2fx} + \frac{be^3n\log(x)}{3d^3f} - \frac{begn\log(x)}{df^2} - \frac{be^3n\log(d+ex)}{3d^3f} + \frac{begn\log}{}$$

Mathematica [A]
time = 0.25, size = 350, normalized size = 0.90

$$\frac{1}{6}\left(-\frac{6begn(\log(x)-\log(d+ex))}{df^2} - \frac{ben(d(d-2ex)-2e^2x^2\log(x)+2e^2x^2\log(d+ex))}{d^3fx^2} - \frac{2(a+b\log(c(d+ex)^n))}{fx^3} + \frac{6g(a+b\log(c(d+ex)^n))}{f^2x} + \frac{3g^{3/2}(a+b\log(c(d+ex)^n))\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}\,x\right)}{e\sqrt{-f}+d\sqrt{g}}\right)}{(-f)^{5/2}} - \frac{3g^{3/2}(a+b\log(c(d+ex)^n))\log\left(\frac{e\left(\sqrt{-f}+\sqrt{g}\,x\right)}{e\sqrt{-f}-d\sqrt{g}}\right)}{(-f)^{5/2}} - \frac{3bg^{3/2}n\mathrm{Li}_2\left(-\frac{\sqrt{g}\,(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)}{(-f)^{5/2}} + \frac{3bg^{3/2}n\mathrm{Li}_2\left(\frac{\sqrt{g}\,(d+ex)}{e\sqrt{-f}+d\sqrt{g}}\right)}{(-f)^{5/2}}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])/(x^4*(f + g*x^2)),x]
```

```
[Out] ((-6*b*e*g*n*(Log[x] - Log[d + e*x]))/(d*f^2) - (b*e*n*(d*(d - 2*e*x) - 2*e
^2*x^2*Log[x] + 2*e^2*x^2*Log[d + e*x]))/(d^3*f*x^2) - (2*(a + b*Log[c*(d +
 e*x)^n]))/(f*x^3) + (6*g*(a + b*Log[c*(d + e*x)^n]))/(f^2*x) + (3*g^(3/2)*
(a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[-f] + d*S
qrt[g])])/(-f)^(5/2) - (3*g^(3/2)*(a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-
```

```
f] + Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g])])/(-f)^(5/2) - (3*b*g^(3/2)*n*Pol
yLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/(-f)^(5/2) + (3*b
*g^(3/2)*n*PolyLog[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(-f)^(
5/2))/6
```

Maple [C] Result contains higher order function than in optimal. Order 9 vs. order 4.
time = 0.53, size = 983, normalized size = 2.53

method	result
risch	$\frac{b e^3 n \ln(ex)}{3f d^3} + \frac{b \ln((ex+d)^n) g}{f^2 x} - \frac{a}{3f x^3} + \frac{ib\pi \operatorname{csgn}(ic(ex+d)^n)^3}{6f x^3} - \frac{b g^2 \arctan\left(\frac{2g(ex+d)-2dg}{2e\sqrt{fg}}\right) n \ln(ex+d)}{f^2\sqrt{fg}} - \frac{beng \ln(ex)}{f^2 d} + -$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))/x^4/(g*x^2+f),x,method=_RETURNVERBOSE)
```

```
[Out] 1/2*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/f^2*g^2/(f*g)^(1/2)*arct
an(x*g/(f*g)^(1/2))+1/3*b*e^3*n/f/d^3*ln(e*x)-1/2*I*b*Pi*csgn(I*c)*csgn(I*(
e*x+d)^n)*csgn(I*c*(e*x+d)^n)/f^2*g/x+1/2*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c
*(e*x+d)^n)^2/f^2*g/x+1/2*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/f^2*g^2/(f
*g)^(1/2)*arctan(x*g/(f*g)^(1/2))+1/2*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^
2/f^2*g/x+b*ln((e*x+d)^n)/f^2*g/x-1/3*a/f/x^3-b*g^2/f^2/(f*g)^(1/2)*arctan(
1/2*(2*g*(e*x+d)-2*d*g)/e/(f*g)^(1/2))*n*ln(e*x+d)-b*e*n/f^2*g/d*ln(e*x)+b*
g^2/f^2/(f*g)^(1/2)*arctan(1/2*(2*g*(e*x+d)-2*d*g)/e/(f*g)^(1/2))*ln((e*x+d
)^n)-1/2*I*b*Pi*csgn(I*c*(e*x+d)^n)^3/f^2*g^2/(f*g)^(1/2)*arctan(x*g/(f*g)^
(1/2))+1/6*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/f/x^3+a/f
^2*g/x+a/f^2*g^2/(f*g)^(1/2)*arctan(x*g/(f*g)^(1/2))-1/3*b*ln(c)/f/x^3+1/6*
I*b*Pi*csgn(I*c*(e*x+d)^n)^3/f/x^3-1/6*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e
*x+d)^n)^2/f/x^3+b*ln(c)/f^2*g/x+1/2*b*n*g^2/f^2/(-f*g)^(1/2)*dilog((e*(-f*
g)^(1/2)-g*(e*x+d)+d*g)/(e*(-f*g)^(1/2)+d*g))-1/2*b*n*g^2/f^2/(-f*g)^(1/2)*
dilog((e*(-f*g)^(1/2)+g*(e*x+d)-d*g)/(e*(-f*g)^(1/2)-d*g))-1/2*I*b*Pi*csgn(
I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/f^2*g^2/(f*g)^(1/2)*arctan(x*g/(
f*g)^(1/2))-1/3*b/f/x^3*ln((e*x+d)^n)-1/6*b*e*n/d/f/x^2+1/3*b*e^2*n/d^2/f/x
+b*ln(c)/f^2*g^2/(f*g)^(1/2)*arctan(x*g/(f*g)^(1/2))+1/2*b*n*g^2/f^2*ln(e*x
+d)/(-f*g)^(1/2)*ln((e*(-f*g)^(1/2)-g*(e*x+d)+d*g)/(e*(-f*g)^(1/2)+d*g))-1/
2*b*n*g^2/f^2*ln(e*x+d)/(-f*g)^(1/2)*ln((e*(-f*g)^(1/2)+g*(e*x+d)-d*g)/(e*(
-f*g)^(1/2)-d*g))-1/2*I*b*Pi*csgn(I*c*(e*x+d)^n)^3/f^2*g/x-1/6*I*b*Pi*csgn(
I*c)*csgn(I*c*(e*x+d)^n)^2/f/x^3+b*e*g*n*ln(e*x+d)/d/f^2-1/3*b*e^3*n*ln(e*x
+d)/d^3/f
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/x^4/(g*x^2+f),x, algorithm="maxima")
```

```
[Out] 1/3*a*(3*g^2*arctan(g*x/sqrt(f*g))/(sqrt(f*g)*f^2) + (3*g*x^2 - f)/(f^2*x^3
)) + b*integrate((log((x*e + d)^n) + log(c))/(g*x^6 + f*x^4), x)
```

Fricas [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/x^4/(g*x^2+f),x, algorithm="fricas")
```

```
[Out] integral((b*log((x*e + d)^n*c) + a)/(g*x^6 + f*x^4), x)
```

Sympy [**F(-1)**] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))/x**4/(g*x**2+f),x)
```

```
[Out] Timed out
```

Giac [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/x^4/(g*x^2+f),x, algorithm="giac")
```

```
[Out] integrate((b*log((x*e + d)^n*c) + a)/((g*x^2 + f)*x^4), x)
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)}{x^4\,\left(g\,x^2+f\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))/(x^4*(f + g*x^2)),x)
```

```
[Out] int((a + b*log(c*(d + e*x)^n))/(x^4*(f + g*x^2)), x)
```

3.266 $\int \frac{x^5(a+b\log(c(d+ex)^n))}{(f+gx^2)^2}\,dx$

Optimal. Leaf size=417

$$\frac{bdnx}{2eg^2}-\frac{bnx^2}{4g^2}+\frac{bdef^{3/2}n\tan^{-1}\left(\frac{\sqrt{g}\,x}{\sqrt{f}}\right)}{2g^{5/2}\left(e^2f+d^2g\right)}-\frac{bd^2n\log(d+ex)}{2e^2g^2}+\frac{be^2f^2n\log(d+ex)}{2g^3\left(e^2f+d^2g\right)}+\frac{x^2(a+b\log\left(c(d+ex)^n\right))}{2g^2}-$$

```
[Out] 1/2*b*d*n*x/e/g^2-1/4*b*n*x^2/g^2+1/2*b*d*e*f^(3/2)*n*arctan(x*g^(1/2)/f^(1
/2))/g^(5/2)/(d^2*g+e^2*f)-1/2*b*d^2*n*ln(e*x+d)/e^2/g^2+1/2*b*e^2*f^2*n*ln
(e*x+d)/g^3/(d^2*g+e^2*f)+1/2*x^2*(a+b*ln(c*(e*x+d)^n))/g^2-1/2*f^2*(a+b*ln
(c*(e*x+d)^n))/g^3/(g*x^2+f)-1/4*b*e^2*f^2*n*ln(g*x^2+f)/g^3/(d^2*g+e^2*f)-
f*(a+b*ln(c*(e*x+d)^n))*ln(e*((-f)^(1/2)-x*g^(1/2))/(e*(-f)^(1/2)+d*g^(1/2)
))/g^3-f*(a+b*ln(c*(e*x+d)^n))*ln(e*((-f)^(1/2)+x*g^(1/2))/(e*(-f)^(1/2)-d*
g^(1/2)))/g^3-b*f*n*polylog(2,-(e*x+d)*g^(1/2)/(e*(-f)^(1/2)-d*g^(1/2)))/g^
3-b*f*n*polylog(2,(e*x+d)*g^(1/2)/(e*(-f)^(1/2)+d*g^(1/2)))/g^3
```

Rubi [A]
time = 0.36, antiderivative size = 417, normalized size of antiderivative = 1.00, number of steps used = 19, number of rules used = 13, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.482$, Rules used = {272, 45, 2463, 2442, 2460, 720, 31, 649, 211, 266, 2441, 2440, 2438}

$$-\frac{bfn\text{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)}{g^3}-\frac{bfn\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+e\sqrt{-f}}\right)}{g^3}-\frac{f^2(a+b\log(c(d+ex)^n))}{2g^3(f+gx^2)}-\frac{f\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}x\right)}{d\sqrt{g}+e\sqrt{-f}}\right)(a+b\log(c(d+ex)^n))}{g^3}-\frac{f\log\left(\frac{e\left(\sqrt{-f}+\sqrt{g}x\right)}{e\sqrt{-f}-d\sqrt{g}}\right)(a+b\log(c(d+ex)^n))}{g^3}+\frac{x^2(a+b\log(c(d+ex)^n))}{2g^2}+\frac{bdef^{3/2}n\text{ArcTan}\left(\frac{\sqrt{g}x}{\sqrt{f}}\right)}{2g^{5/2}(d^2g+e^2f)}-\frac{be^2f^2n\log(f+gx^2)}{4g^3(d^2g+e^2f)}+\frac{be^2f^2n\log(d+ex)}{2g^3(d^2g+e^2f)}-\frac{bd^2n\log(d+ex)}{2e^2g^2}+\frac{bdnx}{2eg^2}-\frac{bnx^2}{4g^2}$$

Antiderivative was successfully verified.

```
[In] Int[(x^5*(a + b*Log[c*(d + e*x)^n]))/(f + g*x^2)^2,x]
```

```
[Out] (b*d*n*x)/(2*e*g^2) - (b*n*x^2)/(4*g^2) + (b*d*e*f^(3/2)*n*ArcTan[(Sqrt[g]*
x)/Sqrt[f]])/(2*g^(5/2)*(e^2*f + d^2*g)) - (b*d^2*n*Log[d + e*x])/(2*e^2*g^
2) + (b*e^2*f^2*n*Log[d + e*x])/(2*g^3*(e^2*f + d^2*g)) + (x^2*(a + b*Log[c
*(d + e*x)^n]))/(2*g^2) - (f^2*(a + b*Log[c*(d + e*x)^n]))/(2*g^3*(f + g*x^
2)) - (f*(a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[
-f] + d*Sqrt[g])])/g^3 - (f*(a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] + S
qrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g])])/g^3 - (b*e^2*f^2*n*Log[f + g*x^2])/(4
*g^3*(e^2*f + d^2*g)) - (b*f*n*PolyLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f]
 - d*Sqrt[g]))])/g^3 - (b*f*n*PolyLog[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] +
d*Sqrt[g])])/g^3
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 211

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]/a)*ArcTan[x/R
t[a/b, 2]], x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 266

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 272

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 649

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2), x_Symbol] :> Dist[d, Int[1/(
a + c*x^2), x], x] + Dist[e, Int[x/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e
}, x] &&  !NiceSqrtQ[(-a)*c]
```

Rule 720

```
Int[1/(((d_) + (e_.)*(x_))*((a_) + (c_.)*(x_)^2)), x_Symbol] :> Dist[e^2/(c
*d^2 + a*e^2), Int[1/(d + e*x), x], x] + Dist[1/(c*d^2 + a*e^2), Int[(c*d -
 c*e*x)/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e}, x] && NeQ[c*d^2 + a*e^2,
 0]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + c*e*(x/g)])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2441

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d + e*x
)^n])/g), x] - Dist[b*e*(n/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2442

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[(f + g*x)^(q + 1)*((a + b*Log[c*(d + e*x)^n])/(
g*(q + 1))), x] - Dist[b*e*(n/(g*(q + 1))), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 2460

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(x_)^(m_.)*(
(f_.) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Simp[(f + g*x^r)^(q + 1)*((a
+ b*Log[c*(d + e*x)^n])^p/(g*r*(q + 1))), x] - Dist[b*e*n*(p/(g*r*(q + 1)))
, Int[(f + g*x^r)^(q + 1)*((a + b*Log[c*(d + e*x)^n])^(p - 1)/(d + e*x)), x
], x] /; FreeQ[{a, b, c, d, e, f, g, m, n, q, r}, x] && EqQ[m, r - 1] && Ne
Q[q, -1] && IGtQ[p, 0]
```

Rule 2463

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rubi steps

$$\int \frac{x^5(a+b\log(c(d+ex)^n))}{(f+gx^2)^2}\,dx = \int \left(\frac{x(a+b\log(c(d+ex)^n))}{g^2} + \frac{f^2x(a+b\log(c(d+ex)^n))}{g^2(f+gx^2)^2} - \frac{2fx(a+b}{g^2}\right.$$

$$= \frac{\int x(a+b\log(c(d+ex)^n))\,dx}{g^2} - \frac{(2f)\int \frac{x(a+b\log(c(d+ex)^n))}{f+gx^2}\,dx}{g^2} + \frac{f^2\int \frac{x(a+}{}}{}$$

$$= \frac{x^2(a+b\log(c(d+ex)^n))}{2g^2} - \frac{f^2(a+b\log(c(d+ex)^n))}{2g^3(f+gx^2)} - \frac{(2f)\int\left(-\frac{}{2\sqrt{}}\right.}{}$$

$$= \frac{x^2(a+b\log(c(d+ex)^n))}{2g^2} - \frac{f^2(a+b\log(c(d+ex)^n))}{2g^3(f+gx^2)} + \frac{f\int \frac{a+b\log(c(d+e}{\sqrt{-f}-\sqrt{}}}{g^{5/2}}$$

$$= \frac{bdnx}{2eg^2} - \frac{bnx^2}{4g^2} - \frac{bd^2n\log(d+ex)}{2e^2g^2} + \frac{be^2f^2n\log(d+ex)}{2g^3(e^2f+d^2g)} + \frac{x^2(a+b\log(c}{2g^2}$$

$$= \frac{bdnx}{2eg^2} - \frac{bnx^2}{4g^2} + \frac{bdef^{3/2}n\tan^{-1}\left(\frac{\sqrt{g}\,x}{\sqrt{f}}\right)}{2g^{5/2}(e^2f+d^2g)} - \frac{bd^2n\log(d+ex)}{2e^2g^2} + \frac{be^2f^2n\,l}{2g^3(e^2}$$

$$= \frac{bdnx}{2eg^2} - \frac{bnx^2}{4g^2} + \frac{bdef^{3/2}n\tan^{-1}\left(\frac{\sqrt{g}\,x}{\sqrt{f}}\right)}{2g^{5/2}(e^2f+d^2g)} - \frac{bd^2n\log(d+ex)}{2e^2g^2} + \frac{be^2f^2n\,l}{2g^3(e^2}$$

Mathematica [C] Result contains complex when optimal does not.
time = 0.93, size = 530, normalized size = 1.27

$$\frac{2gx^2(a-bn\log(d+ex)+b\log(c(d+ex)^n)) - \frac{2f^2(a-bn\log(d+ex)+b\log(c(d+ex)^n))}{f+gx^2} - 4f(a-bn\log(d+ex)+b\log(c(d+ex)^n))\log(f+gx^2) + bn\left(\frac{g(ex(2d-ex)-2(d^2-e^2x^2)\log(d+ex))}{e^2} + \frac{f^{3/2}\left(i\sqrt{g}(d+ex)\log(d+ex)-e\left(\sqrt{f}+i\sqrt{g}x\right)\log\left(i\sqrt{f}-\sqrt{g}x\right)\right)}{\left(e\sqrt{f}-id\sqrt{g}\right)\left(\sqrt{f}+i\sqrt{g}x\right)} + \frac{if^{3/2}\left(-\sqrt{g}(d+ex)\log(d+ex)+e\left(i\sqrt{f}+\sqrt{g}x\right)\log\left(i\sqrt{f}+\sqrt{g}x\right)\right)}{\left(e\sqrt{f}+id\sqrt{g}\right)\left(\sqrt{f}-i\sqrt{g}x\right)} - 4f\left(\log(d+ex)\log\left(\frac{e\left(\sqrt{f}+i\sqrt{g}x\right)}{e\sqrt{f}-id\sqrt{g}}\right)+\text{Li}_2\left(-\frac{i\sqrt{g}(d+ex)}{e\sqrt{f}-id\sqrt{g}}\right)\right) - 4f\left(\log(d+ex)\log\left(\frac{e\left(\sqrt{f}-i\sqrt{g}x\right)}{e\sqrt{f}+id\sqrt{g}}\right)+\text{Li}_2\left(\frac{i\sqrt{g}(d+ex)}{e\sqrt{f}+id\sqrt{g}}\right)\right)\right)}{4g^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^5*(a + b*Log[c*(d + e*x)^n]))/(f + g*x^2)^2,x]
```

```
[Out] (2*g*x^2*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n]) - (2*f^2*(a - b*n*Lo
g[d + e*x] + b*Log[c*(d + e*x)^n]))/(f + g*x^2) - 4*f*(a - b*n*Log[d + e*x]
 + b*Log[c*(d + e*x)^n])*Log[f + g*x^2] + b*n*((g*(e*x*(2*d - e*x) - 2*(d^2
 - e^2*x^2)*Log[d + e*x]))/e^2 + (f^(3/2)*(I*Sqrt[g]*(d + e*x)*Log[d + e*x]
 - e*(Sqrt[f] + I*Sqrt[g]*x)*Log[I*Sqrt[f] - Sqrt[g]*x]))/((e*Sqrt[f] - I*d
*Sqrt[g])*(Sqrt[f] + I*Sqrt[g]*x)) + (I*f^(3/2)*(-(Sqrt[g]*(d + e*x)*Log[d
```

```
+ e*x]) + e*(I*Sqrt[f] + Sqrt[g]*x)*Log[I*Sqrt[f] + Sqrt[g]*x]))/((e*Sqrt[f
] + I*d*Sqrt[g])*(Sqrt[f] - I*Sqrt[g]*x)) - 4*f*(Log[d + e*x]*Log[(e*(Sqrt[
f] + I*Sqrt[g]*x))/(e*Sqrt[f] - I*d*Sqrt[g])] + PolyLog[2, ((-I)*Sqrt[g]*(d
 + e*x))/(e*Sqrt[f] - I*d*Sqrt[g])]) - 4*f*(Log[d + e*x]*Log[(e*(Sqrt[f] -
I*Sqrt[g]*x))/(e*Sqrt[f] + I*d*Sqrt[g])] + PolyLog[2, (I*Sqrt[g]*(d + e*x))
/(e*Sqrt[f] + I*d*Sqrt[g])])))/(4*g^3)
```

Maple [C] Result contains higher order function than in optimal. Order 9 vs. order 4.
time = 0.44, size = 1008, normalized size = 2.42

method	result
risch	$-\frac{bn\ln(ex+d)d^4}{2e^2g(d^2g+f e^2)}+\frac{a x^2}{2g^2}-\frac{af\ln(g x^2+f)}{g^3}-\frac{a f^2}{2g^3(g x^2+f)}+\frac{b\ln((ex+d)^n)x^2}{2g^2}+\frac{b\ln(c)x^2}{2g^2}-\frac{bn\ln(ex+d)d^2 f}{2g^2(d^2g+f e^2)}-\frac{ib\pi\,\mathrm{csgn}(ic$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^5*(a+b*ln(c*(e*x+d)^n))/(g*x^2+f)^2,x,method=_RETURNVERBOSE)
```

```
[Out] -1/4*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/g^2*x^2-1/2*b/e
^2*n/g/(d^2*g+e^2*f)*ln(e*x+d)*d^4+1/2*a/g^2*x^2-1/2*I*b*Pi*csgn(I*c)*csgn(
I*c*(e*x+d)^n)^2*f/g^3*ln(g*x^2+f)-a*f/g^3*ln(g*x^2+f)-1/2*a*f^2/g^3/(g*x^2
+f)-1/2*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2*f/g^3*ln(g*x^2+f)+1/
4*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/g^2*x^2+1/2*b*ln((e*x+d)^n)/g^2*x^
2+1/2*b*ln(c)/g^2*x^2-1/2*b*n/g^2/(d^2*g+e^2*f)*ln(e*x+d)*d^2*f-1/4*I*b*Pi*
csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*f^2/g^3/(g*x^2+f)-1/4*I*b*Pi*csgn(I*(e*x+d)
^n)*csgn(I*c*(e*x+d)^n)^2*f^2/g^3/(g*x^2+f)+1/2*b*e*n/g^2*f^2/(d^2*g+e^2*f)
*d/(f*g)^(1/2)*arctan(x*g/(f*g)^(1/2))-1/2*b*ln(c)*f^2/g^3/(g*x^2+f)-b*ln(c
)*f/g^3*ln(g*x^2+f)+1/2*I*b*Pi*csgn(I*c*(e*x+d)^n)^3*f/g^3*ln(g*x^2+f)-b*ln
((e*x+d)^n)*f/g^3*ln(g*x^2+f)-b*n*f/g^3*dilog((e*(-f*g)^(1/2)-g*(e*x+d)+d*g
)/(e*(-f*g)^(1/2)+d*g))-b*n*f/g^3*dilog((e*(-f*g)^(1/2)+g*(e*x+d)-d*g)/(e*(
-f*g)^(1/2)-d*g))+b*n*f/g^3*ln(e*x+d)*ln(g*x^2+f)-b*n*f/g^3*ln(e*x+d)*ln((e
*(-f*g)^(1/2)-g*(e*x+d)+d*g)/(e*(-f*g)^(1/2)+d*g))-b*n*f/g^3*ln(e*x+d)*ln((
e*(-f*g)^(1/2)+g*(e*x+d)-d*g)/(e*(-f*g)^(1/2)-d*g))-1/4*I*b*Pi*csgn(I*c*(e*
x+d)^n)^3/g^2*x^2-1/2*b*ln((e*x+d)^n)*f^2/g^3/(g*x^2+f)+1/4*I*b*Pi*csgn(I*c
*(e*x+d)^n)^3*f^2/g^3/(g*x^2+f)+1/4*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn
(I*c*(e*x+d)^n)*f^2/g^3/(g*x^2+f)+1/2*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*cs
gn(I*c*(e*x+d)^n)*f/g^3*ln(g*x^2+f)+1/4*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(
e*x+d)^n)^2/g^2*x^2+1/2*b*d*n*x/e/g^2-1/4*b*n*x^2/g^2+1/2*b*e^2*f^2*n*ln(e*
x+d)/g^3/(d^2*g+e^2*f)-1/4*b*e^2*f^2*n*ln(g*x^2+f)/g^3/(d^2*g+e^2*f)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(a+b*log(c*(e*x+d)^n))/(g*x^2+f)^2,x, algorithm="maxima")
```

```
[Out] -1/2*a*(f^2/(g^4*x^2 + f*g^3) - x^2/g^2 + 2*f*log(g*x^2 + f)/g^3) + b*integ
rate((x^5*log((x*e + d)^n) + x^5*log(c))/(g^2*x^4 + 2*f*g*x^2 + f^2), x)
```

Fricas [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(a+b*log(c*(e*x+d)^n))/(g*x^2+f)^2,x, algorithm="fricas")
```

```
[Out] integral((b*x^5*log((x*e + d)^n*c) + a*x^5)/(g^2*x^4 + 2*f*g*x^2 + f^2), x)
```

Sympy [**F(-1)**] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**5*(a+b*ln(c*(e*x+d)**n))/(g*x**2+f)**2,x)
```

```
[Out] Timed out
```

Giac [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(a+b*log(c*(e*x+d)^n))/(g*x^2+f)^2,x, algorithm="giac")
```

```
[Out] integrate((b*log((x*e + d)^n*c) + a)*x^5/(g*x^2 + f)^2, x)
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x^5\,\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)}{{\left(g\,x^2+f\right)}^2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^5*(a + b*log(c*(d + e*x)^n)))/(f + g*x^2)^2,x)
```

```
[Out] int((x^5*(a + b*log(c*(d + e*x)^n)))/(f + g*x^2)^2, x)
```

3.267 $\int \frac{x^3(a+b\log(c(d+ex)^n))}{(f+gx^2)^2}\,dx$

Optimal. Leaf size=344

$$-\frac{bde\sqrt{f}\,n\tan^{-1}\left(\frac{\sqrt{g}\,x}{\sqrt{f}}\right)}{2g^{3/2}\left(e^2f+d^2g\right)}-\frac{be^2fn\log(d+ex)}{2g^2\left(e^2f+d^2g\right)}+\frac{f(a+b\log\left(c(d+ex)^n\right))}{2g^2\left(f+gx^2\right)}+\frac{(a+b\log\left(c(d+ex)^n\right))\log\left(\frac{e(\cdots}{e\cdots}\right.}{2g^2}$$

```
[Out] -1/2*b*e^2*f*n*ln(e*x+d)/g^2/(d^2*g+e^2*f)+1/2*f*(a+b*ln(c*(e*x+d)^n))/g^2/
(g*x^2+f)+1/4*b*e^2*f*n*ln(g*x^2+f)/g^2/(d^2*g+e^2*f)+1/2*(a+b*ln(c*(e*x+d)
^n))*ln(e*((-f)^(1/2)-x*g^(1/2))/(e*(-f)^(1/2)+d*g^(1/2)))/g^2+1/2*(a+b*ln(
c*(e*x+d)^n))*ln(e*((-f)^(1/2)+x*g^(1/2))/(e*(-f)^(1/2)-d*g^(1/2)))/g^2+1/2
*b*n*polylog(2,-(e*x+d)*g^(1/2)/(e*(-f)^(1/2)-d*g^(1/2)))/g^2+1/2*b*n*polyl
og(2,(e*x+d)*g^(1/2)/(e*(-f)^(1/2)+d*g^(1/2)))/g^2-1/2*b*d*e*n*arctan(x*g^(
1/2)/f^(1/2))*f^(1/2)/g^(3/2)/(d^2*g+e^2*f)
```

Rubi [A]
time = 0.31, antiderivative size = 344, normalized size of antiderivative = 1.00, number of steps used = 16, number of rules used = 12, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.444$, Rules used = {272, 45, 2463, 2460, 720, 31, 649, 211, 266, 2441, 2440, 2438}

$$\frac{bn\text{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)}{2g^2}+\frac{bn\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+e\sqrt{-f}}\right)}{2g^2}+\frac{f(a+b\log\left(c(d+ex)^n\right))}{2g^2\left(f+gx^2\right)}+\frac{\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}x\right)}{d\sqrt{g}+e\sqrt{-f}}\right)(a+b\log\left(c(d+ex)^n\right))}{2g^2}+\frac{\log\left(\frac{e\left(\sqrt{-f}+\sqrt{g}x\right)}{e\sqrt{-f}-d\sqrt{g}}\right)(a+b\log\left(c(d+ex)^n\right))}{2g^2}-\frac{bde\sqrt{f}\,n\text{ArcTan}\left(\frac{\sqrt{g}x}{\sqrt{f}}\right)}{2g^{3/2}\left(d^2g+e^2f\right)}+\frac{be^2fn\log\left(f+gx^2\right)}{4g^2\left(d^2g+e^2f\right)}-\frac{be^2fn\log(d+ex)}{2g^2\left(d^2g+e^2f\right)}$$

Antiderivative was successfully verified.

```
[In] Int[(x^3*(a + b*Log[c*(d + e*x)^n]))/(f + g*x^2)^2,x]
```

```
[Out] -1/2*(b*d*e*Sqrt[f]*n*ArcTan[(Sqrt[g]*x)/Sqrt[f]])/(g^(3/2)*(e^2*f + d^2*g)
) - (b*e^2*f*n*Log[d + e*x])/(2*g^2*(e^2*f + d^2*g)) + (f*(a + b*Log[c*(d +
 e*x)^n]))/(2*g^2*(f + g*x^2)) + ((a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-
f] - Sqrt[g]*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(2*g^2) + ((a + b*Log[c*(d + e*
x)^n])*Log[(e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g])])/(2*g^2) +
(b*e^2*f*n*Log[f + g*x^2])/(4*g^2*(e^2*f + d^2*g)) + (b*n*PolyLog[2, -((Sqr
t[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/(2*g^2) + (b*n*PolyLog[2, (Sqrt
[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(2*g^2)
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
```

```
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 211

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]/a)*ArcTan[x/R
t[a/b, 2]], x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 266

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 272

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 649

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2), x_Symbol] :> Dist[d, Int[1/(
a + c*x^2), x], x] + Dist[e, Int[x/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e
}, x] &&  !NiceSqrtQ[(-a)*c]
```

Rule 720

```
Int[1/(((d_) + (e_.)*(x_))*((a_) + (c_.)*(x_)^2)), x_Symbol] :> Dist[e^2/(c
*d^2 + a*e^2), Int[1/(d + e*x), x], x] + Dist[1/(c*d^2 + a*e^2), Int[(c*d -
 c*e*x)/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e}, x] && NeQ[c*d^2 + a*e^2,
 0]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + c*e*(x/g)])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2441

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d + e*x
)^n])/g), x] - Dist[b*e*(n/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2460

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(x_)^(m_.)*(
(f_.) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Simp[(f + g*x^r)^(q + 1)*((a
+ b*Log[c*(d + e*x)^n])^p/(g*r*(q + 1))), x] - Dist[b*e*n*(p/(g*r*(q + 1)))
, Int[(f + g*x^r)^(q + 1)*((a + b*Log[c*(d + e*x)^n])^(p - 1)/(d + e*x)), x
], x] /; FreeQ[{a, b, c, d, e, f, g, m, n, q, r}, x] && EqQ[m, r - 1] && Ne
Q[q, -1] && IGtQ[p, 0]
```

Rule 2463

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rubi steps

$$\int \frac{x^3(a+b\log(c(d+ex)^n))}{(f+gx^2)^2}\,dx = \int \left(-\frac{fx(a+b\log(c(d+ex)^n))}{g(f+gx^2)^2}+\frac{x(a+b\log(c(d+ex)^n))}{g(f+gx^2)}\right)dx$$

$$= \frac{\int \frac{x(a+b\log(c(d+ex)^n))}{f+gx^2}\,dx}{g} - \frac{f\int \frac{x(a+b\log(c(d+ex)^n))}{(f+gx^2)^2}\,dx}{g}$$

$$= \frac{f(a+b\log(c(d+ex)^n))}{2g^2(f+gx^2)} + \frac{\int \left(-\frac{a+b\log(c(d+ex)^n)}{2\sqrt{g}\left(\sqrt{-f}-\sqrt{g}x\right)}+\frac{a+b\log(c(d+e}{2\sqrt{g}\left(\sqrt{-f}+\right.}\right.}{g}$$

$$= \frac{f(a+b\log(c(d+ex)^n))}{2g^2(f+gx^2)} - \frac{\int \frac{a+b\log(c(d+ex)^n)}{\sqrt{-f}-\sqrt{g}x}\,dx}{2g^{3/2}} + \frac{\int \frac{a+b\log(c(d+ex)^n)}{\sqrt{-f}+\sqrt{g}x}\,dx}{2g^{3/2}} -$$

$$= -\frac{be^2fn\log(d+ex)}{2g^2(e^2f+d^2g)} + \frac{f(a+b\log(c(d+ex)^n))}{2g^2(f+gx^2)} + \frac{(a+b\log(c(d+ex)^n}{}$$

$$= -\frac{bde\sqrt{f}\,n\tan^{-1}\left(\frac{\sqrt{g}x}{\sqrt{f}}\right)}{2g^{3/2}(e^2f+d^2g)} - \frac{be^2fn\log(d+ex)}{2g^2(e^2f+d^2g)} + \frac{f(a+b\log(c(d+ex}{2g^2(f+gx^2)}$$

$$= -\frac{bde\sqrt{f}\,n\tan^{-1}\left(\frac{\sqrt{g}x}{\sqrt{f}}\right)}{2g^{3/2}(e^2f+d^2g)} - \frac{be^2fn\log(d+ex)}{2g^2(e^2f+d^2g)} + \frac{f(a+b\log(c(d+ex}{2g^2(f+gx^2)}$$

Mathematica [C] Result contains complex when optimal does not.
time = 0.72, size = 455, normalized size = 1.32

$$\frac{\frac{2f(a-bn\log(d+ex)+b\log(c(d+ex)^n))}{f+gx^2}+2(a-bn\log(d+ex)+b\log(c(d+ex)^n))\log(f+gx^2)+bn\left(\frac{\sqrt{f}\left(-i\sqrt{g}(d+ex)\log(d+ex)+e\left(\sqrt{f}+i\sqrt{g}x\right)\log\left(i\sqrt{f}-\sqrt{g}x\right)\right)}{\left(e\sqrt{f}-id\sqrt{g}\right)\left(\sqrt{f}+i\sqrt{g}x\right)}+\frac{\sqrt{f}\left(i\sqrt{g}(d+ex)\log(d+ex)+e\left(\sqrt{f}-i\sqrt{g}x\right)\log\left(i\sqrt{f}+\sqrt{g}x\right)\right)}{\left(e\sqrt{f}+id\sqrt{g}\right)\left(\sqrt{f}-i\sqrt{g}x\right)}+2\left(\log(d+ex)\log\left(\frac{e\left(\sqrt{f}+i\sqrt{g}x\right)}{e\sqrt{f}-id\sqrt{g}}\right)+\operatorname{Li}_2\left(-\frac{i\sqrt{g}(d+ex)}{e\sqrt{f}-id\sqrt{g}}\right)\right)+2\left(\log(d+ex)\log\left(\frac{e\left(\sqrt{f}-i\sqrt{g}x\right)}{e\sqrt{f}+id\sqrt{g}}\right)+\operatorname{Li}_2\left(\frac{i\sqrt{g}(d+ex)}{e\sqrt{f}+id\sqrt{g}}\right)\right)\right)}{4g^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^3*(a + b*Log[c*(d + e*x)^n]))/(f + g*x^2)^2,x]
```

```
[Out] ((2*f*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n]))/(f + g*x^2) + 2*(a - b
*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])*Log[f + g*x^2] + b*n*((Sqrt[f]*((-I
)*Sqrt[g]*(d + e*x)*Log[d + e*x] + e*(Sqrt[f] + I*Sqrt[g]*x)*Log[I*Sqrt[f]
- Sqrt[g]*x]))/((e*Sqrt[f] - I*d*Sqrt[g])*(Sqrt[f] + I*Sqrt[g]*x)) + (Sqrt[
f]*(I*Sqrt[g]*(d + e*x)*Log[d + e*x] + e*(Sqrt[f] - I*Sqrt[g]*x)*Log[I*Sqrt
[f] + Sqrt[g]*x]))/((e*Sqrt[f] + I*d*Sqrt[g])*(Sqrt[f] - I*Sqrt[g]*x)) + 2*
```

(Log[d + e*x]*Log[(e*(Sqrt[f] + I*Sqrt[g]*x))/(e*Sqrt[f] - I*d*Sqrt[g])] + PolyLog[2, ((-I)*Sqrt[g]*(d + e*x))/(e*Sqrt[f] - I*d*Sqrt[g])]) + 2*(Log[d + e*x]*Log[(e*(Sqrt[f] - I*Sqrt[g]*x))/(e*Sqrt[f] + I*d*Sqrt[g])] + PolyLog [2, (I*Sqrt[g]*(d + e*x))/(e*Sqrt[f] + I*d*Sqrt[g])])))/(4*g^2)

Maple [C] Result contains higher order function than in optimal. Order 9 vs. order 4.
time = 0.39, size = 726, normalized size = 2.11

method	result
risch	$\frac{b\ln((ex+d)^n)\ln(g\,x^2+f)}{2g^2} + \frac{b\ln((ex+d)^n)f}{2g^2(g\,x^2+f)} - \frac{bn\ln(ex+d)\ln(g\,x^2+f)}{2g^2} + \frac{bn\ln(ex+d)\ln\left(\frac{e\sqrt{-fg}-g(ex+d)+dg}{e\sqrt{-fg}+dg}\right)}{2g^2} + \frac{bn\ln(ex$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(x^3*(a+b*ln(c*(e*x+d)^n))/(g*x^2+f)^2,x,method=_RETURNVERBOSE)

[Out] 1/2*b*ln((e*x+d)^n)/g^2*ln(g*x^2+f)+1/2*b*ln((e*x+d)^n)*f/g^2/(g*x^2+f)-1/2 *b*n/g^2*ln(e*x+d)*ln(g*x^2+f)+1/2*b*n/g^2*ln(e*x+d)*ln((e*(-f*g)^(1/2)-g*(e*x+d)+d*g)/(e*(-f*g)^(1/2)+d*g))+1/2*b*n/g^2*ln(e*x+d)*ln((e*(-f*g)^(1/2)+ g*(e*x+d)-d*g)/(e*(-f*g)^(1/2)-d*g))+1/2*b*n/g^2*dilog((e*(-f*g)^(1/2)-g*(e *x+d)+d*g)/(e*(-f*g)^(1/2)+d*g))+1/2*b*n/g^2*dilog((e*(-f*g)^(1/2)+g*(e*x+d)-d*g)/(e*(-f*g)^(1/2)-d*g))+1/4*b*e^2*f*n*ln(g*x^2+f)/g^2/(d^2*g+e^2*f)-1/ 2*b*e*n*f/g/(d^2*g+e^2*f)*d/(f*g)^(1/2)*arctan(x*g/(f*g)^(1/2))-1/2*b*e^2*f *n*ln(e*x+d)/g^2/(d^2*g+e^2*f)+1/4*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*f /g^2/(g*x^2+f)+1/4*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/g^2*ln(g* x^2+f)-1/4*I*b*Pi*csgn(I*c*(e*x+d)^n)^3/g^2*ln(g*x^2+f)-1/4*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/g^2*ln(g*x^2+f)-1/4*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)*f/g^2/(g*x^2+f)+1/4*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2*f/g^2/(g*x^2+f)+1/4*I*b*Pi*csgn(I*c)*csgn(I *c*(e*x+d)^n)^2/g^2*ln(g*x^2+f)-1/4*I*b*Pi*csgn(I*c*(e*x+d)^n)^3*f/g^2/(g*x ^2+f)+1/2*b*ln(c)/g^2*ln(g*x^2+f)+1/2*b*ln(c)*f/g^2/(g*x^2+f)+1/2*a/g^2*ln(g*x^2+f)+1/2*a*f/g^2/(g*x^2+f)

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(x^3*(a+b*log(c*(e*x+d)^n))/(g*x^2+f)^2,x, algorithm="maxima")

[Out] 1/2*a*(f/(g^3*x^2 + f*g^2) + log(g*x^2 + f)/g^2) + b*integrate((x^3*log((x* e + d)^n) + x^3*log(c))/(g^2*x^4 + 2*f*g*x^2 + f^2), x)

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(a+b*log(c*(e*x+d)^n))/(g*x^2+f)^2,x, algorithm="fricas")
[Out] integral((b*x^3*log((x*e + d)^n*c) + a*x^3)/(g^2*x^4 + 2*f*g*x^2 + f^2), x)
```

Sympy [F(-1)] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(a+b*ln(c*(e*x+d)**n))/(g*x**2+f)**2,x)
[Out] Timed out
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(a+b*log(c*(e*x+d)^n))/(g*x^2+f)^2,x, algorithm="giac")
[Out] integrate((b*log((x*e + d)^n*c) + a)*x^3/(g*x^2 + f)^2, x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x^3\,\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)}{{\left(g\,x^2+f\right)}^2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^3*(a + b*log(c*(d + e*x)^n)))/(f + g*x^2)^2,x)
[Out] int((x^3*(a + b*log(c*(d + e*x)^n)))/(f + g*x^2)^2, x)
```

3.268 $\int \frac{x(a+b\log(c(d+ex)^n))}{(f+gx^2)^2}\,dx$

Optimal. Leaf size=139

$$\frac{bden\tan^{-1}\left(\frac{\sqrt{g}\,x}{\sqrt{f}}\right)}{2\sqrt{f}\,\sqrt{g}\,(e^2f+d^2g)}+\frac{be^2n\log(d+ex)}{2g\,(e^2f+d^2g)}-\frac{a+b\log\left(c(d+ex)^n\right)}{2g\,(f+gx^2)}-\frac{be^2n\log\left(f+gx^2\right)}{4g\,(e^2f+d^2g)}$$

```
[Out] 1/2*b*e^2*n*ln(e*x+d)/g/(d^2*g+e^2*f)+1/2*(-a-b*ln(c*(e*x+d)^n))/g/(g*x^2+f
)-1/4*b*e^2*n*ln(g*x^2+f)/g/(d^2*g+e^2*f)+1/2*b*d*e*n*arctan(x*g^(1/2)/f^(1
/2))/(d^2*g+e^2*f)/f^(1/2)/g^(1/2)
```

Rubi [A]
time = 0.06, antiderivative size = 139, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.240$, Rules used = {2460, 720, 31, 649, 211, 266}

$$-\frac{a+b\log\left(c(d+ex)^n\right)}{2g\,(f+gx^2)}+\frac{bden\text{ArcTan}\left(\frac{\sqrt{g}\,x}{\sqrt{f}}\right)}{2\sqrt{f}\,\sqrt{g}\,(d^2g+e^2f)}-\frac{be^2n\log\left(f+gx^2\right)}{4g\,(d^2g+e^2f)}+\frac{be^2n\log(d+ex)}{2g\,(d^2g+e^2f)}$$

Antiderivative was successfully verified.

```
[In] Int[(x*(a + b*Log[c*(d + e*x)^n]))/(f + g*x^2)^2,x]
```

```
[Out] (b*d*e*n*ArcTan[(Sqrt[g]*x)/Sqrt[f]])/(2*Sqrt[f]*Sqrt[g]*(e^2*f + d^2*g)) +
 (b*e^2*n*Log[d + e*x])/(2*g*(e^2*f + d^2*g)) - (a + b*Log[c*(d + e*x)^n])/
(2*g*(f + g*x^2)) - (b*e^2*n*Log[f + g*x^2])/(4*g*(e^2*f + d^2*g))
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 211

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]/a)*ArcTan[x/R
t[a/b, 2]], x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 266

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 649

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2), x_Symbol] :> Dist[d, Int[1/(
a + c*x^2), x], x] + Dist[e, Int[x/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e
}, x] &&  !NiceSqrtQ[(-a)*c]
```

Rule 720

```
Int[1/(((d_) + (e_.)*(x_))*((a_) + (c_.)*(x_)^2)), x_Symbol] :> Dist[e^2/(c
*d^2 + a*e^2), Int[1/(d + e*x), x], x] + Dist[1/(c*d^2 + a*e^2), Int[(c*d -
 c*e*x)/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e}, x] && NeQ[c*d^2 + a*e^2,
 0]
```

Rule 2460

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(x_)^(m_.)*(
(f_.) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Simp[(f + g*x^r)^(q + 1)*((a
+ b*Log[c*(d + e*x)^n])^p/(g*r*(q + 1))), x] - Dist[b*e*n*(p/(g*r*(q + 1)))
, Int[(f + g*x^r)^(q + 1)*((a + b*Log[c*(d + e*x)^n])^(p - 1)/(d + e*x)), x
], x] /; FreeQ[{a, b, c, d, e, f, g, m, n, q, r}, x] && EqQ[m, r - 1] && Ne
Q[q, -1] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{x(a+b\log(c(d+ex)^n))}{(f+gx^2)^2}\,dx &= -\frac{a+b\log(c(d+ex)^n)}{2g(f+gx^2)}+\frac{(ben)\int\frac{1}{(d+ex)(f+gx^2)}\,dx}{2g}\\ &= -\frac{a+b\log(c(d+ex)^n)}{2g(f+gx^2)}+\frac{(ben)\int\frac{dg-egx}{f+gx^2}\,dx}{2g(e^2f+d^2g)}+\frac{(be^3n)\int\frac{1}{d+ex}\,dx}{2g(e^2f+d^2g)}\\ &= \frac{be^2n\log(d+ex)}{2g(e^2f+d^2g)}-\frac{a+b\log(c(d+ex)^n)}{2g(f+gx^2)}+\frac{(bden)\int\frac{1}{f+gx^2}\,dx}{2(e^2f+d^2g)}-\frac{(be^2n)\int}{2(e^2f}\\ &= \frac{bden\tan^{-1}\left(\frac{\sqrt{g}\,x}{\sqrt{f}}\right)}{2\sqrt{f}\sqrt{g}\,(e^2f+d^2g)}+\frac{be^2n\log(d+ex)}{2g(e^2f+d^2g)}-\frac{a+b\log(c(d+ex)^n)}{2g(f+gx^2)}-\frac{be^2}{4}\end{aligned}$$

Mathematica [A]
time = 0.10, size = 165, normalized size = 1.19

$$\frac{2bde\sqrt{g}\,n(f+gx^2)\tan^{-1}\left(\frac{\sqrt{g}\,x}{\sqrt{f}}\right)-\sqrt{f}\,(2ae^2f+2ad^2g-2be^2n(f+gx^2)\log(d+ex)+2b(e^2f+d^2g)\log(c(d+ex)^n)+be^2fn\log(f+gx^2)+be^2gnx^2\log(f+gx^2))}{4\sqrt{f}\,g\,(e^2f+d^2g)\,(f+gx^2)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x*(a + b*Log[c*(d + e*x)^n]))/(f + g*x^2)^2,x]
```

[Out] (2*b*d*e*Sqrt[g]*n*(f + g*x^2)*ArcTan[(Sqrt[g]*x)/Sqrt[f]] - Sqrt[f]*(2*a*e^2*f + 2*a*d^2*g - 2*b*e^2*n*(f + g*x^2)*Log[d + e*x] + 2*b*(e^2*f + d^2*g)*Log[c*(d + e*x)^n] + b*e^2*f*n*Log[f + g*x^2] + b*e^2*g*n*x^2*Log[f + g*x^2]))/(4*Sqrt[f]*g*(e^2*f + d^2*g)*(f + g*x^2))

Maple [C] Result contains higher order function than in optimal. Order 9 vs. order 3.
time = 0.78, size = 765, normalized size = 5.50

method	result
risch	$-\frac{b\ln\left((ex+d)^{n}\right)}{2g\left(g\,x^{2}+f\right)}+\frac{i\pi b\,e^{2}f\,\mathrm{csgn}(ic)\mathrm{csgn}\left(i(ex+d)^{n}\right)\mathrm{csgn}\left(ic(ex+d)^{n}\right)+i\pi b\,d^{2}g\mathrm{csgn}\left(ic(ex+d)^{n}\right)^{3}-i\pi b\,e^{2}f\,\mathrm{csgn}(ic)\mathrm{csgn}\left(ic(ex+d)^{n}\right)^{2}-}{}$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(x*(a+b*ln(c*(e*x+d)^n))/(g*x^2+f)^2,x,method=_RETURNVERBOSE)

[Out] -1/2*b/g/(g*x^2+f)*ln((e*x+d)^n)+1/4*(I*Pi*b*e^2*f*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+I*Pi*b*d^2*g*csgn(I*c*(e*x+d)^n)^3-I*Pi*b*e^2*f*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-I*Pi*b*d^2*g*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-I*Pi*b*d^2*g*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+I*Pi*b*e^2*f*csgn(I*c*(e*x+d)^n)^3-I*Pi*b*e^2*f*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+I*Pi*b*d^2*g*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+2*ln(e*x+d)*b*e^2*g*n*x^2+sum(_R*ln(((-d^2*g^2+3*e^2*f*g)*_R+3*e^2*b*n)*x+4*d*e*f*g*_R+b*d*e*n),_R=RootOf((d^2*f*g^3+e^2*f^2*g^2)*_Z^2+2*b*e^2*f*g*n*_Z+e^2*b^2*n^2))*d^2*g^3*x^2+sum(_R*ln(((-d^2*g^2+3*e^2*f*g)*_R+3*e^2*b*n)*x+4*d*e*f*g*_R+b*d*e*n),_R=RootOf((d^2*f*g^3+e^2*f^2*g^2)*_Z^2+2*b*e^2*f*g*n*_Z+e^2*b^2*n^2))*e^2*f*g^2*x^2+2*ln(e*x+d)*b*e^2*f*n+sum(_R*ln(((-d^2*g^2+3*e^2*f*g)*_R+3*e^2*b*n)*x+4*d*e*f*g*_R+b*d*e*n),_R=RootOf((d^2*f*g^3+e^2*f^2*g^2)*_Z^2+2*b*e^2*f*g*n*_Z+e^2*b^2*n^2))*d^2*f*g^2+sum(_R*ln(((-d^2*g^2+3*e^2*f*g)*_R+3*e^2*b*n)*x+4*d*e*f*g*_R+b*d*e*n),_R=RootOf((d^2*f*g^3+e^2*f^2*g^2)*_Z^2+2*b*e^2*f*g*n*_Z+e^2*b^2*n^2))*e^2*f^2*g-2*ln(c)*b*d^2*g-2*ln(c)*b*e^2*f-2*a*d^2*g-2*a*e^2*f)/(g*x^2+f)/g/(d^2*g+e^2*f)

Maxima [A]
time = 0.50, size = 132, normalized size = 0.95

$$-\frac{1}{4}\,bn\left(\frac{e\log\left(gx^{2}+f\right)}{d^{2}g^{2}+fge^{2}}-\frac{2\,e\log\left(xe+d\right)}{d^{2}g^{2}+fge^{2}}-\frac{2\,d\arctan\left(\frac{gx}{\sqrt{fg}}\right)}{\left(d^{2}g+fe^{2}\right)\sqrt{fg}}\right)e-\frac{b\log\left(\left(xe+d\right)^{n}c\right)}{2\left(g^{2}x^{2}+fg\right)}-\frac{a}{2\left(g^{2}x^{2}+fg\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(x*(a+b*log(c*(e*x+d)^n))/(g*x^2+f)^2,x, algorithm="maxima")

[Out] -1/4*b*n*(e*log(g*x^2 + f)/(d^2*g^2 + f*g*e^2) - 2*e*log(x*e + d)/(d^2*g^2 + f*g*e^2) - 2*d*arctan(g*x/sqrt(f*g))/((d^2*g + f*e^2)*sqrt(f*g)))*e - 1/2*b*log((x*e + d)^n*c)/(g^2*x^2 + f*g) - 1/2*a/(g^2*x^2 + f*g)

Fricas [A]
time = 0.40, size = 359, normalized size = 2.58

$$\left[-\frac{2\,ad^2fg+2\,af^2e^2+(bdgnx^2+bdfn)\sqrt{-fg}\,e\log\left(\frac{gx^2-2\,\sqrt{-fg}\,x-f}{gx^2+f}\right)+(bfgnx^2+bf^2n)e^2\log\left(gx^2+f\right)-2\,(bfgnx^2e^2-bd^2fgn)\log\left(xe+d\right)+2\,(bd^2fg+bf^2e^2)\log\left(c\right)}{4\,(d^2fg^3x^2+d^2f^2g^2+(f^2g^2x^2+f^3g)e^2)},-\frac{2\,ad^2fg+2\,af^2e^2-2\,(bdgnx^2+bdfn)\sqrt{fg}\,\arctan\left(\frac{\sqrt{fg}\,x}{f}\right)e+(bfgnx^2+bf^2n)e^2\log\left(gx^2+f\right)-2\,(bfgnx^2e^2-bd^2fgn)\log\left(xe+d\right)+2\,(bd^2fg+bf^2e^2)\log\left(c\right)}{4\,(d^2fg^3x^2+d^2f^2g^2+(f^2g^2x^2+f^3g)e^2)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*log(c*(e*x+d)^n))/(g*x^2+f)^2,x, algorithm="fricas")
```

```
[Out] [-1/4*(2*a*d^2*f*g + 2*a*f^2*e^2 + (b*d*g*n*x^2 + b*d*f*n)*sqrt(-f*g)*e*log
((g*x^2 - 2*sqrt(-f*g)*x - f)/(g*x^2 + f)) + (b*f*g*n*x^2 + b*f^2*n)*e^2*lo
g(g*x^2 + f) - 2*(b*f*g*n*x^2*e^2 - b*d^2*f*g*n)*log(x*e + d) + 2*(b*d^2*f*
g + b*f^2*e^2)*log(c))/(d^2*f*g^3*x^2 + d^2*f^2*g^2 + (f^2*g^2*x^2 + f^3*g)
*e^2), -1/4*(2*a*d^2*f*g + 2*a*f^2*e^2 - 2*(b*d*g*n*x^2 + b*d*f*n)*sqrt(f*g
)*arctan(sqrt(f*g)*x/f)*e + (b*f*g*n*x^2 + b*f^2*n)*e^2*log(g*x^2 + f) - 2*
(b*f*g*n*x^2*e^2 - b*d^2*f*g*n)*log(x*e + d) + 2*(b*d^2*f*g + b*f^2*e^2)*lo
g(c))/(d^2*f*g^3*x^2 + d^2*f^2*g^2 + (f^2*g^2*x^2 + f^3*g)*e^2)]
```

Sympy [F(-1)] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*ln(c*(e*x+d)**n))/(g*x**2+f)**2,x)
```

```
[Out] Timed out
```

Giac [A]
time = 5.80, size = 218, normalized size = 1.57

$$\frac{bdn\arctan\left(\frac{gx}{\sqrt{fg}}\right)e}{2\,(d^2g+fe^2)\sqrt{fg}}-\frac{bne^2\log\left(gx^2+f\right)}{4\,(d^2g^2+fge^2)}+\frac{bgnx^2e^2\log\left(xe+d\right)-bd^2gn\log\left(xe+d\right)-2\,bd^2g\log\left(c\right)-2\,ad^2g-2\,bfe^2\log\left(c\right)-2\,afe^2}{2\,(d^2g^3x^2+fg^2x^2e^2+d^2fg^2+f^2ge^2)}-\frac{bd^2g\log\left(c\right)+ad^2g+bfe^2\log\left(c\right)+afe^2}{2\,(d^2g+fe^2)(gx^2+f)g}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*log(c*(e*x+d)^n))/(g*x^2+f)^2,x, algorithm="giac")
```

```
[Out] 1/2*b*d*n*arctan(g*x/sqrt(f*g))*e/((d^2*g + f*e^2)*sqrt(f*g)) - 1/4*b*n*e^2
*log(g*x^2 + f)/(d^2*g^2 + f*g*e^2) + 1/2*(b*g*n*x^2*e^2*log(x*e + d) - b*d
^2*g*n*log(x*e + d) - 2*b*d^2*g*log(c) - 2*a*d^2*g - 2*b*f*e^2*log(c) - 2*a
*f*e^2)/(d^2*g^3*x^2 + f*g^2*x^2*e^2 + d^2*f*g^2 + f^2*g*e^2) - 1/2*(b*d^2*
g*log(c) + a*d^2*g + b*f*e^2*log(c) + a*f*e^2)/((d^2*g + f*e^2)*(g*x^2 + f)
*g)
```

Mupad [B]
time = 0.79, size = 366, normalized size = 2.63

$$\frac{b\,e^2\,n\,\ln\left(d+e\,x\right)}{2\,d^2\,g^2+2\,f\,e^2\,g}-\frac{\ln\left(\frac{\left(b\,e^2\,f\,g\,n+b\,d\,e\,n\,\sqrt{-f\,g^3}\right)\,\left(x\,\left(2\,d^2\,e\,g^3-6\,e^3\,f\,g^2\right)-8\,d\,e^2\,f\,g^2\right)}{4\,\left(d^2\,f\,g^3+e^2\,f^2\,g^2\right)}+\frac{b\,d\,e^2\,g\,n}{2}+\frac{3\,b\,e^3\,g\,n\,x}{2}\right)\,\left(b\,e^2\,f\,g\,n+b\,d\,e\,n\,\sqrt{-f\,g^3}\right)}{4\,\left(d^2\,f\,g^3+e^2\,f^2\,g^2\right)}-\frac{\ln\left(\frac{\left(b\,e^2\,f\,g\,n-b\,d\,e\,n\,\sqrt{-f\,g^3}\right)\,\left(x\,\left(2\,d^2\,e\,g^3-6\,e^3\,f\,g^2\right)-8\,d\,e^2\,f\,g^2\right)}{4\,\left(d^2\,f\,g^3+e^2\,f^2\,g^2\right)}+\frac{b\,d\,e^2\,g\,n}{2}+\frac{3\,b\,e^3\,g\,n\,x}{2}\right)\,\left(b\,e^2\,f\,g\,n-b\,d\,e\,n\,\sqrt{-f\,g^3}\right)}{4\,\left(d^2\,f\,g^3+e^2\,f^2\,g^2\right)}-\frac{b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)}{2\,g\,\left(g\,x^2+f\right)}-\frac{a}{2\,g^2\,x^2+2\,f\,g}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x*(a + b*log(c*(d + e*x)^n)))/(f + g*x^2)^2,x)
```

```
[Out] (b*e^2*n*log(d + e*x))/(2*d^2*g^2 + 2*e^2*f*g) - (log(((b*e^2*f*g*n + b*d*e
*n*(-f*g^3)^(1/2))*(x*(2*d^2*e*g^3 - 6*e^3*f*g^2) - 8*d*e^2*f*g^2))/(4*(d^2
*f*g^3 + e^2*f^2*g^2)) + (b*d*e^2*g*n)/2 + (3*b*e^3*g*n*x)/2)*(b*e^2*f*g*n
+ b*d*e*n*(-f*g^3)^(1/2)))/(4*(d^2*f*g^3 + e^2*f^2*g^2)) - (log(((b*e^2*f*g
*n - b*d*e*n*(-f*g^3)^(1/2))*(x*(2*d^2*e*g^3 - 6*e^3*f*g^2) - 8*d*e^2*f*g^2
))/(4*(d^2*f*g^3 + e^2*f^2*g^2)) + (b*d*e^2*g*n)/2 + (3*b*e^3*g*n*x)/2)*(b*
e^2*f*g*n - b*d*e*n*(-f*g^3)^(1/2)))/(4*(d^2*f*g^3 + e^2*f^2*g^2)) - (b*log
(c*(d + e*x)^n))/(2*g*(f + g*x^2)) - a/(2*f*g + 2*g^2*x^2)
```

3.269 $\int \frac{a+b\log(c(d+ex)^n)}{x(f+gx^2)^2}\,dx$

Optimal. Leaf size=383

$$-\frac{bde\sqrt{g}\,n\tan^{-1}\left(\frac{\sqrt{g}\,x}{\sqrt{f}}\right)}{2f^{3/2}\left(e^2f+d^2g\right)}-\frac{be^2n\log(d+ex)}{2f\left(e^2f+d^2g\right)}+\frac{a+b\log\left(c(d+ex)^n\right)}{2f\left(f+gx^2\right)}+\frac{\log\left(-\frac{ex}{d}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{f^2}-$$

```
[Out] -1/2*b*e^2*n*ln(e*x+d)/f/(d^2*g+e^2*f)+1/2*(a+b*ln(c*(e*x+d)^n))/f/(g*x^2+f
)+ln(-e*x/d)*(a+b*ln(c*(e*x+d)^n))/f^2+1/4*b*e^2*n*ln(g*x^2+f)/f/(d^2*g+e^2
*f)-1/2*(a+b*ln(c*(e*x+d)^n))*ln(e*((-f)^(1/2)-x*g^(1/2))/(e*(-f)^(1/2)+d*g
^(1/2)))/f^2-1/2*(a+b*ln(c*(e*x+d)^n))*ln(e*((-f)^(1/2)+x*g^(1/2))/(e*(-f)^
(1/2)-d*g^(1/2)))/f^2+b*n*polylog(2,1+e*x/d)/f^2-1/2*b*n*polylog(2,-(e*x+d)
*g^(1/2)/(e*(-f)^(1/2)-d*g^(1/2)))/f^2-1/2*b*n*polylog(2,(e*x+d)*g^(1/2)/(e
*(-f)^(1/2)+d*g^(1/2)))/f^2-1/2*b*d*e*n*arctan(x*g^(1/2)/f^(1/2))*g^(1/2)/f
^(3/2)/(d^2*g+e^2*f)
```

Rubi [A]

time = 0.33, antiderivative size = 383, normalized size of antiderivative = 1.00, number of steps used = 18, number of rules used = 13, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.482$, Rules used = {272, 46, 2463, 2441, 2352, 2460, 720, 31, 649, 211, 266, 2440, 2438}

$$-\frac{bn\,\text{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)}{2f^2}-\frac{bn\,\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+e\sqrt{-f}}\right)}{2f^2}+\frac{bn\,\text{PolyLog}\left(2,\frac{ex}{d}+1\right)}{f^2}-\frac{\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}x\right)}{d\sqrt{g}+e\sqrt{-f}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{2f^2}-\frac{\log\left(\frac{e\left(\sqrt{-f}+\sqrt{g}x\right)}{e\sqrt{-f}-d\sqrt{g}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{2f^2}+\frac{\log\left(-\frac{ex}{d}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{f^2}+\frac{a+b\log\left(c(d+ex)^n\right)}{2f\left(f+gx^2\right)}-\frac{bde\sqrt{g}\,n\,\text{ArcTan}\left(\frac{\sqrt{g}x}{\sqrt{f}}\right)}{2f^{3/2}\left(d^2g+e^2f\right)}+\frac{be^2n\log\left(f+gx^2\right)}{4f\left(d^2g+e^2f\right)}-\frac{be^2n\log(d+ex)}{2f\left(d^2g+e^2f\right)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])/(x*(f + g*x^2)^2),x]
```

```
[Out] -1/2*(b*d*e*Sqrt[g]*n*ArcTan[(Sqrt[g]*x)/Sqrt[f]])/(f^(3/2)*(e^2*f + d^2*g)
) - (b*e^2*n*Log[d + e*x])/(2*f*(e^2*f + d^2*g)) + (a + b*Log[c*(d + e*x)^n
])/(2*f*(f + g*x^2)) + (Log[-((e*x)/d)]*(a + b*Log[c*(d + e*x)^n]))/f^2 - (
(a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[-f] + d*S
qrt[g])])/(2*f^2) - ((a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] + Sqrt[g]*
x))/(e*Sqrt[-f] - d*Sqrt[g])])/(2*f^2) + (b*e^2*n*Log[f + g*x^2])/(4*f*(e^2
*f + d^2*g)) - (b*n*PolyLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g
]))])/(2*f^2) - (b*n*PolyLog[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g]
)])/(2*f^2) + (b*n*PolyLog[2, 1 + (e*x)/d])/f^2
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 46

```
Int[((a_) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[E
xpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m +
 n + 2, 0])
```

Rule 211

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]/a)*ArcTan[x/R
t[a/b, 2]], x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 266

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 272

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 649

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2), x_Symbol] :> Dist[d, Int[1/(
a + c*x^2), x], x] + Dist[e, Int[x/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e
}, x] &&  !NiceSqrtQ[(-a)*c]
```

Rule 720

```
Int[1/(((d_) + (e_.)*(x_))*((a_) + (c_.)*(x_)^2)), x_Symbol] :> Dist[e^2/(c
*d^2 + a*e^2), Int[1/(d + e*x), x], x] + Dist[1/(c*d^2 + a*e^2), Int[(c*d -
 c*e*x)/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e}, x] && NeQ[c*d^2 + a*e^2,
 0]
```

Rule 2352

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> Simp[(-e^(-1))*PolyLo
g[2, 1 - c*x], x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + c*e*(x/g)])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2441

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d + e*x
)^n])/g), x] - Dist[b*e*(n/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2460

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(x_)^(m_.)*(
(f_.) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Simp[(f + g*x^r)^(q + 1)*((a
+ b*Log[c*(d + e*x)^n])^p/(g*r*(q + 1))), x] - Dist[b*e*n*(p/(g*r*(q + 1)))
, Int[(f + g*x^r)^(q + 1)*((a + b*Log[c*(d + e*x)^n])^(p - 1)/(d + e*x)), x
], x] /; FreeQ[{a, b, c, d, e, f, g, m, n, q, r}, x] && EqQ[m, r - 1] && Ne
Q[q, -1] && IGtQ[p, 0]
```

Rule 2463

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rubi steps

$$\int \frac{a+b\log\left(c(d+ex)^n\right)}{x\left(f+gx^2\right)^2}\,dx = \int \left(\frac{a+b\log\left(c(d+ex)^n\right)}{f^2x} - \frac{gx(a+b\log\left(c(d+ex)^n\right))}{f\left(f+gx^2\right)^2} - \frac{gx(a+b\log\left(c(d+\right.}{f^2\left(f+gx^2\right)}$$

$$= \frac{\int \frac{a+b\log(c(d+ex)^n)}{x}\,dx}{f^2} - \frac{g\int \frac{x(a+b\log(c(d+ex)^n))}{f+gx^2}\,dx}{f^2} - \frac{g\int \frac{x(a+b\log(c(d+ex)^n))}{(f+gx^2)^2}\,dx}{f}$$

$$= \frac{a+b\log\left(c(d+ex)^n\right)}{2f\left(f+gx^2\right)} + \frac{\log\left(-\frac{ex}{d}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{f^2} - \frac{g\int\left(-\frac{a+b\log}{2\sqrt{g}\left(\sqrt{\right.}}\right.}{}$$

$$= \frac{a+b\log\left(c(d+ex)^n\right)}{2f\left(f+gx^2\right)} + \frac{\log\left(-\frac{ex}{d}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{f^2} + \frac{bn\operatorname{Li}_2\left(1+\frac{ex}{d}\right)}{f^2} +$$

$$= -\frac{be^2n\log(d+ex)}{2f\left(e^2f+d^2g\right)} + \frac{a+b\log\left(c(d+ex)^n\right)}{2f\left(f+gx^2\right)} + \frac{\log\left(-\frac{ex}{d}\right)\left(a+b\log\left(c(d+ex)^n\right.\right.}{f^2}$$

$$= -\frac{bde\sqrt{g}\,n\tan^{-1}\left(\frac{\sqrt{g}\,x}{\sqrt{f}}\right)}{2f^{3/2}\left(e^2f+d^2g\right)} - \frac{be^2n\log(d+ex)}{2f\left(e^2f+d^2g\right)} + \frac{a+b\log\left(c(d+ex)^n\right)}{2f\left(f+gx^2\right)} + \log$$

$$= -\frac{bde\sqrt{g}\,n\tan^{-1}\left(\frac{\sqrt{g}\,x}{\sqrt{f}}\right)}{2f^{3/2}\left(e^2f+d^2g\right)} - \frac{be^2n\log(d+ex)}{2f\left(e^2f+d^2g\right)} + \frac{a+b\log\left(c(d+ex)^n\right)}{2f\left(f+gx^2\right)} + \log$$

Mathematica [C] Result contains complex when optimal does not.
time = 0.90, size = 521, normalized size = 1.36

$$\frac{a-bn\log(d+ex)+b\log\left(c(d+ex)^n\right)}{2f^2+2fgx^2} + \frac{\log(x)\left(a-bn\log(d+ex)+b\log\left(c(d+ex)^n\right)\right)}{f^2} - \frac{\left(a-bn\log(d+ex)+b\log\left(c(d+ex)^n\right)\right)\log\left(f+gx^2\right)}{2f^2} + \frac{bn\left(\frac{\sqrt{f}\left(-i\sqrt{g}(d+ex)\log(d+ex)+e\left(\sqrt{f}+i\sqrt{g}x\right)\log\left(i\sqrt{f}-\sqrt{g}x\right)\right)}{\left(e\sqrt{f}-id\sqrt{g}\right)\left(\sqrt{f}+i\sqrt{g}x\right)} + \frac{\sqrt{f}\left(i\sqrt{g}(d+ex)\log(d+ex)+e\left(\sqrt{f}-i\sqrt{g}x\right)\log\left(i\sqrt{f}+\sqrt{g}x\right)\right)}{\left(e\sqrt{f}+id\sqrt{g}\right)\left(\sqrt{f}-i\sqrt{g}x\right)} - 2\left(\log(d+ex)\log\left(\frac{e\left(\sqrt{f}+i\sqrt{g}x\right)}{e\sqrt{f}-id\sqrt{g}}\right)+\operatorname{Li}_2\left(-\frac{i\sqrt{g}(d+ex)}{e\sqrt{f}-id\sqrt{g}}\right)\right) - 2\left(\log(d+ex)\log\left(\frac{e\left(\sqrt{f}-i\sqrt{g}x\right)}{e\sqrt{f}+id\sqrt{g}}\right)+\operatorname{Li}_2\left(\frac{i\sqrt{g}(d+ex)}{e\sqrt{f}+id\sqrt{g}}\right)\right) + 4\left(\log\left(-\frac{ex}{d}\right)\log(d+ex)+\operatorname{Li}_2\left(1+\frac{ex}{d}\right)\right)\right)}{4f^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])/(x*(f + g*x^2)^2),x]
```

```
[Out] (a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])/(2*f^2 + 2*f*g*x^2) + (Log[x]
*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n]))/f^2 - ((a - b*n*Log[d + e*x
] + b*Log[c*(d + e*x)^n])*Log[f + g*x^2])/(2*f^2) + (b*n*((Sqrt[f]*((-I)*Sq
rt[g]*(d + e*x)*Log[d + e*x] + e*(Sqrt[f] + I*Sqrt[g]*x)*Log[I*Sqrt[f] - Sq
rt[g]*x]))/((e*Sqrt[f] - I*d*Sqrt[g])*(Sqrt[f] + I*Sqrt[g]*x)) + (Sqrt[f]*(
I*Sqrt[g]*(d + e*x)*Log[d + e*x] + e*(Sqrt[f] - I*Sqrt[g]*x)*Log[I*Sqrt[f]
```

```
+ Sqrt[g]*x]))/((e*Sqrt[f] + I*d*Sqrt[g])*(Sqrt[f] - I*Sqrt[g]*x)) - 2*(Log
[d + e*x]*Log[(e*(Sqrt[f] + I*Sqrt[g]*x))/(e*Sqrt[f] - I*d*Sqrt[g])] + Poly
Log[2, ((-I)*Sqrt[g]*(d + e*x))/(e*Sqrt[f] - I*d*Sqrt[g])]) - 2*(Log[d + e*
x]*Log[(e*(Sqrt[f] - I*Sqrt[g]*x))/(e*Sqrt[f] + I*d*Sqrt[g])] + PolyLog[2,
(I*Sqrt[g]*(d + e*x))/(e*Sqrt[f] + I*d*Sqrt[g])]) + 4*(Log[-((e*x)/d)]*Log[
d + e*x] + PolyLog[2, 1 + (e*x)/d])))/(4*f^2)
```

Maple [C] Result contains higher order function than in optimal. Order 9 vs. order 4.
time = 0.39, size = 910, normalized size = 2.38

method	result
risch	$-\frac{b\ln((ex+d)^n)\ln(g\,x^2+f)}{2f^2}+\frac{b\ln((ex+d)^n)}{2f(g\,x^2+f)}+\frac{ib\pi\,\mathrm{csgn}(ic)\mathrm{csgn}(i(ex+d)^n)\mathrm{csgn}(ic(ex+d)^n)\ln(g\,x^2+f)}{4f^2}-\frac{ib\pi\,\mathrm{csgn}(ic)\mathrm{csgn}(i(e}{4f(}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))/x/(g*x^2+f)^2,x,method=_RETURNVERBOSE)
```

```
[Out] -1/2*b*ln((e*x+d)^n)/f^2*ln(g*x^2+f)+1/2*b*ln((e*x+d)^n)/f/(g*x^2+f)+1/4*I*
b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/f^2*ln(g*x^2+f)-1/2*a/
f^2*ln(g*x^2+f)-1/2*b*ln(c)/f^2*ln(g*x^2+f)+1/2*b*ln(c)/f/(g*x^2+f)-1/4*I*b
*Pi*csgn(I*c*(e*x+d)^n)^3/f/(g*x^2+f)+1/2*a/f/(g*x^2+f)-1/4*I*b*Pi*csgn(I*c
)*csgn(I*c*(e*x+d)^n)^2/f^2*ln(g*x^2+f)+1/4*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+
d)^n)^2/f/(g*x^2+f)+a/f^2*ln(x)+1/4*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+
d)^n)^2/f/(g*x^2+f)-1/2*b*n/f^2*dilog((e*(-f*g)^(1/2)-g*(e*x+d)+d*g)/(e*(-f
*g)^(1/2)+d*g))-1/2*b*n/f^2*dilog((e*(-f*g)^(1/2)+g*(e*x+d)-d*g)/(e*(-f*g)^
(1/2)-d*g))-1/4*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/f/(g
*x^2+f)-1/2*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/f^2*ln(x
)-b*n/f^2*dilog((e*x+d)/d)+b*ln((e*x+d)^n)/f^2*ln(x)+1/2*b*n/f^2*ln(e*x+d)*
ln(g*x^2+f)-1/2*b*n/f^2*ln(e*x+d)*ln((e*(-f*g)^(1/2)-g*(e*x+d)+d*g)/(e*(-f*
g)^(1/2)+d*g))-1/2*b*n/f^2*ln(e*x+d)*ln((e*(-f*g)^(1/2)+g*(e*x+d)-d*g)/(e*(
-f*g)^(1/2)-d*g))+b*ln(c)/f^2*ln(x)+1/2*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(
e*x+d)^n)^2/f^2*ln(x)-b*n/f^2*ln(x)*ln((e*x+d)/d)+1/4*I*b*Pi*csgn(I*c*(e*x+
d)^n)^3/f^2*ln(g*x^2+f)-1/2*b*e*n/f*g/(d^2*g+e^2*f)*d/(f*g)^(1/2)*arctan(x*
g/(f*g)^(1/2))-1/2*I*b*Pi*csgn(I*c*(e*x+d)^n)^3/f^2*ln(x)-1/4*I*b*Pi*csgn(I
*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/f^2*ln(g*x^2+f)+1/2*I*b*Pi*csgn(I*c)*csgn
(I*c*(e*x+d)^n)^2/f^2*ln(x)-1/2*b*e^2*n*ln(e*x+d)/f/(d^2*g+e^2*f)+1/4*b*e^2
*n*ln(g*x^2+f)/f/(d^2*g+e^2*f)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/x/(g*x^2+f)^2,x, algorithm="maxima")
```

```
[Out] 1/2*a*(1/(f*g*x^2 + f^2) - log(g*x^2 + f)/f^2 + 2*log(x)/f^2) + b*integrate
((log((x*e + d)^n) + log(c))/(g^2*x^5 + 2*f*g*x^3 + f^2*x), x)
```

Fricas [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/x/(g*x^2+f)^2,x, algorithm="fricas")
```

```
[Out] integral((b*log((x*e + d)^n*c) + a)/(g^2*x^5 + 2*f*g*x^3 + f^2*x), x)
```

Sympy [**F(-1)**] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))/x/(g*x**2+f)**2,x)
```

```
[Out] Timed out
```

Giac [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/x/(g*x^2+f)^2,x, algorithm="giac")
```

```
[Out] integrate((b*log((x*e + d)^n*c) + a)/((g*x^2 + f)^2*x), x)
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)}{x\,{\left(g\,x^2+f\right)}^2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))/(x*(f + g*x^2)^2),x)
```

```
[Out] int((a + b*log(c*(d + e*x)^n))/(x*(f + g*x^2)^2), x)
```

3.270 $\int \frac{a+b\log(c(d+ex)^n)}{x^3(f+gx^2)^2}\,dx$

Optimal. Leaf size=460

$$-\frac{ben}{2df^2x}+\frac{bdeg^{3/2}n\tan^{-1}\left(\frac{\sqrt{g}\,x}{\sqrt{f}}\right)}{2f^{5/2}\left(e^2f+d^2g\right)}-\frac{be^2n\log(x)}{2d^2f^2}+\frac{be^2n\log(d+ex)}{2d^2f^2}+\frac{be^2gn\log(d+ex)}{2f^2\left(e^2f+d^2g\right)}-\frac{a+b\log\left(c(d+ex\right.}{2f^2x^2}$$

```
[Out] -1/2*b*e*n/d/f^2/x+1/2*b*d*e*g^(3/2)*n*arctan(x*g^(1/2)/f^(1/2))/f^(5/2)/(d
^2*g+e^2*f)-1/2*b*e^2*n*ln(x)/d^2/f^2+1/2*b*e^2*n*ln(e*x+d)/d^2/f^2+1/2*b*e
^2*g*n*ln(e*x+d)/f^2/(d^2*g+e^2*f)+1/2*(-a-b*ln(c*(e*x+d)^n))/f^2/x^2-1/2*g
*(a+b*ln(c*(e*x+d)^n))/f^2/(g*x^2+f)-2*g*ln(-e*x/d)*(a+b*ln(c*(e*x+d)^n))/f
^3-1/4*b*e^2*g*n*ln(g*x^2+f)/f^2/(d^2*g+e^2*f)+g*(a+b*ln(c*(e*x+d)^n))*ln(e
*((-f)^(1/2)-x*g^(1/2))/(e*(-f)^(1/2)+d*g^(1/2)))/f^3+g*(a+b*ln(c*(e*x+d)^n
))*ln(e*((-f)^(1/2)+x*g^(1/2))/(e*(-f)^(1/2)-d*g^(1/2)))/f^3-2*b*g*n*polylo
g(2,1+e*x/d)/f^3+b*g*n*polylog(2,-(e*x+d)*g^(1/2)/(e*(-f)^(1/2)-d*g^(1/2)))
/f^3+b*g*n*polylog(2,(e*x+d)*g^(1/2)/(e*(-f)^(1/2)+d*g^(1/2)))/f^3
```

Rubi [A]

time = 0.38, antiderivative size = 460, normalized size of antiderivative = 1.00, number of steps used = 21, number of rules used = 14, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.518$, Rules used = {272, 46, 2463, 2442, 2441, 2352, 2460, 720, 31, 649, 211, 266, 2440, 2438}

$$\frac{bgn\text{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)}{f^3}+\frac{bgn\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+e\sqrt{-f}}\right)}{f^3}-\frac{2bgn\text{PolyLog}\left(2,\frac{ex}{d}+1\right)}{f^3}-\frac{2g\log\left(-\frac{ex}{d}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{f^3}+\frac{g\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}x\right)}{d\sqrt{g}+e\sqrt{-f}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{f^3}+\frac{g\log\left(\frac{e\left(\sqrt{-f}+\sqrt{g}x\right)}{e\sqrt{-f}-d\sqrt{g}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{f^3}-\frac{g\left(a+b\log\left(c(d+ex)^n\right)\right)}{2f^2\left(f+gx^2\right)}-\frac{a+b\log\left(c(d+ex)^n\right)}{2f^2x^2}+\frac{bdeg^{3/2}n\text{ArcTan}\left(\frac{\sqrt{g}x}{\sqrt{f}}\right)}{2f^{5/2}\left(d^2g+e^2f\right)}-\frac{be^2gn\log\left(f+gx^2\right)}{4f^2\left(d^2g+e^2f\right)}+\frac{be^2gn\log(d+ex)}{2f^2\left(d^2g+e^2f\right)}-\frac{be^2n\log(x)}{2d^2f^2}+\frac{be^2n\log(d+ex)}{2d^2f^2}-\frac{ben}{2df^2x}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])/(x^3*(f + g*x^2)^2),x]
```

```
[Out] -1/2*(b*e*n)/(d*f^2*x) + (b*d*e*g^(3/2)*n*ArcTan[(Sqrt[g]*x)/Sqrt[f]])/(2*f
^(5/2)*(e^2*f + d^2*g)) - (b*e^2*n*Log[x])/(2*d^2*f^2) + (b*e^2*n*Log[d + e
*x])/(2*d^2*f^2) + (b*e^2*g*n*Log[d + e*x])/(2*f^2*(e^2*f + d^2*g)) - (a +
b*Log[c*(d + e*x)^n])/(2*f^2*x^2) - (g*(a + b*Log[c*(d + e*x)^n]))/(2*f^2*(
f + g*x^2)) - (2*g*Log[-((e*x)/d)]*(a + b*Log[c*(d + e*x)^n]))/f^3 + (g*(a
+ b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[-f] + d*Sqrt
[g])])/f^3 + (g*(a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] + Sqrt[g]*x))/(
e*Sqrt[-f] - d*Sqrt[g])])/f^3 - (b*e^2*g*n*Log[f + g*x^2])/(4*f^2*(e^2*f +
d^2*g)) + (b*g*n*PolyLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))
])/f^3 + (b*g*n*PolyLog[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/f
^3 - (2*b*g*n*PolyLog[2, 1 + (e*x)/d])/f^3
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 46

```
Int[((a_) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[E
xpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m +
 n + 2, 0])
```

Rule 211

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]/a)*ArcTan[x/R
t[a/b, 2]], x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 266

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 272

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 649

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2), x_Symbol] :> Dist[d, Int[1/(
a + c*x^2), x], x] + Dist[e, Int[x/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e
}, x] &&  !NiceSqrtQ[(-a)*c]
```

Rule 720

```
Int[1/(((d_) + (e_.)*(x_))*((a_) + (c_.)*(x_)^2)), x_Symbol] :> Dist[e^2/(c
*d^2 + a*e^2), Int[1/(d + e*x), x], x] + Dist[1/(c*d^2 + a*e^2), Int[(c*d -
 c*e*x)/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e}, x] && NeQ[c*d^2 + a*e^2,
 0]
```

Rule 2352

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> Simp[(-e^(-1))*PolyLo
g[2, 1 - c*x], x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + c*e*(x/g)])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2441

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d + e*x
)^n])/g), x] - Dist[b*e*(n/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2442

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[(f + g*x)^(q + 1)*((a + b*Log[c*(d + e*x)^n])/(
g*(q + 1))), x] - Dist[b*e*(n/(g*(q + 1))), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 2460

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(x_)^(m_.)*(
(f_.) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Simp[(f + g*x^r)^(q + 1)*((a
+ b*Log[c*(d + e*x)^n])^p/(g*r*(q + 1))), x] - Dist[b*e*n*(p/(g*r*(q + 1)))
, Int[(f + g*x^r)^(q + 1)*((a + b*Log[c*(d + e*x)^n])^(p - 1)/(d + e*x)), x
], x] /; FreeQ[{a, b, c, d, e, f, g, m, n, q, r}, x] && EqQ[m, r - 1] && Ne
Q[q, -1] && IGtQ[p, 0]
```

Rule 2463

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rubi steps

$$\int \frac{a+b\log\left(c(d+ex)^n\right)}{x^3\left(f+gx^2\right)^2}\,dx = \int \left(\frac{a+b\log\left(c(d+ex)^n\right)}{f^2x^3} - \frac{2g(a+b\log\left(c(d+ex)^n\right))}{f^3x} + \frac{g^2x(a+b\log\left(c(d+\right.}{f^2\left(f+gx^2\right)^{}}\right.$$

$$= \frac{\int \frac{a+b\log(c(d+ex)^n)}{x^3}\,dx}{f^2} - \frac{(2g)\int \frac{a+b\log(c(d+ex)^n)}{x}\,dx}{f^3} + \frac{(2g^2)\int \frac{x(a+b\log(c(d+ex)^n))}{f+gx^2}\,dx}{f^3}$$

$$= -\frac{a+b\log\left(c(d+ex)^n\right)}{2f^2x^2} - \frac{g(a+b\log\left(c(d+ex)^n\right))}{2f^2\left(f+gx^2\right)} - \frac{2g\log\left(-\frac{ex}{d}\right)\left(a+b\log\right.}{f^3}$$

$$= -\frac{a+b\log\left(c(d+ex)^n\right)}{2f^2x^2} - \frac{g(a+b\log\left(c(d+ex)^n\right))}{2f^2\left(f+gx^2\right)} - \frac{2g\log\left(-\frac{ex}{d}\right)\left(a+b\log\right.}{f^3}$$

$$= -\frac{ben}{2df^2x} - \frac{be^2n\log(x)}{2d^2f^2} + \frac{be^2n\log(d+ex)}{2d^2f^2} + \frac{be^2gn\log(d+ex)}{2f^2\left(e^2f+d^2g\right)} - \frac{a+b\log\left(c\right.}{2f^2}$$

$$= -\frac{ben}{2df^2x} + \frac{bdeg^{3/2}n\tan^{-1}\left(\frac{\sqrt{g}\,x}{\sqrt{f}}\right)}{2f^{5/2}\left(e^2f+d^2g\right)} - \frac{be^2n\log(x)}{2d^2f^2} + \frac{be^2n\log(d+ex)}{2d^2f^2} + \frac{be^2gn}{2f^2}$$

$$= -\frac{ben}{2df^2x} + \frac{bdeg^{3/2}n\tan^{-1}\left(\frac{\sqrt{g}\,x}{\sqrt{f}}\right)}{2f^{5/2}\left(e^2f+d^2g\right)} - \frac{be^2n\log(x)}{2d^2f^2} + \frac{be^2n\log(d+ex)}{2d^2f^2} + \frac{be^2gn}{2f^2}$$

Mathematica [C] Result contains complex when optimal does not.
time = 0.97, size = 596, normalized size = 1.30

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])/(x^3*(f + g*x^2)^2),x]
```

```
[Out] ((-2*f*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n]))/x^2 - (2*f*g*(a - b*n
*Log[d + e*x] + b*Log[c*(d + e*x)^n]))/(f + g*x^2) - 8*g*Log[x]*(a - b*n*Lo
g[d + e*x] + b*Log[c*(d + e*x)^n]) + 4*g*(a - b*n*Log[d + e*x] + b*Log[c*(d
 + e*x)^n])*Log[f + g*x^2] + b*n*((-2*f*(d*e*x + e^2*x^2*Log[x] + (d^2 - e^
2*x^2)*Log[d + e*x]))/(d^2*x^2) + (I*Sqrt[f]*g*(Sqrt[g]*(d + e*x)*Log[d + e
*x] + I*e*(Sqrt[f] + I*Sqrt[g]*x)*Log[I*Sqrt[f] - Sqrt[g]*x]))/((e*Sqrt[f]
```

```
- I*d*Sqrt[g])*(Sqrt[f] + I*Sqrt[g]*x)) + (I*Sqrt[f]*g*(-(Sqrt[g]*(d + e*x)
*Log[d + e*x]) + e*(I*Sqrt[f] + Sqrt[g]*x)*Log[I*Sqrt[f] + Sqrt[g]*x]))/((e
*Sqrt[f] + I*d*Sqrt[g])*(Sqrt[f] - I*Sqrt[g]*x)) + 4*g*(Log[d + e*x]*Log[(e
*(Sqrt[f] + I*Sqrt[g]*x))/(e*Sqrt[f] - I*d*Sqrt[g])] + PolyLog[2, ((-I)*Sqr
t[g]*(d + e*x))/(e*Sqrt[f] - I*d*Sqrt[g])]) + 4*g*(Log[d + e*x]*Log[(e*(Sqr
t[f] - I*Sqrt[g]*x))/(e*Sqrt[f] + I*d*Sqrt[g])] + PolyLog[2, (I*Sqrt[g]*(d
+ e*x))/(e*Sqrt[f] + I*d*Sqrt[g])]) - 8*g*(Log[-((e*x)/d)]*Log[d + e*x] + P
olyLog[2, 1 + (e*x)/d])))/(4*f^3)
```

Maple [C] Result contains higher order function than in optimal. Order 9 vs. order 4.
time = 0.38, size = 1165, normalized size = 2.53

method	result	size
risch	Expression too large to display	1165

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))/x^3/(g*x^2+f)^2,x,method=_RETURNVERBOSE)
```

```
[Out] -1/2*b*ln(c)/f^2/x^2-I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/f^3*g*ln(x)-I*b
*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/f^3*g*ln(x)-1/2*a/f^2/x^2-2*a/f
^3*g*ln(x)-2*b*ln((e*x+d)^n)/f^3*g*ln(x)-1/4*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(
I*c*(e*x+d)^n)^2*g/f^2/(g*x^2+f)+1/2*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x
+d)^n)^2*g/f^3*ln(g*x^2+f)+b*n/f^3*g*dilog((e*(-f*g)^(1/2)-g*(e*x+d)+d*g)/(
e*(-f*g)^(1/2)+d*g))+b*n/f^3*g*dilog((e*(-f*g)^(1/2)+g*(e*x+d)-d*g)/(e*(-f*
g)^(1/2)-d*g))-1/2*a*g/f^2/(g*x^2+f)-1/4*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^
n)^2*g/f^2/(g*x^2+f)+1/2*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*g/f^3*ln(g*
x^2+f)+a*g/f^3*ln(g*x^2+f)+1/2*b*e*n/f^2*g^2/(d^2*g+e^2*f)*d/(f*g)^(1/2)*ar
ctan(x*g/(f*g)^(1/2))+1/4*I*b*Pi*csgn(I*c*(e*x+d)^n)^3*g/f^2/(g*x^2+f)-1/2*
b*ln((e*x+d)^n)/f^2/x^2+1/4*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*
x+d)^n)/f^2/x^2+1/4*I*b*Pi*csgn(I*c*(e*x+d)^n)^3/f^2/x^2-1/2*b*ln(c)*g/f^2/
(g*x^2+f)+b*ln(c)*g/f^3*ln(g*x^2+f)-1/2*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*
csgn(I*c*(e*x+d)^n)*g/f^3*ln(g*x^2+f)+2*b*n/f^3*g*dilog((e*x+d)/d)+2*b*n/f^
3*g*ln(x)*ln((e*x+d)/d)-1/4*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/f^2/x^2-
1/4*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/f^2/x^2-b*n/f^3*g*ln(e*x
+d)*ln(g*x^2+f)+1/4*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)*
g/f^2/(g*x^2+f)+1/2*b*e^4*n/f/(d^2*g+e^2*f)/d^2*ln(e*x+d)-2*b*ln(c)/f^3*g*l
n(x)+I*b*Pi*csgn(I*c*(e*x+d)^n)^3/f^3*g*ln(x)-1/2*b*ln((e*x+d)^n)*g/f^2/(g*
x^2+f)+b*ln((e*x+d)^n)*g/f^3*ln(g*x^2+f)+I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)
*csgn(I*c*(e*x+d)^n)/f^3*g*ln(x)-1/2*I*b*Pi*csgn(I*c*(e*x+d)^n)^3*g/f^3*ln(
g*x^2+f)+b*n/f^3*g*ln(e*x+d)*ln((e*(-f*g)^(1/2)-g*(e*x+d)+d*g)/(e*(-f*g)^(1
/2)+d*g))+b*n/f^3*g*ln(e*x+d)*ln((e*(-f*g)^(1/2)+g*(e*x+d)-d*g)/(e*(-f*g)^(
1/2)-d*g))-1/2*b*e^2*n*ln(x)/d^2/f^2-1/2*b*e*n/d/f^2/x+b*e^2*g*n*ln(e*x+d)/
f^2/(d^2*g+e^2*f)-1/4*b*e^2*g*n*ln(g*x^2+f)/f^2/(d^2*g+e^2*f)
```

Maxima [F]

time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/x^3/(g*x^2+f)^2,x, algorithm="maxima")
```

```
[Out] -1/2*a*((2*g*x^2 + f)/(f^2*g*x^4 + f^3*x^2) - 2*g*log(g*x^2 + f)/f^3 + 4*g*
log(x)/f^3) + b*integrate((log((x*e + d)^n) + log(c))/(g^2*x^7 + 2*f*g*x^5
+ f^2*x^3), x)
```

Fricas [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/x^3/(g*x^2+f)^2,x, algorithm="fricas")
```

```
[Out] integral((b*log((x*e + d)^n*c) + a)/(g^2*x^7 + 2*f*g*x^5 + f^2*x^3), x)
```

Sympy [**F(-1)**] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))/x**3/(g*x**2+f)**2,x)
```

```
[Out] Timed out
```

Giac [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/x^3/(g*x^2+f)^2,x, algorithm="giac")
```

```
[Out] integrate((b*log((x*e + d)^n*c) + a)/((g*x^2 + f)^2*x^3), x)
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)}{x^3\,{\left(g\,x^2+f\right)}^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))/(x^3*(f + g*x^2)^2),x)
```

```
[Out] int((a + b*log(c*(d + e*x)^n))/(x^3*(f + g*x^2)^2), x)
```

3.271 $\int \frac{x^4(a+b\log(c(d+ex)^n))}{(f+gx^2)^2}\,dx$

Optimal. Leaf size=534

$$\frac{ax}{g^2}-\frac{bnx}{g^2}-\frac{befn\log(d+ex)}{4\left(e\sqrt{-f}-d\sqrt{g}\right)g^{5/2}}+\frac{befn\log(d+ex)}{4\left(e\sqrt{-f}+d\sqrt{g}\right)g^{5/2}}+\frac{b(d+ex)\log\left(c(d+ex)^n\right)}{eg^2}-\frac{f(a+b\log\left(c\right.}{4g^{5/2}\left(\sqrt{-f}\right.}$$

```
[Out] a*x/g^2-b*n*x/g^2+b*(e*x+d)*ln(c*(e*x+d)^n)/e/g^2+3/4*(a+b*ln(c*(e*x+d)^n))
*ln(e*((-f)^(1/2)-x*g^(1/2))/(e*(-f)^(1/2)+d*g^(1/2)))*(-f)^(1/2)/g^(5/2)-3
/4*(a+b*ln(c*(e*x+d)^n))*ln(e*((-f)^(1/2)+x*g^(1/2))/(e*(-f)^(1/2)-d*g^(1/2
)))*(-f)^(1/2)/g^(5/2)-3/4*b*n*polylog(2,-(e*x+d)*g^(1/2)/(e*(-f)^(1/2)-d*g
^(1/2)))*(-f)^(1/2)/g^(5/2)+3/4*b*n*polylog(2,(e*x+d)*g^(1/2)/(e*(-f)^(1/2)
+d*g^(1/2)))*(-f)^(1/2)/g^(5/2)-1/4*b*e*f*n*ln(e*x+d)/g^(5/2)/(e*(-f)^(1/2)
-d*g^(1/2))+1/4*b*e*f*n*ln((-f)^(1/2)+x*g^(1/2))/g^(5/2)/(e*(-f)^(1/2)-d*g^
(1/2))+1/4*b*e*f*n*ln(e*x+d)/g^(5/2)/(e*(-f)^(1/2)+d*g^(1/2))-1/4*b*e*f*n*l
n((-f)^(1/2)-x*g^(1/2))/g^(5/2)/(e*(-f)^(1/2)+d*g^(1/2))-1/4*f*(a+b*ln(c*(e
*x+d)^n))/g^(5/2)/((-f)^(1/2)-x*g^(1/2))+1/4*f*(a+b*ln(c*(e*x+d)^n))/g^(5/2
)/((-f)^(1/2)+x*g^(1/2))
```

Rubi [A]
time = 0.73, antiderivative size = 534, normalized size of antiderivative = 1.00, number of steps used = 31, number of rules used = 13, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.482$, Rules used = {294, 327, 211, 2463, 2436, 2332, 2456, 2442, 36, 31, 2441, 2440, 2438}

$$-\frac{3b\sqrt{-f}\,n\,\text{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)}{4g^{5/2}}+\frac{3b\sqrt{-f}\,n\,\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+e\sqrt{-f}}\right)}{4g^{5/2}}-\frac{f(a+b\log\left(c(d+ex)^n\right))}{4g^{5/2}\left(\sqrt{-f}-\sqrt{g}x\right)}+\frac{f(a+b\log\left(c(d+ex)^n\right))}{4g^{5/2}\left(\sqrt{-f}+\sqrt{g}x\right)}+\frac{3\sqrt{-f}\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}x\right)}{d\sqrt{g}+e\sqrt{-f}}\right)(a+b\log\left(c(d+ex)^n\right))}{4g^{5/2}}-\frac{3\sqrt{-f}\log\left(\frac{e\left(\sqrt{-f}+\sqrt{g}x\right)}{e\sqrt{-f}-d\sqrt{g}}\right)(a+b\log\left(c(d+ex)^n\right))}{4g^{5/2}}+\frac{ax}{g^2}+\frac{b(d+ex)\log\left(c(d+ex)^n\right)}{eg^2}-\frac{befn\log(d+ex)}{4g^{5/2}\left(e\sqrt{-f}-d\sqrt{g}\right)}+\frac{befn\log(d+ex)}{4g^{5/2}\left(d\sqrt{g}+e\sqrt{-f}\right)}-\frac{befn\log\left(\sqrt{-f}-\sqrt{g}x\right)}{4g^{5/2}\left(d\sqrt{g}+e\sqrt{-f}\right)}+\frac{befn\log\left(\sqrt{-f}+\sqrt{g}x\right)}{4g^{5/2}\left(e\sqrt{-f}-d\sqrt{g}\right)}-\frac{bnx}{g^2}$$

Antiderivative was successfully verified.

```
[In] Int[(x^4*(a + b*Log[c*(d + e*x)^n]))/(f + g*x^2)^2,x]
```

```
[Out] (a*x)/g^2 - (b*n*x)/g^2 - (b*e*f*n*Log[d + e*x])/(4*(e*Sqrt[-f] - d*Sqrt[g]
)*g^(5/2)) + (b*e*f*n*Log[d + e*x])/(4*(e*Sqrt[-f] + d*Sqrt[g])*g^(5/2)) +
(b*(d + e*x)*Log[c*(d + e*x)^n])/(e*g^2) - (f*(a + b*Log[c*(d + e*x)^n]))/(
4*g^(5/2)*(Sqrt[-f] - Sqrt[g]*x)) + (f*(a + b*Log[c*(d + e*x)^n]))/(4*g^(5/
2)*(Sqrt[-f] + Sqrt[g]*x)) - (b*e*f*n*Log[Sqrt[-f] - Sqrt[g]*x])/(4*(e*Sqrt
[-f] + d*Sqrt[g])*g^(5/2)) + (3*Sqrt[-f]*(a + b*Log[c*(d + e*x)^n])*Log[(e*
(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(4*g^(5/2)) + (b*e*f*n*L
og[Sqrt[-f] + Sqrt[g]*x])/(4*(e*Sqrt[-f] - d*Sqrt[g])*g^(5/2)) - (3*Sqrt[-f
]*(a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d
*Sqrt[g])])/(4*g^(5/2)) - (3*b*Sqrt[-f]*n*PolyLog[2, -((Sqrt[g]*(d + e*x))/
(e*Sqrt[-f] - d*Sqrt[g]))])/(4*g^(5/2)) + (3*b*Sqrt[-f]*n*PolyLog[2, (Sqrt[
g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(4*g^(5/2))
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 36

```
Int[1/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))), x_Symbol] :> Dist[b/(b*c
 - a*d), Int[1/(a + b*x), x], x] - Dist[d/(b*c - a*d), Int[1/(c + d*x), x],
 x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0]
```

Rule 211

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]/a)*ArcTan[x/R
t[a/b, 2]], x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 294

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[c^(
n - 1)*(c*x)^(m - n + 1)*((a + b*x^n)^(p + 1)/(b*n*(p + 1))), x] - Dist[c^n
*((m - n + 1)/(b*n*(p + 1))), Int[(c*x)^(m - n)*(a + b*x^n)^(p + 1), x], x]
 /; FreeQ[{a, b, c}, x] && IGtQ[n, 0] && LtQ[p, -1] && GtQ[m + 1, n] &&  !I
LtQ[(m + n*(p + 1) + 1)/n, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 327

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[c^(n
 - 1)*(c*x)^(m - n + 1)*((a + b*x^n)^(p + 1)/(b*(m + n*p + 1))), x] - Dist[
a*c^n*((m - n + 1)/(b*(m + n*p + 1))), Int[(c*x)^(m - n)*(a + b*x^n)^p, x],
 x] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && GtQ[m, n - 1] && NeQ[m + n*p
 + 1, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 2332

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2436

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + c*e*(x/g)])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2441

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d + e*x
)^n])/g), x] - Dist[b*e*(n/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2442

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[(f + g*x)^(q + 1)*((a + b*Log[c*(d + e*x)^n])/(
g*(q + 1))), x] - Dist[b*e*(n/(g*(q + 1))), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 2456

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_)^(r_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a + b*Log[c*(d + e*x)
^n])^p, (f + g*x^r)^q, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, r}, x] && I
GtQ[p, 0] && IntegerQ[q] && (GtQ[q, 0] || (IntegerQ[r] && NeQ[r, 1]))
```

Rule 2463

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rubi steps

$$\int \frac{x^4(a+b\log(c(d+ex)^n))}{(f+gx^2)^2}\,dx = \int \left(\frac{a+b\log(c(d+ex)^n)}{g^2} + \frac{f^2(a+b\log(c(d+ex)^n))}{g^2(f+gx^2)^2} - \frac{2f(a+b\log(c(\ldots}{g^2(f+g\ldots}\right.$$

$$= \frac{\int (a+b\log(c(d+ex)^n))\,dx}{g^2} - \frac{(2f)\int \frac{a+b\log(c(d+ex)^n)}{f+gx^2}\,dx}{g^2} + \frac{f^2\int \frac{a+b\log(c(d\ldots}{(f+gx^2\ldots}}{g^2}$$

$$= \frac{ax}{g^2} + \frac{b\int \log(c(d+ex)^n)\,dx}{g^2} - \frac{(2f)\int \left(\frac{\sqrt{-f}\,(a+b\log(c(d+ex)^n))}{2f\left(\sqrt{-f}-\sqrt{g}\,x\right)} + \frac{\sqrt{-f}\,(\ldots}{2f\left(\sqrt{\ldots}\right.}\right.}{g^2}$$

$$= \frac{ax}{g^2} + \frac{b\text{Subst}\left(\int \log(cx^n)\,dx, x, d+ex\right)}{eg^2} - \frac{\sqrt{-f}\int \frac{a+b\log(c(d+ex)^n)}{\sqrt{-f}-\sqrt{g}\,x}\,dx}{g^2} - \ldots$$

$$= \frac{ax}{g^2} - \frac{bnx}{g^2} + \frac{b(d+ex)\log(c(d+ex)^n)}{eg^2} - \frac{f(a+b\log(c(d+ex)^n))}{4g^{5/2}\left(\sqrt{-f}-\sqrt{g}\,x\right)} + \frac{f(a\ldots}{4g^{5\ldots}}$$

$$= \frac{ax}{g^2} - \frac{bnx}{g^2} + \frac{b(d+ex)\log(c(d+ex)^n)}{eg^2} - \frac{f(a+b\log(c(d+ex)^n))}{4g^{5/2}\left(\sqrt{-f}-\sqrt{g}\,x\right)} + \frac{f(a\ldots}{4g^{5\ldots}}$$

$$= \frac{ax}{g^2} - \frac{bnx}{g^2} - \frac{befn\log(d+ex)}{4\left(e\sqrt{-f}-d\sqrt{g}\right)g^{5/2}} + \frac{befn\log(d+ex)}{4\left(e\sqrt{-f}+d\sqrt{g}\right)g^{5/2}} + \frac{b(d\ldots}{}$$

$$= \frac{ax}{g^2} - \frac{bnx}{g^2} - \frac{befn\log(d+ex)}{4\left(e\sqrt{-f}-d\sqrt{g}\right)g^{5/2}} + \frac{befn\log(d+ex)}{4\left(e\sqrt{-f}+d\sqrt{g}\right)g^{5/2}} + \frac{b(d\ldots}{}$$

$$= \frac{ax}{g^2} - \frac{bnx}{g^2} - \frac{befn\log(d+ex)}{4\left(e\sqrt{-f}-d\sqrt{g}\right)g^{5/2}} + \frac{befn\log(d+ex)}{4\left(e\sqrt{-f}+d\sqrt{g}\right)g^{5/2}} + \frac{b(d\ldots}{}$$

Mathematica [A]
time = 0.51, size = 434, normalized size = 0.81

$$\frac{4a\sqrt{g}\,x-4b\sqrt{g}\,nx+\frac{4b\sqrt{g}\,(d+ex)\log(c(d+ex)^n)}{e}-\frac{f(a+b\log(c(d+ex)^n))}{\sqrt{-f}-\sqrt{g}\,x}+\frac{f(a+b\log(c(d+ex)^n))}{\sqrt{-f}+\sqrt{g}\,x}+\frac{befn\left(\log(d+ex)-\log\left(\sqrt{-f}-\sqrt{g}\,x\right)\right)}{e\sqrt{-f}+d\sqrt{g}}+3\sqrt{-f}\,(a+b\log(c(d+ex)^n))\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}\,x\right)}{e\sqrt{-f}+d\sqrt{g}}\right)-\frac{befn\left(\log(d+ex)-\log\left(\sqrt{-f}+\sqrt{g}\,x\right)\right)}{e\sqrt{-f}-d\sqrt{g}}-3\sqrt{-f}\,(a+b\log(c(d+ex)^n))\log\left(\frac{e\left(\sqrt{-f}+\sqrt{g}\,x\right)}{e\sqrt{-f}-d\sqrt{g}}\right)-3b\sqrt{-f}\,n\mathrm{Li}_2\left(-\frac{\sqrt{g}\,(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)+3b\sqrt{-f}\,n\mathrm{Li}_2\left(\frac{\sqrt{g}\,(d+ex)}{e\sqrt{-f}+d\sqrt{g}}\right)}{4g^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^4*(a + b*Log[c*(d + e*x)^n]))/(f + g*x^2)^2,x]
```

```
[Out] (4*a*Sqrt[g]*x - 4*b*Sqrt[g]*n*x + (4*b*Sqrt[g]*(d + e*x)*Log[c*(d + e*x)^n
])/e - (f*(a + b*Log[c*(d + e*x)^n]))/(Sqrt[-f] - Sqrt[g]*x) + (f*(a + b*Lo
g[c*(d + e*x)^n]))/(Sqrt[-f] + Sqrt[g]*x) + (b*e*f*n*(Log[d + e*x] - Log[Sq
rt[-f] - Sqrt[g]*x]))/(e*Sqrt[-f] + d*Sqrt[g]) + 3*Sqrt[-f]*(a + b*Log[c*(d
 + e*x)^n])*Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[-f] + d*Sqrt[g])] - (b*e
*f*n*(Log[d + e*x] - Log[Sqrt[-f] + Sqrt[g]*x]))/(e*Sqrt[-f] - d*Sqrt[g]) -
 3*Sqrt[-f]*(a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sq
rt[-f] - d*Sqrt[g])] - 3*b*Sqrt[-f]*n*PolyLog[2, -((Sqrt[g]*(d + e*x))/(e*S
qrt[-f] - d*Sqrt[g]))] + 3*b*Sqrt[-f]*n*PolyLog[2, (Sqrt[g]*(d + e*x))/(e*S
qrt[-f] + d*Sqrt[g])]])/(4*g^(5/2))
```

Maple [C] Result contains higher order function than in optimal. Order 9 vs. order 4.
time = 0.52, size = 2021, normalized size = 3.78

method	result	size
risch	Expression too large to display	2021

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(a+b*ln(c*(e*x+d)^n))/(g*x^2+f)^2,x,method=_RETURNVERBOSE)
```

```
[Out] -1/2*I*b*Pi*csgn(I*c*(e*x+d)^n)^3/g^2*x+1/2*b*ln(c)/g^2*f*x/(g*x^2+f)-3/2*b
*ln(c)/g^2*f/(f*g)^(1/2)*arctan(x*g/(f*g)^(1/2))-1/2*b*e^2/g^2*f/(e^2*g*x^2
+e^2*f)*x*n*ln(e*x+d)-1/2*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+
d)^n)/g^2*x-3/2*b/g^2*f/(f*g)^(1/2)*arctan(1/2*(2*g*(e*x+d)-2*d*g)/e/(f*g)^
(1/2))*ln((e*x+d)^n)+3/4*I*b*Pi*csgn(I*c*(e*x+d)^n)^3/g^2*f/(f*g)^(1/2)*arc
tan(x*g/(f*g)^(1/2))+b*ln(c)/g^2*x-3/2*a/g^2*f/(f*g)^(1/2)*arctan(x*g/(f*g)
^(1/2))-1/4*I*b*Pi*csgn(I*c*(e*x+d)^n)^3/g^2*f*x/(g*x^2+f)+1/2*a/g^2*f*x/(g
*x^2+f)+a*x/g^2-b*n*x/g^2-1/4*b*e*n/g^2*f/(d^2*g+e^2*f)*d*ln(g*(e*x+d)^2-2*
d*g*(e*x+d)+d^2*g+f*e^2)-1/2*b*e^2*n/g^2*f^2/(d^2*g+e^2*f)/(f*g)^(1/2)*arct
an(1/2*(2*g*(e*x+d)-2*d*g)/e/(f*g)^(1/2))-1/4*b*e^4*n/g*f^2*ln(e*x+d)/(d^2*
g+e^2*f)/(e^2*g*x^2+e^2*f)/(-f*g)^(1/2)*ln((e*(-f*g)^(1/2)+g*(e*x+d)-d*g)/(
e*(-f*g)^(1/2)-d*g))*x^2+1/4*b*e^2*n/g*f^2*ln(e*x+d)/(d^2*g+e^2*f)/(e^2*g*x
^2+e^2*f)/(-f*g)^(1/2)*ln((e*(-f*g)^(1/2)-g*(e*x+d)+d*g)/(e*(-f*g)^(1/2)+d*
g))*d^2-1/4*b*e^2*n/g*f^2*ln(e*x+d)/(d^2*g+e^2*f)/(e^2*g*x^2+e^2*f)/(-f*g)^
(1/2)*ln((e*(-f*g)^(1/2)+g*(e*x+d)-d*g)/(e*(-f*g)^(1/2)-d*g))*d^2+1/4*b*e^4
*n/g*f^2*ln(e*x+d)/(d^2*g+e^2*f)/(e^2*g*x^2+e^2*f)/(-f*g)^(1/2)*ln((e*(-f*g
)^(1/2)-g*(e*x+d)+d*g)/(e*(-f*g)^(1/2)+d*g))*x^2+3/2*b/g^2*f/(f*g)^(1/2)*ar
```

```
ctan(1/2*(2*g*(e*x+d)-2*d*g)/e/(f*g)^(1/2))*n*ln(e*x+d)-b*n/g^2*f*ln(e*x+d)
/(-f*g)^(1/2)*ln((e*(-f*g)^(1/2)-g*(e*x+d)+d*g)/(e*(-f*g)^(1/2)+d*g))+b*n/g
^2*f*ln(e*x+d)/(-f*g)^(1/2)*ln((e*(-f*g)^(1/2)+g*(e*x+d)-d*g)/(e*(-f*g)^(1/
2)-d*g))+3/4*b*n/g^2*f/(-f*g)^(1/2)*dilog((e*(-f*g)^(1/2)+g*(e*x+d)-d*g)/(e
*(-f*g)^(1/2)-d*g))-b/e*n/g^2*d-1/4*b*e^4*n/g^2*f^3*ln(e*x+d)/(d^2*g+e^2*f)
/(e^2*g*x^2+e^2*f)/(-f*g)^(1/2)*ln((e*(-f*g)^(1/2)+g*(e*x+d)-d*g)/(e*(-f*g)
^(1/2)-d*g))-3/4*b*n/g^2*f/(-f*g)^(1/2)*dilog((e*(-f*g)^(1/2)-g*(e*x+d)+d*g
)/(e*(-f*g)^(1/2)+d*g))+1/2*b*e^2/g^2*f/(e^2*g*x^2+e^2*f)*x*ln((e*x+d)^n)-3
/4*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/g^2*f/(f*g)^(1/2)*arctan(
x*g/(f*g)^(1/2))+b*ln((e*x+d)^n)/g^2*x+1/4*b*e^4*n/g^2*f^3*ln(e*x+d)/(d^2*g
+e^2*f)/(e^2*g*x^2+e^2*f)/(-f*g)^(1/2)*ln((e*(-f*g)^(1/2)-g*(e*x+d)+d*g)/(e
*(-f*g)^(1/2)+d*g))+1/2*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/g^2*x+1/4*I*
b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/g^2*f*x/(g*x^2+f)+1/2*b*e^3*n/g^2*f^2*
ln(e*x+d)/(d^2*g+e^2*f)/(e^2*g*x^2+e^2*f)*d+1/2*b*e^4*n/g^2*f^2*ln(e*x+d)/(
d^2*g+e^2*f)/(e^2*g*x^2+e^2*f)*x+1/2*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x
+d)^n)^2/g^2*x+1/2*b*e^2*n/g*f*ln(e*x+d)/(d^2*g+e^2*f)/(e^2*g*x^2+e^2*f)*d^
2*x+1/2*b*e^3*n/g*f*ln(e*x+d)/(d^2*g+e^2*f)/(e^2*g*x^2+e^2*f)*d*x^2+b/e/g^2
*d*ln((e*x+d)^n)+3/4*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)
/g^2*f/(f*g)^(1/2)*arctan(x*g/(f*g)^(1/2))+1/4*I*b*Pi*csgn(I*(e*x+d)^n)*csg
n(I*c*(e*x+d)^n)^2/g^2*f*x/(g*x^2+f)+1/4*b*e^2*n*f*ln(e*x+d)/(d^2*g+e^2*f)/
(e^2*g*x^2+e^2*f)/(-f*g)^(1/2)*ln((e*(-f*g)^(1/2)-g*(e*x+d)+d*g)/(e*(-f*g)^
(1/2)+d*g))*d^2*x^2-1/4*b*e^2*n*f*ln(e*x+d)/(d^2*g+e^2*f)/(e^2*g*x^2+e^2*f)
/(-f*g)^(1/2)*ln((e*(-f*g)^(1/2)+g*(e*x+d)-d*g)/(e*(-f*g)^(1/2)-d*g))*d^2*x
^2-3/4*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/g^2*f/(f*g)^(1/2)*arctan(x*g/
(f*g)^(1/2))-1/4*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/g^2
*f*x/(g*x^2+f)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(a+b*log(c*(e*x+d)^n))/(g*x^2+f)^2,x, algorithm="maxima")
```

```
[Out] 1/2*a*(f*x/(g^3*x^2 + f*g^2) - 3*f*arctan(g*x/sqrt(f*g))/(sqrt(f*g)*g^2) +
2*x/g^2) + b*integrate((x^4*log((x*e + d)^n) + x^4*log(c))/(g^2*x^4 + 2*f*g
*x^2 + f^2), x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(a+b*log(c*(e*x+d)^n))/(g*x^2+f)^2,x, algorithm="fricas")
```

```
[Out] integral((b*x^4*log((x*e + d)^n*c) + a*x^4)/(g^2*x^4 + 2*f*g*x^2 + f^2), x)
```

Sympy [**F(-1)**] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**4*(a+b*ln(c*(e*x+d)**n))/(g*x**2+f)**2,x)
[Out] Timed out
```

Giac [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(a+b*log(c*(e*x+d)^n))/(g*x^2+f)^2,x, algorithm="giac")
[Out] integrate((b*log((x*e + d)^n*c) + a)*x^4/(g*x^2 + f)^2, x)
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x^4\,\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)}{{\left(g\,x^2+f\right)}^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^4*(a + b*log(c*(d + e*x)^n)))/(f + g*x^2)^2,x)
[Out] int((x^4*(a + b*log(c*(d + e*x)^n)))/(f + g*x^2)^2, x)
```

3.272 $\int \frac{x^2(a+b\log(c(d+ex)^n))}{(f+gx^2)^2}\,dx$

Optimal. Leaf size=491

$$\frac{ben\log(d+ex)}{4\left(e\sqrt{-f}-d\sqrt{g}\right)g^{3/2}}-\frac{ben\log(d+ex)}{4\left(e\sqrt{-f}+d\sqrt{g}\right)g^{3/2}}+\frac{a+b\log\left(c(d+ex)^n\right)}{4g^{3/2}\left(\sqrt{-f}-\sqrt{g}\,x\right)}-\frac{a+b\log\left(c(d+ex)^n\right)}{4g^{3/2}\left(\sqrt{-f}+\sqrt{g}\,x\right)}+\frac{be}{4(}$$

```
[Out] 1/4*(a+b*ln(c*(e*x+d)^n))*ln(e*((-f)^(1/2)-x*g^(1/2))/(e*(-f)^(1/2)+d*g^(1/
2)))/g^(3/2)/(-f)^(1/2)-1/4*(a+b*ln(c*(e*x+d)^n))*ln(e*((-f)^(1/2)+x*g^(1/2
))/(e*(-f)^(1/2)-d*g^(1/2)))/g^(3/2)/(-f)^(1/2)-1/4*b*n*polylog(2,-(e*x+d)*
g^(1/2)/(e*(-f)^(1/2)-d*g^(1/2)))/g^(3/2)/(-f)^(1/2)+1/4*b*n*polylog(2,(e*x
+d)*g^(1/2)/(e*(-f)^(1/2)+d*g^(1/2)))/g^(3/2)/(-f)^(1/2)+1/4*b*e*n*ln(e*x+d
)/g^(3/2)/(e*(-f)^(1/2)-d*g^(1/2))-1/4*b*e*n*ln((-f)^(1/2)+x*g^(1/2))/g^(3/
2)/(e*(-f)^(1/2)-d*g^(1/2))-1/4*b*e*n*ln(e*x+d)/g^(3/2)/(e*(-f)^(1/2)+d*g^(
1/2))+1/4*b*e*n*ln((-f)^(1/2)-x*g^(1/2))/g^(3/2)/(e*(-f)^(1/2)+d*g^(1/2))+1
/4*(a+b*ln(c*(e*x+d)^n))/g^(3/2)/((-f)^(1/2)-x*g^(1/2))+1/4*(-a-b*ln(c*(e*x
+d)^n))/g^(3/2)/((-f)^(1/2)+x*g^(1/2))
```

Rubi [A]
time = 0.61, antiderivative size = 491, normalized size of antiderivative = 1.00, number of steps used = 28, number of rules used = 10, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.370$,
Rules used = {294, 211, 2463, 2456, 2442, 36, 31, 2441, 2440, 2438}

$$-\frac{bn\text{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)}{4\sqrt{-f}\,g^{3/2}}+\frac{bn\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+e\sqrt{-f}}\right)}{4\sqrt{-f}\,g^{3/2}}+\frac{a+b\log\left(c(d+ex)^n\right)}{4g^{3/2}\left(\sqrt{-f}-\sqrt{g}\,x\right)}-\frac{a+b\log\left(c(d+ex)^n\right)}{4g^{3/2}\left(\sqrt{-f}+\sqrt{g}\,x\right)}+\frac{\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}\,x\right)}{d\sqrt{g}+e\sqrt{-f}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{4\sqrt{-f}\,g^{3/2}}-\frac{\log\left(\frac{e\left(\sqrt{-f}+\sqrt{g}\,x\right)}{e\sqrt{-f}-d\sqrt{g}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{4\sqrt{-f}\,g^{3/2}}+\frac{ben\log(d+ex)}{4g^{3/2}\left(e\sqrt{-f}-d\sqrt{g}\right)}-\frac{ben\log(d+ex)}{4g^{3/2}\left(d\sqrt{g}+e\sqrt{-f}\right)}+\frac{ben\log\left(\sqrt{-f}-\sqrt{g}\,x\right)}{4g^{3/2}\left(d\sqrt{g}+e\sqrt{-f}\right)}-\frac{ben\log\left(\sqrt{-f}+\sqrt{g}\,x\right)}{4g^{3/2}\left(e\sqrt{-f}-d\sqrt{g}\right)}$$

Antiderivative was successfully verified.

```
[In] Int[(x^2*(a + b*Log[c*(d + e*x)^n]))/(f + g*x^2)^2,x]
```

```
[Out] (b*e*n*Log[d + e*x])/(4*(e*Sqrt[-f] - d*Sqrt[g])*g^(3/2)) - (b*e*n*Log[d +
e*x])/(4*(e*Sqrt[-f] + d*Sqrt[g])*g^(3/2)) + (a + b*Log[c*(d + e*x)^n])/(4*
g^(3/2)*(Sqrt[-f] - Sqrt[g]*x)) - (a + b*Log[c*(d + e*x)^n])/(4*g^(3/2)*(Sq
rt[-f] + Sqrt[g]*x)) + (b*e*n*Log[Sqrt[-f] - Sqrt[g]*x])/(4*(e*Sqrt[-f] + d
*Sqrt[g])*g^(3/2)) + ((a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] - Sqrt[g]
*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(4*Sqrt[-f]*g^(3/2)) - (b*e*n*Log[Sqrt[-f]
+ Sqrt[g]*x])/(4*(e*Sqrt[-f] - d*Sqrt[g])*g^(3/2)) - ((a + b*Log[c*(d + e*x
)^n])*Log[(e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g])])/(4*Sqrt[-f]
*g^(3/2)) - (b*n*PolyLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))
])/(4*Sqrt[-f]*g^(3/2)) + (b*n*PolyLog[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] +
 d*Sqrt[g])])/(4*Sqrt[-f]*g^(3/2))
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 36

```
Int[1/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))), x_Symbol] :> Dist[b/(b*c
 - a*d), Int[1/(a + b*x), x], x] - Dist[d/(b*c - a*d), Int[1/(c + d*x), x],
 x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0]
```

Rule 211

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]/a)*ArcTan[x/R
t[a/b, 2]], x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 294

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[c^(
n - 1)*(c*x)^(m - n + 1)*((a + b*x^n)^(p + 1)/(b*n*(p + 1))), x] - Dist[c^n
*((m - n + 1)/(b*n*(p + 1))), Int[(c*x)^(m - n)*(a + b*x^n)^(p + 1), x], x]
 /; FreeQ[{a, b, c}, x] && IGtQ[n, 0] && LtQ[p, -1] && GtQ[m + 1, n] &&  !I
LtQ[(m + n*(p + 1) + 1)/n, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + c*e*(x/g)])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2441

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d + e*x
)^n])/g), x] - Dist[b*e*(n/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2442

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[(f + g*x)^(q + 1)*((a + b*Log[c*(d + e*x)^n])/(
g*(q + 1))), x] - Dist[b*e*(n/(g*(q + 1))), Int[(f + g*x)^(q + 1)/(d + e*x)
```

```
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 2456

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_)^(r_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a + b*Log[c*(d + e*x)
^n])^p, (f + g*x^r)^q, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, r}, x] && I
GtQ[p, 0] && IntegerQ[q] && (GtQ[q, 0] || (IntegerQ[r] && NeQ[r, 1]))
```

Rule 2463

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rubi steps

$$\int \frac{x^2(a+b\log(c(d+ex)^n))}{(f+gx^2)^2}\,dx = \int \left(-\frac{f(a+b\log(c(d+ex)^n))}{g(f+gx^2)^2} + \frac{a+b\log(c(d+ex)^n)}{g(f+gx^2)}\right)dx$$

$$= \frac{\int \frac{a+b\log(c(d+ex)^n)}{f+gx^2}\,dx}{g} - \frac{f\int \frac{a+b\log(c(d+ex)^n)}{(f+gx^2)^2}\,dx}{g}$$

$$= \frac{\int \left(\frac{\sqrt{-f}\,(a+b\log(c(d+ex)^n))}{2f\left(\sqrt{-f}-\sqrt{g}\,x\right)} + \frac{\sqrt{-f}\,(a+b\log(c(d+ex)^n))}{2f\left(\sqrt{-f}+\sqrt{g}\,x\right)}\right)dx}{g} - \frac{f\int \left(-\frac{g(a}{4f(}\right.}{}$$

$$= \frac{1}{4}\int \frac{a+b\log(c(d+ex)^n)}{\left(\sqrt{-f}\,\sqrt{g}-gx\right)^2}\,dx + \frac{1}{4}\int \frac{a+b\log(c(d+ex)^n)}{\left(\sqrt{-f}\,\sqrt{g}+gx\right)^2}\,dx + \frac{1}{2}\int \frac{a}{}$$

$$= \frac{a+b\log(c(d+ex)^n)}{4g^{3/2}\left(\sqrt{-f}-\sqrt{g}\,x\right)} - \frac{a+b\log(c(d+ex)^n)}{4g^{3/2}\left(\sqrt{-f}+\sqrt{g}\,x\right)} + \frac{(a+b\log(c(d+e}{}$$

$$= \frac{a+b\log(c(d+ex)^n)}{4g^{3/2}\left(\sqrt{-f}-\sqrt{g}\,x\right)} - \frac{a+b\log(c(d+ex)^n)}{4g^{3/2}\left(\sqrt{-f}+\sqrt{g}\,x\right)} + \frac{(a+b\log(c(d+e}{}$$

$$= \frac{ben\log(d+ex)}{4\left(e\sqrt{-f}-d\sqrt{g}\right)g^{3/2}} - \frac{ben\log(d+ex)}{4\left(e\sqrt{-f}+d\sqrt{g}\right)g^{3/2}} + \frac{a+b\log(c(d}{4g^{3/2}\left(\sqrt{-f}-\right.}$$

$$= \frac{ben\log(d+ex)}{4\left(e\sqrt{-f}-d\sqrt{g}\right)g^{3/2}} - \frac{ben\log(d+ex)}{4\left(e\sqrt{-f}+d\sqrt{g}\right)g^{3/2}} + \frac{a+b\log(c(d}{4g^{3/2}\left(\sqrt{-f}-\right.}$$

$$= \frac{ben\log(d+ex)}{4\left(e\sqrt{-f}-d\sqrt{g}\right)g^{3/2}} - \frac{ben\log(d+ex)}{4\left(e\sqrt{-f}+d\sqrt{g}\right)g^{3/2}} + \frac{a+b\log(c(d}{4g^{3/2}\left(\sqrt{-f}-\right.}$$

Mathematica [A]
time = 0.45, size = 383, normalized size = 0.78

$$\frac{\frac{a+b\log(c(d+ex)^n)}{\sqrt{-f}-\sqrt{g}x}-\frac{a+b\log(c(d+ex)^n)}{\sqrt{-f}+\sqrt{g}x}-\frac{ben\left(\log(d+ex)-\log\left(\sqrt{-f}-\sqrt{g}x\right)\right)}{e\sqrt{-f}+d\sqrt{g}}+\frac{(a+b\log(c(d+ex)^n))\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}x\right)}{e\sqrt{-f}+d\sqrt{g}}\right)}{\sqrt{-f}}+\frac{ben\left(\log(d+ex)-\log\left(\sqrt{-f}+\sqrt{g}x\right)\right)}{e\sqrt{-f}-d\sqrt{g}}+\frac{f(a+b\log(c(d+ex)^n))\log\left(\frac{e\left(\sqrt{-f}+\sqrt{g}x\right)}{e\sqrt{-f}-d\sqrt{g}}\right)}{(-f)^{3/2}}+\frac{bfn\text{Li}_2\left(-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)}{(-f)^{3/2}}+\frac{bn\text{Li}_2\left(\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}+d\sqrt{g}}\right)}{\sqrt{-f}}}{4g^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^2*(a + b*Log[c*(d + e*x)^n]))/(f + g*x^2)^2,x]
```

```
[Out] ((a + b*Log[c*(d + e*x)^n])/(Sqrt[-f] - Sqrt[g]*x) - (a + b*Log[c*(d + e*x)
^n])/(Sqrt[-f] + Sqrt[g]*x) - (b*e*n*(Log[d + e*x] - Log[Sqrt[-f] - Sqrt[g]
*x]))/(e*Sqrt[-f] + d*Sqrt[g]) + ((a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-
f] - Sqrt[g]*x))/(e*Sqrt[-f] + d*Sqrt[g])])/Sqrt[-f] + (b*e*n*(Log[d + e*x]
 - Log[Sqrt[-f] + Sqrt[g]*x]))/(e*Sqrt[-f] - d*Sqrt[g]) + (f*(a + b*Log[c*(
d + e*x)^n])*Log[(e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g])])/(-f)
^(3/2) + (b*f*n*PolyLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))]
)/(-f)^(3/2) + (b*n*PolyLog[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])
])/Sqrt[-f])/(4*g^(3/2))
```

Maple [C] Result contains higher order function than in optimal. Order 9 vs. order 4.
time = 0.53, size = 1781, normalized size = 3.63

method	result	size
risch	Expression too large to display	1781

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(a+b*ln(c*(e*x+d)^n))/(g*x^2+f)^2,x,method=_RETURNVERBOSE)
```

```
[Out] -1/4*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2*x/g/(g*x^2+f)+1/4*b*e^2
*n*g*ln(e*x+d)/(d^2*g+e^2*f)/(e^2*g*x^2+e^2*f)/(-f*g)^(1/2)*ln((e*(-f*g)^(1
/2)+g*(e*x+d)-d*g)/(e*(-f*g)^(1/2)-d*g))*d^2*x^2-1/4*b*e^2*n*g*ln(e*x+d)/(d
^2*g+e^2*f)/(e^2*g*x^2+e^2*f)/(-f*g)^(1/2)*ln((e*(-f*g)^(1/2)-g*(e*x+d)+d*g
)/(e*(-f*g)^(1/2)+d*g))*d^2*x^2-1/2*b*e^3*n*ln(e*x+d)/(d^2*g+e^2*f)/(e^2*g*
x^2+e^2*f)*d*x^2+1/2*b/g/(f*g)^(1/2)*arctan(1/2*(2*g*(e*x+d)-2*d*g)/e/(f*g)
^(1/2))*ln((e*x+d)^n)+1/2*b*e^2*n*f/g/(d^2*g+e^2*f)/(f*g)^(1/2)*arctan(1/2*
(2*g*(e*x+d)-2*d*g)/e/(f*g)^(1/2))+1/4*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e
*x+d)^n)^2/g/(f*g)^(1/2)*arctan(x*g/(f*g)^(1/2))-1/2*b*e^2*n*ln(e*x+d)/(d^2
*g+e^2*f)/(e^2*g*x^2+e^2*f)*d^2*x-1/4*I*b*Pi*csgn(I*c*(e*x+d)^n)^3/g/(f*g)^
(1/2)*arctan(x*g/(f*g)^(1/2))+1/4*I*b*Pi*csgn(I*c*(e*x+d)^n)^3*x/g/(g*x^2+f
)-1/4*b*n/g/(-f*g)^(1/2)*dilog((e*(-f*g)^(1/2)+g*(e*x+d)-d*g)/(e*(-f*g)^(1/
2)-d*g))-1/2*a*x/g/(g*x^2+f)+1/2*a/g/(f*g)^(1/2)*arctan(x*g/(f*g)^(1/2))+1/
4*b*n/g/(-f*g)^(1/2)*dilog((e*(-f*g)^(1/2)-g*(e*x+d)+d*g)/(e*(-f*g)^(1/2)+d
*g))-1/4*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/g/(f*g)^(1/
2)*arctan(x*g/(f*g)^(1/2))-1/4*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*x/g/(
g*x^2+f)-1/2*b*e^2/(e^2*g*x^2+e^2*f)/g*x*ln((e*x+d)^n)-1/2*b*ln(c)*x/g/(g*x
```

```
^2+f)+1/2*b*ln(c)/g/(f*g)^(1/2)*arctan(x*g/(f*g)^(1/2))-1/2*b*e^3*n*f/g*ln(
e*x+d)/(d^2*g+e^2*f)/(e^2*g*x^2+e^2*f)*d-1/2*b*e^4*n*f/g*ln(e*x+d)/(d^2*g+e
^2*f)/(e^2*g*x^2+e^2*f)*x+1/4*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(
e*x+d)^n)*x/g/(g*x^2+f)-1/4*b*e^4*n*f^2/g*ln(e*x+d)/(d^2*g+e^2*f)/(e^2*g*x^
2+e^2*f)/(-f*g)^(1/2)*ln((e*(-f*g)^(1/2)-g*(e*x+d)+d*g)/(e*(-f*g)^(1/2)+d*g
))-1/4*b*e^2*n*f*ln(e*x+d)/(d^2*g+e^2*f)/(e^2*g*x^2+e^2*f)/(-f*g)^(1/2)*ln(
(e*(-f*g)^(1/2)-g*(e*x+d)+d*g)/(e*(-f*g)^(1/2)+d*g))*d^2+1/4*I*b*Pi*csgn(I*
c)*csgn(I*c*(e*x+d)^n)^2/g/(f*g)^(1/2)*arctan(x*g/(f*g)^(1/2))+1/2*b*e^2/(e
^2*g*x^2+e^2*f)/g*x*n*ln(e*x+d)+1/4*b*e*n/g/(d^2*g+e^2*f)*d*ln(g*(e*x+d)^2-
2*d*g*(e*x+d)+d^2*g+f*e^2)-1/2*b*n/g*ln(e*x+d)/(-f*g)^(1/2)*ln((e*(-f*g)^(1
/2)+g*(e*x+d)-d*g)/(e*(-f*g)^(1/2)-d*g))+1/2*b*n/g*ln(e*x+d)/(-f*g)^(1/2)*l
n((e*(-f*g)^(1/2)-g*(e*x+d)+d*g)/(e*(-f*g)^(1/2)+d*g))-1/2*b/g/(f*g)^(1/2)*
arctan(1/2*(2*g*(e*x+d)-2*d*g)/e/(f*g)^(1/2))*n*ln(e*x+d)+1/4*b*e^4*n*f^2/g
*ln(e*x+d)/(d^2*g+e^2*f)/(e^2*g*x^2+e^2*f)/(-f*g)^(1/2)*ln((e*(-f*g)^(1/2)+
g*(e*x+d)-d*g)/(e*(-f*g)^(1/2)-d*g))+1/4*b*e^2*n*f*ln(e*x+d)/(d^2*g+e^2*f)/
(e^2*g*x^2+e^2*f)/(-f*g)^(1/2)*ln((e*(-f*g)^(1/2)+g*(e*x+d)-d*g)/(e*(-f*g)^
(1/2)-d*g))*d^2-1/4*b*e^4*n*f*ln(e*x+d)/(d^2*g+e^2*f)/(e^2*g*x^2+e^2*f)/(-f
*g)^(1/2)*ln((e*(-f*g)^(1/2)-g*(e*x+d)+d*g)/(e*(-f*g)^(1/2)+d*g))*x^2+1/4*b
*e^4*n*f*ln(e*x+d)/(d^2*g+e^2*f)/(e^2*g*x^2+e^2*f)/(-f*g)^(1/2)*ln((e*(-f*g
)^(1/2)+g*(e*x+d)-d*g)/(e*(-f*g)^(1/2)-d*g))*x^2
```

Maxima [**F**]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*log(c*(e*x+d)^n))/(g*x^2+f)^2,x, algorithm="maxima")
[Out] -1/2*a*(x/(g^2*x^2 + f*g) - arctan(g*x/sqrt(f*g))/(sqrt(f*g)*g)) + b*integr
ate((x^2*log((x*e + d)^n) + x^2*log(c))/(g^2*x^4 + 2*f*g*x^2 + f^2), x)
```

Fricas [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*log(c*(e*x+d)^n))/(g*x^2+f)^2,x, algorithm="fricas")
[Out] integral((b*x^2*log((x*e + d)^n*c) + a*x^2)/(g^2*x^4 + 2*f*g*x^2 + f^2), x)
```

Sympy [**F(-1)**] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(a+b*ln(c*(e*x+d)**n))/(g*x**2+f)**2,x)
```

```
[Out] Timed out
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*log(c*(e*x+d)^n))/(g*x^2+f)^2,x, algorithm="giac")
```

```
[Out] integrate((b*log((x*e + d)^n*c) + a)*x^2/(g*x^2 + f)^2, x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x^2\,\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)}{{\left(g\,x^2+f\right)}^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^2*(a + b*log(c*(d + e*x)^n)))/(f + g*x^2)^2,x)
```

```
[Out] int((x^2*(a + b*log(c*(d + e*x)^n)))/(f + g*x^2)^2, x)
```

3.273 $\int \frac{a+b\log(c(d+ex)^n)}{(f+gx^2)^2}\,dx$

Optimal. Leaf size=503

$$\frac{ben\log(d+ex)}{4f\left(e\sqrt{-f}+d\sqrt{g}\right)\sqrt{g}}+\frac{ben\log(d+ex)}{4\left(e(-f)^{3/2}+df\sqrt{g}\right)\sqrt{g}}-\frac{a+b\log\left(c(d+ex)^n\right)}{4f\sqrt{g}\left(\sqrt{-f}-\sqrt{g}\,x\right)}+\frac{a+b\log\left(c(d+ex)^r\right.}{4f\sqrt{g}\left(\sqrt{-f}+\sqrt{g}\right.}$$

```
[Out] -1/4*(a+b*ln(c*(e*x+d)^n))*ln(e*((-f)^(1/2)-x*g^(1/2))/(e*(-f)^(1/2)+d*g^(1
/2)))/(-f)^(3/2)/g^(1/2)+1/4*(a+b*ln(c*(e*x+d)^n))*ln(e*((-f)^(1/2)+x*g^(1/
2))/(e*(-f)^(1/2)-d*g^(1/2)))/(-f)^(3/2)/g^(1/2)+1/4*b*n*polylog(2,-(e*x+d)
*g^(1/2)/(e*(-f)^(1/2)-d*g^(1/2)))/(-f)^(3/2)/g^(1/2)-1/4*b*n*polylog(2,(e*
x+d)*g^(1/2)/(e*(-f)^(1/2)+d*g^(1/2)))/(-f)^(3/2)/g^(1/2)+1/4*b*e*n*ln(e*x+
d)/f/g^(1/2)/(e*(-f)^(1/2)+d*g^(1/2))-1/4*b*e*n*ln((-f)^(1/2)-x*g^(1/2))/f/
g^(1/2)/(e*(-f)^(1/2)+d*g^(1/2))+1/4*b*e*n*ln(e*x+d)/g^(1/2)/(e*(-f)^(3/2)+
d*f*g^(1/2))-1/4*b*e*n*ln((-f)^(1/2)+x*g^(1/2))/g^(1/2)/(e*(-f)^(3/2)+d*f*g
^(1/2))+1/4*(-a-b*ln(c*(e*x+d)^n))/f/g^(1/2)/((-f)^(1/2)-x*g^(1/2))+1/4*(a+
b*ln(c*(e*x+d)^n))/f/g^(1/2)/((-f)^(1/2)+x*g^(1/2))
```

Rubi [A]
time = 0.32, antiderivative size = 503, normalized size of antiderivative = 1.00, number of steps used = 18, number of rules used = 7, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.292$, Rules used = {2456, 2442, 36, 31, 2441, 2440, 2438}

$$\frac{bn\text{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)}{4(-f)^{3/2}\sqrt{g}}-\frac{bn\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+e\sqrt{-f}}\right)}{4(-f)^{3/2}\sqrt{g}}-\frac{a+b\log\left(c(d+ex)^n\right)}{4f\sqrt{g}\left(\sqrt{-f}-\sqrt{g}\,x\right)}+\frac{a+b\log\left(c(d+ex)^n\right)}{4f\sqrt{g}\left(\sqrt{-f}+\sqrt{g}\,x\right)}-\frac{\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}\,x\right)}{d\sqrt{g}+e\sqrt{-f}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{4(-f)^{3/2}\sqrt{g}}+\frac{\log\left(\frac{e\left(\sqrt{-f}+\sqrt{g}\,x\right)}{e\sqrt{-f}-d\sqrt{g}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{4(-f)^{3/2}\sqrt{g}}+\frac{ben\log(d+ex)}{4f\sqrt{g}\left(d\sqrt{g}+e\sqrt{-f}\right)}+\frac{ben\log(d+ex)}{4\sqrt{g}\left(df\sqrt{g}+e(-f)^{3/2}\right)}-\frac{ben\log\left(\sqrt{-f}-\sqrt{g}\,x\right)}{4f\sqrt{g}\left(d\sqrt{g}+e\sqrt{-f}\right)}-\frac{ben\log\left(\sqrt{-f}+\sqrt{g}\,x\right)}{4\sqrt{g}\left(df\sqrt{g}+e(-f)^{3/2}\right)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])/(f + g*x^2)^2,x]
```

```
[Out] (b*e*n*Log[d + e*x])/(4*f*(e*Sqrt[-f] + d*Sqrt[g])*Sqrt[g]) + (b*e*n*Log[d
 + e*x])/(4*(e*(-f)^(3/2) + d*f*Sqrt[g])*Sqrt[g]) - (a + b*Log[c*(d + e*x)^n
])/(4*f*Sqrt[g]*(Sqrt[-f] - Sqrt[g]*x)) + (a + b*Log[c*(d + e*x)^n])/(4*f*S
qrt[g]*(Sqrt[-f] + Sqrt[g]*x)) - (b*e*n*Log[Sqrt[-f] - Sqrt[g]*x])/(4*f*(e*
Sqrt[-f] + d*Sqrt[g])*Sqrt[g]) - ((a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-
f] - Sqrt[g]*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(4*(-f)^(3/2)*Sqrt[g]) - (b*e*n
*Log[Sqrt[-f] + Sqrt[g]*x])/(4*(e*(-f)^(3/2) + d*f*Sqrt[g])*Sqrt[g]) + ((a
+ b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt
[g])])/(4*(-f)^(3/2)*Sqrt[g]) + (b*n*PolyLog[2, -((Sqrt[g]*(d + e*x))/(e*Sq
rt[-f] - d*Sqrt[g]))])/(4*(-f)^(3/2)*Sqrt[g]) - (b*n*PolyLog[2, (Sqrt[g]*(d
 + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(4*(-f)^(3/2)*Sqrt[g])
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 36

```
Int[1/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))), x_Symbol] :> Dist[b/(b*c
 - a*d), Int[1/(a + b*x), x], x] - Dist[d/(b*c - a*d), Int[1/(c + d*x), x],
 x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + c*e*(x/g)])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2441

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d + e*x
)^n])/g), x] - Dist[b*e*(n/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2442

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[(f + g*x)^(q + 1)*((a + b*Log[c*(d + e*x)^n])/(
g*(q + 1))), x] - Dist[b*e*(n/(g*(q + 1))), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 2456

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_)^(r_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a + b*Log[c*(d + e*x)
^n])^p, (f + g*x^r)^q, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, r}, x] && I
GtQ[p, 0] && IntegerQ[q] && (GtQ[q, 0] || (IntegerQ[r] && NeQ[r, 1]))
```

Rubi steps

$$\int \frac{a+b\log\left(c(d+ex)^n\right)}{\left(f+gx^2\right)^2}\,dx = \int \left(-\frac{g(a+b\log\left(c(d+ex)^n\right))}{4f\left(\sqrt{-f}\sqrt{g}-gx\right)^2}-\frac{g(a+b\log\left(c(d+ex)^n\right))}{4f\left(\sqrt{-f}\sqrt{g}+gx\right)^2}-\frac{g(a+b\log\left(c(\right.}{2f\left(-fg-\right.}\right.$$

$$=-\frac{g\int\frac{a+b\log(c(d+ex)^n)}{\left(\sqrt{-f}\sqrt{g}-gx\right)^2}\,dx}{4f}-\frac{g\int\frac{a+b\log(c(d+ex)^n)}{\left(\sqrt{-f}\sqrt{g}+gx\right)^2}\,dx}{4f}-\frac{g\int\frac{a+b\log(c(d+ex)^n)}{-fg-g^2x^2}\,\ldots}{2f}$$

$$=-\frac{a+b\log\left(c(d+ex)^n\right)}{4f\sqrt{g}\left(\sqrt{-f}-\sqrt{g}\,x\right)}+\frac{a+b\log\left(c(d+ex)^n\right)}{4f\sqrt{g}\left(\sqrt{-f}+\sqrt{g}\,x\right)}-\frac{g\int\left(-\frac{\sqrt{-f}\,(a+\ldots}{2fg\left(\sqrt{-\ldots}\right.}\right.}{}$$

$$=-\frac{a+b\log\left(c(d+ex)^n\right)}{4f\sqrt{g}\left(\sqrt{-f}-\sqrt{g}\,x\right)}+\frac{a+b\log\left(c(d+ex)^n\right)}{4f\sqrt{g}\left(\sqrt{-f}+\sqrt{g}\,x\right)}+\frac{\int\frac{a+b\log(c(d+ex)^n)}{\sqrt{-f}-\sqrt{g}\,x}\,\ldots}{4(-f)^{3/2}}$$

$$=\frac{ben\log(d+ex)}{4f\left(e\sqrt{-f}+d\sqrt{g}\right)\sqrt{g}}+\frac{ben\log(d+ex)}{4\left(e(-f)^{3/2}+df\sqrt{g}\right)\sqrt{g}}-\frac{a+b\log\left(c(d+\right.}{4f\sqrt{g}\left(\sqrt{-f}\right.}$$

$$=\frac{ben\log(d+ex)}{4f\left(e\sqrt{-f}+d\sqrt{g}\right)\sqrt{g}}+\frac{ben\log(d+ex)}{4\left(e(-f)^{3/2}+df\sqrt{g}\right)\sqrt{g}}-\frac{a+b\log\left(c(d+\right.}{4f\sqrt{g}\left(\sqrt{-f}\right.}$$

$$=\frac{ben\log(d+ex)}{4f\left(e\sqrt{-f}+d\sqrt{g}\right)\sqrt{g}}+\frac{ben\log(d+ex)}{4\left(e(-f)^{3/2}+df\sqrt{g}\right)\sqrt{g}}-\frac{a+b\log\left(c(d+\right.}{4f\sqrt{g}\left(\sqrt{-f}\right.}$$

Mathematica [A]
time = 0.67, size = 407, normalized size = 0.81

$$\frac{1}{4}\left(\frac{a+b\log\left(c(d+ex)^n\right)}{f\left(\sqrt{-f}\sqrt{g}+gx\right)}+\frac{a+b\log\left(c(d+ex)^n\right)}{(-f)^{3/2}\sqrt{g}+fgx}+\frac{ben\left(\log(d+ex)-\log\left(\sqrt{-f}-\sqrt{g}\,x\right)\right)}{e\sqrt{-f}\,f\sqrt{g}+dfg}+\frac{f(a+b\log\left(c(d+ex)^n\right))\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}\,x\right)}{e\sqrt{-f}+d\sqrt{g}}\right)}{(-f)^{5/2}\sqrt{g}}+\frac{ben\left(\log(d+ex)-\log\left(\sqrt{-f}+\sqrt{g}\,x\right)\right)}{e(-f)^{3/2}\sqrt{g}+dfg}+\frac{(a+b\log\left(c(d+ex)^n\right))\log\left(\frac{e\left(\sqrt{-f}+\sqrt{g}\,x\right)}{e\sqrt{-f}-d\sqrt{g}}\right)}{(-f)^{3/2}\sqrt{g}}+\frac{bn\text{Li}_2\left(-\frac{\sqrt{g}\,(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)}{(-f)^{3/2}\sqrt{g}}+\frac{bfn\text{Li}_2\left(\frac{\sqrt{g}\,(d+ex)}{e\sqrt{-f}+d\sqrt{g}}\right)}{(-f)^{5/2}\sqrt{g}}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])/(f + g*x^2)^2,x]
```

```
[Out] ((a + b*Log[c*(d + e*x)^n])/(f*(Sqrt[-f]*Sqrt[g] + g*x)) + (a + b*Log[c*(d
+ e*x)^n])/((-f)^(3/2)*Sqrt[g] + f*g*x) + (b*e*n*(Log[d + e*x] - Log[Sqrt[-
f] - Sqrt[g]*x]))/(e*Sqrt[-f]*f*Sqrt[g] + d*f*g) + (f*(a + b*Log[c*(d + e*x
)^n])*Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[-f] + d*Sqrt[g])])/((-f)^(5/2)
*Sqrt[g]) + (b*e*n*(Log[d + e*x] - Log[Sqrt[-f] + Sqrt[g]*x]))/(e*(-f)^(3/2
)*Sqrt[g] + d*f*g) + ((a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] + Sqrt[g]
*x))/(e*Sqrt[-f] - d*Sqrt[g])])/((-f)^(3/2)*Sqrt[g]) + (b*n*PolyLog[2, -((S
qrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/((-f)^(3/2)*Sqrt[g]) + (b*f*n
*PolyLog[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/((-f)^(5/2)*Sqrt
[g]))/4
```

Maple [C] Result contains higher order function than in optimal. Order 9 vs. order 4.
time = 0.52, size = 1666, normalized size = 3.31

method	result	size
risch	Expression too large to display	1666

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))/(g*x^2+f)^2,x,method=_RETURNVERBOSE)
```

```
[Out] -1/2*b*e^2*n/(d^2*g+e^2*f)/(f*g)^(1/2)*arctan(1/2*(2*g*(e*x+d)-2*d*g)/e/(f*
g)^(1/2))+1/4*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/f/(f*g)^(1/2)*arctan(x
*g/(f*g)^(1/2))+1/4*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2*x/f/(g*x
^2+f)+1/2*b*ln(c)/f/(f*g)^(1/2)*arctan(x*g/(f*g)^(1/2))+1/2*b*ln(c)*x/f/(g*
x^2+f)+1/4*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*x/f/(g*x^2+f)-1/4*I*b*Pi*
csgn(I*c*(e*x+d)^n)^3*x/f/(g*x^2+f)+1/2*a/f/(f*g)^(1/2)*arctan(x*g/(f*g)^(1
/2))+1/2*a*x/f/(g*x^2+f)+1/4*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2
/f/(f*g)^(1/2)*arctan(x*g/(f*g)^(1/2))-1/4*I*b*Pi*csgn(I*c*(e*x+d)^n)^3/f/(
f*g)^(1/2)*arctan(x*g/(f*g)^(1/2))+1/4*b*n/f/(-f*g)^(1/2)*dilog((e*(-f*g)^(
1/2)-g*(e*x+d)+d*g)/(e*(-f*g)^(1/2)+d*g))-1/4*b*n/f/(-f*g)^(1/2)*dilog((e*(
-f*g)^(1/2)+g*(e*x+d)-d*g)/(e*(-f*g)^(1/2)-d*g))-1/4*b*e*n/f/(d^2*g+e^2*f)*
d*ln(g*(e*x+d)^2-2*d*g*(e*x+d)+d^2*g+f*e^2)-1/2*b*e^2/f/(e^2*g*x^2+e^2*f)*x
*n*ln(e*x+d)-1/4*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)*x/f
/(g*x^2+f)+1/4*b*e^4*n*ln(e*x+d)/(d^2*g+e^2*f)/(e^2*g*x^2+e^2*f)/(-f*g)^(1/
2)*ln((e*(-f*g)^(1/2)-g*(e*x+d)+d*g)/(e*(-f*g)^(1/2)+d*g))*g*x^2+1/4*b*e^2*
n*ln(e*x+d)/(d^2*g+e^2*f)/(e^2*g*x^2+e^2*f)/(-f*g)^(1/2)*ln((e*(-f*g)^(1/2)
-g*(e*x+d)+d*g)/(e*(-f*g)^(1/2)+d*g))*g*d^2+1/2*b*e^3*n*ln(e*x+d)/f/(d^2*g+
e^2*f)/(e^2*g*x^2+e^2*f)*d*g*x^2+1/2*b*e^2*n*ln(e*x+d)/f/(d^2*g+e^2*f)/(e^2
*g*x^2+e^2*f)*d^2*g*x-1/4*b*e^4*n*ln(e*x+d)/(d^2*g+e^2*f)/(e^2*g*x^2+e^2*f)
/(-f*g)^(1/2)*ln((e*(-f*g)^(1/2)+g*(e*x+d)-d*g)/(e*(-f*g)^(1/2)-d*g))*g*x^2
-1/4*b*e^2*n*ln(e*x+d)/(d^2*g+e^2*f)/(e^2*g*x^2+e^2*f)/(-f*g)^(1/2)*ln((e*(
-f*g)^(1/2)+g*(e*x+d)-d*g)/(e*(-f*g)^(1/2)-d*g))*g*d^2+1/4*b*e^4*n*ln(e*x+d
)*f/(d^2*g+e^2*f)/(e^2*g*x^2+e^2*f)/(-f*g)^(1/2)*ln((e*(-f*g)^(1/2)-g*(e*x+
d)+d*g)/(e*(-f*g)^(1/2)+d*g))-1/2*b/f/(f*g)^(1/2)*arctan(1/2*(2*g*(e*x+d)-2
*d*g)/e/(f*g)^(1/2))*n*ln(e*x+d)+1/2*b/f/(f*g)^(1/2)*arctan(1/2*(2*g*(e*x+d
```

```
)-2*d*g)/e/(f*g)^(1/2))*ln((e*x+d)^n)-1/4*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n
)*csgn(I*c*(e*x+d)^n)/f/(f*g)^(1/2)*arctan(x*g/(f*g)^(1/2))+1/2*b*e^4*n*ln(
e*x+d)/(d^2*g+e^2*f)/(e^2*g*x^2+e^2*f)*x+1/2*b*e^3*n*ln(e*x+d)/(d^2*g+e^2*f
)/(e^2*g*x^2+e^2*f)*d+1/2*b*e^2/f/(e^2*g*x^2+e^2*f)*x*ln((e*x+d)^n)-1/4*b*e
^4*n*ln(e*x+d)*f/(d^2*g+e^2*f)/(e^2*g*x^2+e^2*f)/(-f*g)^(1/2)*ln((e*(-f*g)^
(1/2)+g*(e*x+d)-d*g)/(e*(-f*g)^(1/2)-d*g))+1/4*b*e^2*n*ln(e*x+d)/f/(d^2*g+e
^2*f)/(e^2*g*x^2+e^2*f)/(-f*g)^(1/2)*ln((e*(-f*g)^(1/2)-g*(e*x+d)+d*g)/(e*(
-f*g)^(1/2)+d*g))*d^2*g^2*x^2-1/4*b*e^2*n*ln(e*x+d)/f/(d^2*g+e^2*f)/(e^2*g*
x^2+e^2*f)/(-f*g)^(1/2)*ln((e*(-f*g)^(1/2)+g*(e*x+d)-d*g)/(e*(-f*g)^(1/2)-d
*g))*d^2*g^2*x^2
```

Maxima [**F**]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x^2+f)^2,x, algorithm="maxima")
```

```
[Out] 1/2*a*(x/(f*g*x^2 + f^2) + arctan(g*x/sqrt(f*g))/(sqrt(f*g)*f)) + b*integra
te((log((x*e + d)^n) + log(c))/(g^2*x^4 + 2*f*g*x^2 + f^2), x)
```

Fricas [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x^2+f)^2,x, algorithm="fricas")
```

```
[Out] integral((b*log((x*e + d)^n*c) + a)/(g^2*x^4 + 2*f*g*x^2 + f^2), x)
```

Sympy [**F(-1)**] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))/(g*x**2+f)**2,x)
```

```
[Out] Timed out
```

Giac [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x^2+f)^2,x, algorithm="giac")
```

```
[Out] integrate((b*log((x*e + d)^n*c) + a)/(g*x^2 + f)^2, x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)}{{\left(g\,x^2+f\right)}^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))/(f + g*x^2)^2,x)
```

```
[Out] int((a + b*log(c*(d + e*x)^n))/(f + g*x^2)^2, x)
```

3.274 $\int \frac{a+b\log(c(d+ex)^n)}{x^2(f+gx^2)^2}\,dx$

Optimal. Leaf size=560

$$\frac{ben\log(x)}{df^2}-\frac{ben\log(d+ex)}{df^2}-\frac{be\sqrt{g}\,n\log(d+ex)}{4f^2\left(e\sqrt{-f}+d\sqrt{g}\right)}-\frac{be\sqrt{g}\,n\log(d+ex)}{4f\left(e(-f)^{3/2}+df\sqrt{g}\right)}-\frac{a+b\log\left(c(d+ex)^n\right)}{f^2x}+\frac{\sqrt{\vphantom{g}}}{}$$

```
[Out] b*e*n*ln(x)/d/f^2-b*e*n*ln(e*x+d)/d/f^2+(-a-b*ln(c*(e*x+d)^n))/f^2/x-3/4*(a
+b*ln(c*(e*x+d)^n))*ln(e*((-f)^(1/2)-x*g^(1/2))/(e*(-f)^(1/2)+d*g^(1/2)))*g
^(1/2)/(-f)^(5/2)+3/4*(a+b*ln(c*(e*x+d)^n))*ln(e*((-f)^(1/2)+x*g^(1/2))/(e*
(-f)^(1/2)-d*g^(1/2)))*g^(1/2)/(-f)^(5/2)+3/4*b*n*polylog(2,-(e*x+d)*g^(1/2
)/(e*(-f)^(1/2)-d*g^(1/2)))*g^(1/2)/(-f)^(5/2)-3/4*b*n*polylog(2,(e*x+d)*g^
(1/2)/(e*(-f)^(1/2)+d*g^(1/2)))*g^(1/2)/(-f)^(5/2)-1/4*b*e*n*ln(e*x+d)*g^(1
/2)/f^2/(e*(-f)^(1/2)+d*g^(1/2))+1/4*b*e*n*ln((-f)^(1/2)-x*g^(1/2))*g^(1/2)
/f^2/(e*(-f)^(1/2)+d*g^(1/2))-1/4*b*e*n*ln(e*x+d)*g^(1/2)/f/(e*(-f)^(3/2)+d
*f*g^(1/2))+1/4*b*e*n*ln((-f)^(1/2)+x*g^(1/2))*g^(1/2)/f/(e*(-f)^(3/2)+d*f*
g^(1/2))+1/4*(a+b*ln(c*(e*x+d)^n))*g^(1/2)/f^2/((-f)^(1/2)-x*g^(1/2))-1/4*(
a+b*ln(c*(e*x+d)^n))*g^(1/2)/f^2/((-f)^(1/2)+x*g^(1/2))
```

Rubi [A]
time = 0.65, antiderivative size = 560, normalized size of antiderivative = 1.00, number of steps used = 32, number of rules used = 12, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.444$, Rules used = {296, 331, 211, 2463, 2442, 36, 29, 31, 2456, 2441, 2440, 2438}

$$\frac{3b\sqrt{g}\,n\,\text{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)}{4(-f)^{5/2}}-\frac{3b\sqrt{g}\,n\,\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+e\sqrt{-f}}\right)}{4(-f)^{5/2}}+\frac{\sqrt{g}\left(a+b\log\left(c(d+ex)^n\right)\right)}{4f^2\left(\sqrt{-f}-\sqrt{g}x\right)}-\frac{\sqrt{g}\left(a+b\log\left(c(d+ex)^n\right)\right)}{4f^2\left(\sqrt{-f}+\sqrt{g}x\right)}-\frac{a+b\log\left(c(d+ex)^n\right)}{f^2x}-\frac{3\sqrt{g}\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}x\right)}{d\sqrt{g}+e\sqrt{-f}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{4(-f)^{5/2}}+\frac{3\sqrt{g}\log\left(\frac{e\left(\sqrt{-f}+\sqrt{g}x\right)}{e\sqrt{-f}-d\sqrt{g}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{4(-f)^{5/2}}-\frac{be\sqrt{g}\,n\log(d+ex)}{4f^2\left(d\sqrt{g}+e\sqrt{-f}\right)}+\frac{be\sqrt{g}\,n\log\left(\sqrt{-f}-\sqrt{g}x\right)}{4f^2\left(d\sqrt{g}+e\sqrt{-f}\right)}+\frac{ben\log(x)}{df^2}-\frac{ben\log(d+ex)}{df^2}-\frac{be\sqrt{g}\,n\log(d+ex)}{4f\left(df\sqrt{g}+e(-f)^{3/2}\right)}+\frac{be\sqrt{g}\,n\log\left(\sqrt{-f}+\sqrt{g}x\right)}{4f\left(df\sqrt{g}+e(-f)^{3/2}\right)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])/(x^2*(f + g*x^2)^2),x]
```

```
[Out] (b*e*n*Log[x])/(d*f^2) - (b*e*n*Log[d + e*x])/(d*f^2) - (b*e*Sqrt[g]*n*Log[
d + e*x])/(4*f^2*(e*Sqrt[-f] + d*Sqrt[g])) - (b*e*Sqrt[g]*n*Log[d + e*x])/(
4*f*(e*(-f)^(3/2) + d*f*Sqrt[g])) - (a + b*Log[c*(d + e*x)^n])/(f^2*x) + (S
qrt[g]*(a + b*Log[c*(d + e*x)^n]))/(4*f^2*(Sqrt[-f] - Sqrt[g]*x)) - (Sqrt[g
]*(a + b*Log[c*(d + e*x)^n]))/(4*f^2*(Sqrt[-f] + Sqrt[g]*x)) + (b*e*Sqrt[g]
*n*Log[Sqrt[-f] - Sqrt[g]*x])/(4*f^2*(e*Sqrt[-f] + d*Sqrt[g])) - (3*Sqrt[g]
*(a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[-f] + d*
Sqrt[g])])/(4*(-f)^(5/2)) + (b*e*Sqrt[g]*n*Log[Sqrt[-f] + Sqrt[g]*x])/(4*f*
(e*(-f)^(3/2) + d*f*Sqrt[g])) + (3*Sqrt[g]*(a + b*Log[c*(d + e*x)^n])*Log[(
e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g])])/(4*(-f)^(5/2)) + (3*b*
Sqrt[g]*n*PolyLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/(4*(
-f)^(5/2)) - (3*b*Sqrt[g]*n*PolyLog[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*
Sqrt[g])])/(4*(-f)^(5/2))
```

Rule 29

```
Int[(x_)^(-1), x_Symbol] :> Simp[Log[x], x]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 36

```
Int[1/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))), x_Symbol] :> Dist[b/(b*c
 - a*d), Int[1/(a + b*x), x], x] - Dist[d/(b*c - a*d), Int[1/(c + d*x), x],
 x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0]
```

Rule 211

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]/a)*ArcTan[x/R
t[a/b, 2]], x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 296

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(-(
c*x)^(m + 1))*((a + b*x^n)^(p + 1)/(a*c*n*(p + 1))), x] + Dist[(m + n*(p +
1) + 1)/(a*n*(p + 1)), Int[(c*x)^m*(a + b*x^n)^(p + 1), x], x] /; FreeQ[{a,
 b, c, m}, x] && IGtQ[n, 0] && LtQ[p, -1] && IntBinomialQ[a, b, c, n, m, p,
 x]
```

Rule 331

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(c*x
)^(m + 1)*((a + b*x^n)^(p + 1)/(a*c*(m + 1))), x] - Dist[b*((m + n*(p + 1)
+ 1)/(a*c^n*(m + 1))), Int[(c*x)^(m + n)*(a + b*x^n)^p, x], x] /; FreeQ[{a,
 b, c, p}, x] && IGtQ[n, 0] && LtQ[m, -1] && IntBinomialQ[a, b, c, n, m, p,
 x]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + c*e*(x/g)])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
```

```
(e*f - d*g), 0]
```

Rule 2441

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d + e*x
)^n])/g), x] - Dist[b*e*(n/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2442

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[(f + g*x)^(q + 1)*((a + b*Log[c*(d + e*x)^n])/(
g*(q + 1))), x] - Dist[b*e*(n/(g*(q + 1))), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 2456

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_)^(r_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a + b*Log[c*(d + e*x)
^n])^p, (f + g*x^r)^q, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, r}, x] && I
GtQ[p, 0] && IntegerQ[q] && (GtQ[q, 0] || (IntegerQ[r] && NeQ[r, 1]))
```

Rule 2463

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rubi steps

$$\int \frac{a+b\log\left(c(d+ex)^n\right)}{x^2\left(f+gx^2\right)^2}\,dx = \int \left(\frac{a+b\log\left(c(d+ex)^n\right)}{f^2x^2} - \frac{g(a+b\log\left(c(d+ex)^n\right))}{f\left(f+gx^2\right)^2} - \frac{g(a+b\log\left(c(d+ex\cdots\right.}{f^2\left(f+gx^2\right)\cdots}\right.$$

$$= \frac{\int \frac{a+b\log(c(d+ex)^n)}{x^2}\,dx}{f^2} - \frac{g\int \frac{a+b\log(c(d+ex)^n)}{f+gx^2}\,dx}{f^2} - \frac{g\int \frac{a+b\log(c(d+ex)^n)}{(f+gx^2)^2}\,dx}{f}$$

$$= -\frac{a+b\log\left(c(d+ex)^n\right)}{f^2x} - \frac{g\int\left(\frac{\sqrt{-f}\,(a+b\log(c(d+ex)^n))}{2f\left(\sqrt{-f}-\sqrt{g}\,x\right)} + \frac{\sqrt{-f}\,(a+b\log(c(d+ex)^n\cdots}{2f\left(\sqrt{-f}+\sqrt{g}\,x\right)}\cdots\right.}{f^2}$$

$$= -\frac{a+b\log\left(c(d+ex)^n\right)}{f^2x} + \frac{g\int \frac{a+b\log(c(d+ex)^n)}{\sqrt{-f}-\sqrt{g}\,x}\,dx}{2(-f)^{5/2}} + \frac{g\int \frac{a+b\log(c(d+ex)^n)}{\sqrt{-f}+\sqrt{g}\,x}\,dx}{2(-f)^{5/2}} + \frac{g^2\cdots}{\cdots}$$

$$= \frac{ben\log(x)}{df^2} - \frac{ben\log(d+ex)}{df^2} - \frac{a+b\log\left(c(d+ex)^n\right)}{f^2x} + \frac{\sqrt{g}\,(a+b\log\left(c(d+\cdots\right.}{4f^2\left(\sqrt{-f}-\sqrt{g}\cdots\right.}$$

$$= \frac{ben\log(x)}{df^2} - \frac{ben\log(d+ex)}{df^2} - \frac{a+b\log\left(c(d+ex)^n\right)}{f^2x} + \frac{\sqrt{g}\,(a+b\log\left(c(d+\cdots\right.}{4f^2\left(\sqrt{-f}-\sqrt{g}\cdots\right.}$$

$$= \frac{ben\log(x)}{df^2} - \frac{ben\log(d+ex)}{df^2} + \frac{be\sqrt{g}\,n\log(d+ex)}{4f^2\left(e\sqrt{-f}-d\sqrt{g}\right)} - \frac{be\sqrt{g}\,n\log(d+e\cdots}{4f^2\left(e\sqrt{-f}+d\sqrt{\cdots}\right.}$$

$$= \frac{ben\log(x)}{df^2} - \frac{ben\log(d+ex)}{df^2} + \frac{be\sqrt{g}\,n\log(d+ex)}{4f^2\left(e\sqrt{-f}-d\sqrt{g}\right)} - \frac{be\sqrt{g}\,n\log(d+e\cdots}{4f^2\left(e\sqrt{-f}+d\sqrt{\cdots}\right.}$$

$$= \frac{ben\log(x)}{df^2} - \frac{ben\log(d+ex)}{df^2} + \frac{be\sqrt{g}\,n\log(d+ex)}{4f^2\left(e\sqrt{-f}-d\sqrt{g}\right)} - \frac{be\sqrt{g}\,n\log(d+e\cdots}{4f^2\left(e\sqrt{-f}+d\sqrt{\cdots}\right.}$$

Mathematica [A]

time = 0.53, size = 476, normalized size = 0.85

$$\frac{1}{4}\left(\frac{4ben(\log(x)-\log(d+ex))}{df^2}-\frac{4(a+b\log(c(d+ex)^n))}{f^2x}+\frac{\sqrt{g}\,(a+b\log(c(d+ex)^n))}{f^2\left(\sqrt{-f}-\sqrt{g}\,x\right)}-\frac{\sqrt{g}\,(a+b\log(c(d+ex)^n))}{f^2\left(\sqrt{-f}+\sqrt{g}\,x\right)}-\frac{be\sqrt{g}\,n\left(\log(d+ex)-\log\left(\sqrt{-f}-\sqrt{g}\,x\right)\right)}{f^2\left(e\sqrt{-f}+d\sqrt{g}\right)}-\frac{3\sqrt{g}\,(a+b\log(c(d+ex)^n))\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}\,x\right)}{e\sqrt{-f}+d\sqrt{g}}\right)}{(-f)^{5/2}}+\frac{be\sqrt{g}\,n\left(\log(d+ex)-\log\left(\sqrt{-f}+\sqrt{g}\,x\right)\right)}{f^2\left(e\sqrt{-f}-d\sqrt{g}\right)}+\frac{3\sqrt{g}\,(a+b\log(c(d+ex)^n))\log\left(\frac{e\left(\sqrt{-f}+\sqrt{g}\,x\right)}{e\sqrt{-f}-d\sqrt{g}}\right)}{(-f)^{5/2}}+\frac{3b\sqrt{g}\,n\mathrm{Li}_2\left(-\frac{\sqrt{g}\,(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)}{(-f)^{5/2}}-\frac{3b\sqrt{g}\,n\mathrm{Li}_2\left(\frac{\sqrt{g}\,(d+ex)}{e\sqrt{-f}+d\sqrt{g}}\right)}{(-f)^{5/2}}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])/(x^2*(f + g*x^2)^2),x]
```

```
[Out] ((4*b*e*n*(Log[x] - Log[d + e*x]))/(d*f^2) - (4*(a + b*Log[c*(d + e*x)^n]))
/(f^2*x) + (Sqrt[g]*(a + b*Log[c*(d + e*x)^n]))/(f^2*(Sqrt[-f] - Sqrt[g]*x)
) - (Sqrt[g]*(a + b*Log[c*(d + e*x)^n]))/(f^2*(Sqrt[-f] + Sqrt[g]*x)) - (b*
e*Sqrt[g]*n*(Log[d + e*x] - Log[Sqrt[-f] - Sqrt[g]*x]))/(f^2*(e*Sqrt[-f] +
d*Sqrt[g])) - (3*Sqrt[g]*(a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] - Sqrt
[g]*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(-f)^(5/2) + (b*e*Sqrt[g]*n*(Log[d + e*x
] - Log[Sqrt[-f] + Sqrt[g]*x]))/(f^2*(e*Sqrt[-f] - d*Sqrt[g])) + (3*Sqrt[g]
*(a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d*
Sqrt[g])])/(-f)^(5/2) + (3*b*Sqrt[g]*n*PolyLog[2, -((Sqrt[g]*(d + e*x))/(e*
Sqrt[-f] - d*Sqrt[g]))])/(-f)^(5/2) - (3*b*Sqrt[g]*n*PolyLog[2, (Sqrt[g]*(d
 + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(-f)^(5/2))/4
```

Maple [C] Result contains higher order function than in optimal. Order 9 vs. order 4.
time = 0.63, size = 2032, normalized size = 3.63

method	result	size
risch	Expression too large to display	2032

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))/x^2/(g*x^2+f)^2,x,method=_RETURNVERBOSE)
```

```
[Out] 1/4*b*e^4*n*g*ln(e*x+d)/(d^2*g+e^2*f)/(e^2*g*x^2+e^2*f)/(-f*g)^(1/2)*ln((e*
(-f*g)^(1/2)+g*(e*x+d)-d*g)/(e*(-f*g)^(1/2)-d*g))-1/2*b*e^4*n/f*g*ln(e*x+d)
/(d^2*g+e^2*f)/(e^2*g*x^2+e^2*f)*x-1/2*b*e^3*n/f*g*ln(e*x+d)/(d^2*g+e^2*f)/
(e^2*g*x^2+e^2*f)*d-b*ln((e*x+d)^n)/f^2/x-3/4*b*n/f^2*g/(-f*g)^(1/2)*dilog(
(e*(-f*g)^(1/2)-g*(e*x+d)+d*g)/(e*(-f*g)^(1/2)+d*g))-1/2*b*ln(c)/f^2*g*x/(g
*x^2+f)-3/2*b*ln(c)/f^2*g/(f*g)^(1/2)*arctan(x*g/(f*g)^(1/2))-b*ln(c)/f^2/x
-a/f^2/x+1/4*b*e*n/f^2*g/(d^2*g+e^2*f)*d*ln(g*(e*x+d)^2-2*d*g*(e*x+d)+d^2*g
+f*e^2)+1/2*b/f^2*g/(e^2*g*x^2+e^2*f)*x*e^2*n*ln(e*x+d)+1/2*b*n/f^2*g*ln(e*
x+d)/(-f*g)^(1/2)*ln((e*(-f*g)^(1/2)+g*(e*x+d)-d*g)/(e*(-f*g)^(1/2)-d*g))-1
/2*b*n/f^2*g*ln(e*x+d)/(-f*g)^(1/2)*ln((e*(-f*g)^(1/2)-g*(e*x+d)+d*g)/(e*(-
f*g)^(1/2)+d*g))+3/2*b/f^2*g/(f*g)^(1/2)*arctan(1/2*(2*g*(e*x+d)-2*d*g)/e/(
f*g)^(1/2))*n*ln(e*x+d)-1/2*a/f^2*g*x/(g*x^2+f)-3/2*a/f^2*g/(f*g)^(1/2)*arc
tan(x*g/(f*g)^(1/2))+1/4*I*b*Pi*csgn(I*c*(e*x+d)^n)^3/f^2*g*x/(g*x^2+f)+1/2
*b*e^2*n/f*g/(d^2*g+e^2*f)/(f*g)^(1/2)*arctan(1/2*(2*g*(e*x+d)-2*d*g)/e/(f*
g)^(1/2))+1/2*I*b*Pi*csgn(I*c*(e*x+d)^n)^3/f^2/x-1/2*I*b*Pi*csgn(I*(e*x+d)^
n)*csgn(I*c*(e*x+d)^n)^2/f^2/x-1/2*b*n/f^2*g^2*ln(e*x+d)/(d^2*g+e^2*f)/(e^2
```

```
*g*x^2+e^2*f)*d*x^2*e^3-1/2*b*n/f^2*g^2*ln(e*x+d)/(d^2*g+e^2*f)/(e^2*g*x^2+
e^2*f)*d^2*x*e^2+3/4*b*n/f^2*g/(-f*g)^(1/2)*dilog((e*(-f*g)^(1/2)+g*(e*x+d)
-d*g)/(e*(-f*g)^(1/2)-d*g))+b*e*n/f^2/d*ln(e*x)-3/2*b/f^2*g/(f*g)^(1/2)*arc
tan(1/2*(2*g*(e*x+d)-2*d*g)/e/(f*g)^(1/2))*ln((e*x+d)^n)-1/2*b/f^2*g/(e^2*g
*x^2+e^2*f)*x*e^2*ln((e*x+d)^n)-1/2*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/
f^2/x-1/4*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/f^2*g*x/(g*x^2+f)-
1/4*b*e^4*n*g*ln(e*x+d)/(d^2*g+e^2*f)/(e^2*g*x^2+e^2*f)/(-f*g)^(1/2)*ln((e*
(-f*g)^(1/2)-g*(e*x+d)+d*g)/(e*(-f*g)^(1/2)+d*g))+1/2*I*b*Pi*csgn(I*c)*csgn
(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/f^2/x+3/4*I*b*Pi*csgn(I*c*(e*x+d)^n)^3/f^
2*g/(f*g)^(1/2)*arctan(x*g/(f*g)^(1/2))-3/4*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I
*c*(e*x+d)^n)^2/f^2*g/(f*g)^(1/2)*arctan(x*g/(f*g)^(1/2))-3/4*I*b*Pi*csgn(I
*c)*csgn(I*c*(e*x+d)^n)^2/f^2*g/(f*g)^(1/2)*arctan(x*g/(f*g)^(1/2))+1/4*b*e
^2*n/f^2*g^3*ln(e*x+d)/(d^2*g+e^2*f)/(e^2*g*x^2+e^2*f)/(-f*g)^(1/2)*ln((e*(
-f*g)^(1/2)+g*(e*x+d)-d*g)/(e*(-f*g)^(1/2)-d*g))*d^2*x^2-1/4*b*e^2*n/f^2*g^
3*ln(e*x+d)/(d^2*g+e^2*f)/(e^2*g*x^2+e^2*f)/(-f*g)^(1/2)*ln((e*(-f*g)^(1/2)
-g*(e*x+d)+d*g)/(e*(-f*g)^(1/2)+d*g))*d^2*x^2-b*e*n*ln(e*x+d)/d/f^2+3/4*I*b
*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/f^2*g/(f*g)^(1/2)*arcta
n(x*g/(f*g)^(1/2))+1/4*b*e^4*n/f*g^2*ln(e*x+d)/(d^2*g+e^2*f)/(e^2*g*x^2+e^2
*f)/(-f*g)^(1/2)*ln((e*(-f*g)^(1/2)+g*(e*x+d)-d*g)/(e*(-f*g)^(1/2)-d*g))*x^
2+1/4*b*e^2*n/f*g^2*ln(e*x+d)/(d^2*g+e^2*f)/(e^2*g*x^2+e^2*f)/(-f*g)^(1/2)*
ln((e*(-f*g)^(1/2)+g*(e*x+d)-d*g)/(e*(-f*g)^(1/2)-d*g))*d^2-1/4*b*e^4*n/f*g
^2*ln(e*x+d)/(d^2*g+e^2*f)/(e^2*g*x^2+e^2*f)/(-f*g)^(1/2)*ln((e*(-f*g)^(1/2
)-g*(e*x+d)+d*g)/(e*(-f*g)^(1/2)+d*g))*x^2-1/4*b*e^2*n/f*g^2*ln(e*x+d)/(d^2
*g+e^2*f)/(e^2*g*x^2+e^2*f)/(-f*g)^(1/2)*ln((e*(-f*g)^(1/2)-g*(e*x+d)+d*g)/
(e*(-f*g)^(1/2)+d*g))*d^2-1/4*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/f^2*g*
x/(g*x^2+f)+1/4*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/f^2*
g*x/(g*x^2+f)
```

Maxima [**F**]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/x^2/(g*x^2+f)^2,x, algorithm="maxima")
```

```
[Out] -1/2*a*((3*g*x^2 + 2*f)/(f^2*g*x^3 + f^3*x) + 3*g*arctan(g*x/sqrt(f*g))/(sq
rt(f*g)*f^2)) + b*integrate((log((x*e + d)^n) + log(c))/(g^2*x^6 + 2*f*g*x^
4 + f^2*x^2), x)
```

Fricas [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/x^2/(g*x^2+f)^2,x, algorithm="fricas")
```

```
[Out] integral((b*log((x*e + d)^n*c) + a)/(g^2*x^6 + 2*f*g*x^4 + f^2*x^2), x)
```

Sympy [**F(-1)**] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))/x**2/(g*x**2+f)**2,x)
```

```
[Out] Timed out
```

Giac [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/x^2/(g*x^2+f)^2,x, algorithm="giac")
```

```
[Out] integrate((b*log((x*e + d)^n*c) + a)/((g*x^2 + f)^2*x^2), x)
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)}{x^2\,{\left(g\,x^2+f\right)}^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))/(x^2*(f + g*x^2)^2),x)
```

```
[Out] int((a + b*log(c*(d + e*x)^n))/(x^2*(f + g*x^2)^2), x)
```

3.275 $\int \frac{a+b\log(c(d+ex)^n)}{\sqrt{2+gx^2}}\,dx$

Optimal. Leaf size=326

$$\frac{bn\sinh^{-1}\left(\frac{\sqrt{g}\,x}{\sqrt{2}}\right)^2}{2\sqrt{g}}-\frac{bn\sinh^{-1}\left(\frac{\sqrt{g}\,x}{\sqrt{2}}\right)\log\left(1+\frac{\sqrt{2}\,ee^{\sinh^{-1}\left(\frac{\sqrt{g}\,x}{\sqrt{2}}\right)}}{d\sqrt{g}-\sqrt{2e^2+d^2g}}\right)}{\sqrt{g}}-\frac{bn\sinh^{-1}\left(\frac{\sqrt{g}\,x}{\sqrt{2}}\right)\log\left(1+\frac{\sqrt{2}}{d\sqrt{g}}\right.}{\sqrt{g}}$$

```
[Out] 1/2*b*n*arcsinh(1/2*x*g^(1/2)*2^(1/2))^2/g^(1/2)+arcsinh(1/2*x*g^(1/2)*2^(1
/2))*(a+b*ln(c*(e*x+d)^n))/g^(1/2)-b*n*arcsinh(1/2*x*g^(1/2)*2^(1/2))*ln(1+
e*(1/2*x*g^(1/2)*2^(1/2)+1/2*(2*g*x^2+4)^(1/2))*2^(1/2)/(d*g^(1/2)-(d^2*g+2
*e^2)^(1/2)))/g^(1/2)-b*n*arcsinh(1/2*x*g^(1/2)*2^(1/2))*ln(1+e*(1/2*x*g^(1
/2)*2^(1/2)+1/2*(2*g*x^2+4)^(1/2))*2^(1/2)/(d*g^(1/2)+(d^2*g+2*e^2)^(1/2)))
/g^(1/2)-b*n*polylog(2,-e*(1/2*x*g^(1/2)*2^(1/2)+1/2*(2*g*x^2+4)^(1/2))*2^(
1/2)/(d*g^(1/2)-(d^2*g+2*e^2)^(1/2)))/g^(1/2)-b*n*polylog(2,-e*(1/2*x*g^(1/
2)*2^(1/2)+1/2*(2*g*x^2+4)^(1/2))*2^(1/2)/(d*g^(1/2)+(d^2*g+2*e^2)^(1/2)))/
g^(1/2)
```

Rubi [A]
time = 0.29, antiderivative size = 326, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 8, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.308$, Rules used = {221, 2451, 12, 5827, 5680, 2221, 2317, 2438}

$$-\frac{bn\text{PolyLog}\left(2,-\frac{\sqrt{2}\,ee^{\sinh^{-1}\left(\frac{\sqrt{g}\,x}{\sqrt{2}}\right)}}{d\sqrt{g}-\sqrt{d^2g+2e^2}}\right)}{\sqrt{g}}-\frac{bn\text{PolyLog}\left(2,-\frac{\sqrt{2}\,ee^{\sinh^{-1}\left(\frac{\sqrt{g}\,x}{\sqrt{2}}\right)}}{\sqrt{d^2g+2e^2}+d\sqrt{g}}\right)}{\sqrt{g}}+\frac{\sinh^{-1}\left(\frac{\sqrt{g}\,x}{\sqrt{2}}\right)(a+b\log(c(d+ex)^n))}{\sqrt{g}}-\frac{bn\sinh^{-1}\left(\frac{\sqrt{g}\,x}{\sqrt{2}}\right)\log\left(\frac{\sqrt{2}\,ee^{\sinh^{-1}\left(\frac{\sqrt{g}\,x}{\sqrt{2}}\right)}}{d\sqrt{g}-\sqrt{d^2g+2e^2}}+1\right)}{\sqrt{g}}-\frac{bn\sinh^{-1}\left(\frac{\sqrt{g}\,x}{\sqrt{2}}\right)\log\left(\frac{\sqrt{2}\,ee^{\sinh^{-1}\left(\frac{\sqrt{g}\,x}{\sqrt{2}}\right)}}{\sqrt{d^2g+2e^2}+d\sqrt{g}}+1\right)}{\sqrt{g}}+\frac{bn\sinh^{-1}\left(\frac{\sqrt{g}\,x}{\sqrt{2}}\right)^2}{2\sqrt{g}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])/Sqrt[2 + g*x^2],x]
```

```
[Out] (b*n*ArcSinh[(Sqrt[g]*x)/Sqrt[2]]^2)/(2*Sqrt[g]) - (b*n*ArcSinh[(Sqrt[g]*x)
/Sqrt[2]]*Log[1 + (Sqrt[2]*e*E^ArcSinh[(Sqrt[g]*x)/Sqrt[2]])/(d*Sqrt[g] - S
qrt[2*e^2 + d^2*g])])/Sqrt[g] - (b*n*ArcSinh[(Sqrt[g]*x)/Sqrt[2]]*Log[1 + (
Sqrt[2]*e*E^ArcSinh[(Sqrt[g]*x)/Sqrt[2]])/(d*Sqrt[g] + Sqrt[2*e^2 + d^2*g])
])/Sqrt[g] + (ArcSinh[(Sqrt[g]*x)/Sqrt[2]]*(a + b*Log[c*(d + e*x)^n]))/Sqrt
[g] - (b*n*PolyLog[2, -((Sqrt[2]*e*E^ArcSinh[(Sqrt[g]*x)/Sqrt[2]])/(d*Sqrt[
g] - Sqrt[2*e^2 + d^2*g]))])/Sqrt[g] - (b*n*PolyLog[2, -((Sqrt[2]*e*E^ArcSi
nh[(Sqrt[g]*x)/Sqrt[2]])/(d*Sqrt[g] + Sqrt[2*e^2 + d^2*g]))])/Sqrt[g]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] && !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 221

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSinh[Rt[b, 2]*(x/Sqrt
[a])]/Rt[b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && PosQ[b]
```

Rule 2221

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m/(b*f*g*n*Log[F]))*Log[1 + b*((F^(g*(e + f*x)))^n/a)], x] - Di
st[d*(m/(b*f*g*n*Log[F])), Int[(c + d*x)^(m - 1)*Log[1 + b*((F^(g*(e + f*x)
))^n/a)], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2317

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2451

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/Sqrt[(f_) + (g_.)*
(x_)^2], x_Symbol] :> With[{u = IntHide[1/Sqrt[f + g*x^2], x]}, Simp[u*(a +
 b*Log[c*(d + e*x)^n]), x] - Dist[b*e*n, Int[SimplifyIntegrand[u/(d + e*x),
 x], x], x]] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && GtQ[f, 0]
```

Rule 5680

```
Int[(Cosh[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin
h[(c_.) + (d_.)*(x_)]), x_Symbol] :> Simp[-(e + f*x)^(m + 1)/(b*f*(m + 1)),
 x] + (Int[(e + f*x)^m*(E^(c + d*x)/(a - Rt[a^2 + b^2, 2] + b*E^(c + d*x)))
, x] + Int[(e + f*x)^m*(E^(c + d*x)/(a + Rt[a^2 + b^2, 2] + b*E^(c + d*x)))
, x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0]
```

Rule 5827

```
Int[((a_.) + ArcSinh[(c_.)*(x_)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_Symbo
l] :> Subst[Int[(a + b*x)^n*(Cosh[x]/(c*d + e*Sinh[x])), x], x, ArcSinh[c*x
]] /; FreeQ[{a, b, c, d, e}, x] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{a+b\log\left(c(d+ex)^n\right)}{\sqrt{2+gx^2}}\,dx = \frac{\sinh^{-1}\left(\frac{\sqrt{g}\,x}{\sqrt{2}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{\sqrt{g}} - (ben)\int \frac{\sinh^{-1}\left(\frac{\sqrt{g}\,x}{\sqrt{2}}\right)}{\sqrt{g}\,(d+ex)}\,dx$$

$$= \frac{\sinh^{-1}\left(\frac{\sqrt{g}\,x}{\sqrt{2}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{\sqrt{g}} - \frac{(ben)\int \frac{\sinh^{-1}\left(\frac{\sqrt{g}\,x}{\sqrt{2}}\right)}{d+ex}\,dx}{\sqrt{g}}$$

$$= \frac{\sinh^{-1}\left(\frac{\sqrt{g}\,x}{\sqrt{2}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{\sqrt{g}} - \frac{(ben)\text{Subst}\left(\int \frac{x\cosh(x)}{\frac{d\sqrt{g}}{\sqrt{2}}+e\sinh(x)}\,dx, x, \right.}{\sqrt{g}}$$

$$= \frac{bn\sinh^{-1}\left(\frac{\sqrt{g}\,x}{\sqrt{2}}\right)^2}{2\sqrt{g}} + \frac{\sinh^{-1}\left(\frac{\sqrt{g}\,x}{\sqrt{2}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{\sqrt{g}} - \frac{(ben)\text{Subst}}{}$$

$$= \frac{bn\sinh^{-1}\left(\frac{\sqrt{g}\,x}{\sqrt{2}}\right)^2}{2\sqrt{g}} - \frac{bn\sinh^{-1}\left(\frac{\sqrt{g}\,x}{\sqrt{2}}\right)\log\left(1+\frac{\sqrt{2}\,ee^{\sinh^{-1}\left(\frac{\sqrt{g}\,x}{\sqrt{2}}\right)}}{d\sqrt{g}-\sqrt{2e^2+d^2g}}\right)}{\sqrt{g}} - $$

$$= \frac{bn\sinh^{-1}\left(\frac{\sqrt{g}\,x}{\sqrt{2}}\right)^2}{2\sqrt{g}} - \frac{bn\sinh^{-1}\left(\frac{\sqrt{g}\,x}{\sqrt{2}}\right)\log\left(1+\frac{\sqrt{2}\,ee^{\sinh^{-1}\left(\frac{\sqrt{g}\,x}{\sqrt{2}}\right)}}{d\sqrt{g}-\sqrt{2e^2+d^2g}}\right)}{\sqrt{g}} - $$

$$= \frac{bn\sinh^{-1}\left(\frac{\sqrt{g}\,x}{\sqrt{2}}\right)^2}{2\sqrt{g}} - \frac{bn\sinh^{-1}\left(\frac{\sqrt{g}\,x}{\sqrt{2}}\right)\log\left(1+\frac{\sqrt{2}\,ee^{\sinh^{-1}\left(\frac{\sqrt{g}\,x}{\sqrt{2}}\right)}}{d\sqrt{g}-\sqrt{2e^2+d^2g}}\right)}{\sqrt{g}} - $$

Mathematica [A]
time = 0.16, size = 275, normalized size = 0.84

$$\frac{\sinh^{-1}\left(\frac{\sqrt{g}\,x}{\sqrt{2}}\right)\left(2a+bn\sinh^{-1}\left(\frac{\sqrt{g}\,x}{\sqrt{2}}\right)-2bn\log\left(1+\frac{\sqrt{2}\,ee^{\sinh^{-1}\left(\frac{\sqrt{g}\,x}{\sqrt{2}}\right)}}{d\sqrt{g}-\sqrt{2e^2+d^2g}}\right)-2bn\log\left(1+\frac{\sqrt{2}\,ee^{\sinh^{-1}\left(\frac{\sqrt{g}\,x}{\sqrt{2}}\right)}}{d\sqrt{g}+\sqrt{2e^2+d^2g}}\right)+2b\log\left(c(d+ex)^n\right)\right)-2bn\text{Li}_2\left(\frac{\sqrt{2}\,ee^{\sinh^{-1}\left(\frac{\sqrt{g}\,x}{\sqrt{2}}\right)}}{-d\sqrt{g}+\sqrt{2e^2+d^2g}}\right)-2bn\text{Li}_2\left(-\frac{\sqrt{2}\,ee^{\sinh^{-1}\left(\frac{\sqrt{g}\,x}{\sqrt{2}}\right)}}{d\sqrt{g}+\sqrt{2e^2+d^2g}}\right)}{2\sqrt{g}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])/Sqrt[2 + g*x^2],x]
```

```
[Out] (ArcSinh[(Sqrt[g]*x)/Sqrt[2]]*(2*a + b*n*ArcSinh[(Sqrt[g]*x)/Sqrt[2]] - 2*b
*n*Log[1 + (Sqrt[2]*e*E^ArcSinh[(Sqrt[g]*x)/Sqrt[2]])/(d*Sqrt[g] - Sqrt[2*e
^2 + d^2*g])] - 2*b*n*Log[1 + (Sqrt[2]*e*E^ArcSinh[(Sqrt[g]*x)/Sqrt[2]])/(d
*Sqrt[g] + Sqrt[2*e^2 + d^2*g])] + 2*b*Log[c*(d + e*x)^n]) - 2*b*n*PolyLog[
2, (Sqrt[2]*e*E^ArcSinh[(Sqrt[g]*x)/Sqrt[2]])/(-(d*Sqrt[g]) + Sqrt[2*e^2 +
d^2*g])] - 2*b*n*PolyLog[2, -((Sqrt[2]*e*E^ArcSinh[(Sqrt[g]*x)/Sqrt[2]])/(d
*Sqrt[g] + Sqrt[2*e^2 + d^2*g]))])/(2*Sqrt[g])
```

Maple [F]
time = 0.16, size = 0, normalized size = 0.00

$$\int \frac{a + b\ln\left(c(ex+d)^{n}\right)}{\sqrt{g\,x^{2}+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))/(g*x^2+2)^(1/2),x)
```

```
[Out] int((a+b*ln(c*(e*x+d)^n))/(g*x^2+2)^(1/2),x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x^2+2)^(1/2),x, algorithm="maxima")
```

```
[Out] b*integrate((log((x*e + d)^n) + log(c))/sqrt(g*x^2 + 2), x) + a*arcsinh(1/2
*sqrt(2)*sqrt(g)*x)/sqrt(g)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x^2+2)^(1/2),x, algorithm="fricas")
```

```
[Out] integral((sqrt(g*x^2 + 2)*b*log((x*e + d)^n*c) + sqrt(g*x^2 + 2)*a)/(g*x^2
+ 2), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{a + b\log\left(c(d+ex)^{n}\right)}{\sqrt{gx^{2}+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))/(g*x**2+2)**(1/2),x)
```

```
[Out] Integral((a + b*log(c*(d + e*x)**n))/sqrt(g*x**2 + 2), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x^2+2)^(1/2),x, algorithm="giac")
```

```
[Out] integrate((b*log((x*e + d)^n*c) + a)/sqrt(g*x^2 + 2), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)}{\sqrt{g\,x^2+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))/(g*x^2 + 2)^(1/2),x)
```

```
[Out] int((a + b*log(c*(d + e*x)^n))/(g*x^2 + 2)^(1/2), x)
```

3.276 $\int \frac{a+b\log(c(d+ex)^n)}{\sqrt{f+gx^2}}\,dx$

Optimal. Leaf size=506

$$\frac{b\sqrt{f}\,n\sqrt{1+\frac{gx^2}{f}}\,\sinh^{-1}\left(\frac{\sqrt{g}\,x}{\sqrt{f}}\right)^2}{2\sqrt{g}\,\sqrt{f+gx^2}}-\frac{b\sqrt{f}\,n\sqrt{1+\frac{gx^2}{f}}\,\sinh^{-1}\left(\frac{\sqrt{g}\,x}{\sqrt{f}}\right)\log\left(1+\frac{e e^{\sinh^{-1}\left(\frac{\sqrt{g}\,x}{\sqrt{f}}\right)}\sqrt{f}}{d\sqrt{g}-\sqrt{e^2f+d^2g}}\right)}{\sqrt{g}\,\sqrt{f+gx^2}}-$$

```
[Out] 1/2*b*n*arcsinh(x*g^(1/2)/f^(1/2))^2*f^(1/2)*(1+g*x^2/f)^(1/2)/g^(1/2)/(g*x
^2+f)^(1/2)+arcsinh(x*g^(1/2)/f^(1/2))*(a+b*ln(c*(e*x+d)^n))*f^(1/2)*(1+g*x
^2/f)^(1/2)/g^(1/2)/(g*x^2+f)^(1/2)-b*n*arcsinh(x*g^(1/2)/f^(1/2))*ln(1+e*(
x*g^(1/2)/f^(1/2)+(1+g*x^2/f)^(1/2))*f^(1/2)/(d*g^(1/2)-(d^2*g+e^2*f)^(1/2)
))*f^(1/2)*(1+g*x^2/f)^(1/2)/g^(1/2)/(g*x^2+f)^(1/2)-b*n*arcsinh(x*g^(1/2)/
f^(1/2))*ln(1+e*(x*g^(1/2)/f^(1/2)+(1+g*x^2/f)^(1/2))*f^(1/2)/(d*g^(1/2)+(d
^2*g+e^2*f)^(1/2)))*f^(1/2)*(1+g*x^2/f)^(1/2)/g^(1/2)/(g*x^2+f)^(1/2)-b*n*p
olylog(2,-e*(x*g^(1/2)/f^(1/2)+(1+g*x^2/f)^(1/2))*f^(1/2)/(d*g^(1/2)-(d^2*g
+e^2*f)^(1/2)))*f^(1/2)*(1+g*x^2/f)^(1/2)/g^(1/2)/(g*x^2+f)^(1/2)-b*n*polyl
og(2,-e*(x*g^(1/2)/f^(1/2)+(1+g*x^2/f)^(1/2))*f^(1/2)/(d*g^(1/2)+(d^2*g+e^2
*f)^(1/2)))*f^(1/2)*(1+g*x^2/f)^(1/2)/g^(1/2)/(g*x^2+f)^(1/2)
```

Rubi [A]
time = 0.39, antiderivative size = 506, normalized size of antiderivative = 1.00, number of steps used = 11, number of rules used = 9, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.346$, Rules used = {2453, 221, 2451, 12, 5827, 5680, 2221, 2317, 2438}

$$-\frac{b\sqrt{f}\,n\sqrt{\frac{gx^2}{f}+1}\,\text{PolyLog}\left(2,-\frac{e\sqrt{f}\,e^{\sinh^{-1}\left(\frac{\sqrt{g}\,x}{\sqrt{f}}\right)}}{d\sqrt{g}-\sqrt{d^2g+e^2f}}\right)}{\sqrt{g}\,\sqrt{f+gx^2}}-\frac{b\sqrt{f}\,n\sqrt{\frac{gx^2}{f}+1}\,\text{PolyLog}\left(2,-\frac{e\sqrt{f}\,e^{\sinh^{-1}\left(\frac{\sqrt{g}\,x}{\sqrt{f}}\right)}}{\sqrt{d^2g+e^2f}+d\sqrt{g}}\right)}{\sqrt{g}\,\sqrt{f+gx^2}}+\frac{\sqrt{f}\,\sqrt{\frac{gx^2}{f}+1}\,\sinh^{-1}\left(\frac{\sqrt{g}\,x}{\sqrt{f}}\right)(a+b\log(c(d+ex)^n))}{\sqrt{g}\,\sqrt{f+gx^2}}-\frac{b\sqrt{f}\,n\sqrt{\frac{gx^2}{f}+1}\,\sinh^{-1}\left(\frac{\sqrt{g}\,x}{\sqrt{f}}\right)\log\left(\frac{e\sqrt{f}\,e^{\sinh^{-1}\left(\frac{\sqrt{g}\,x}{\sqrt{f}}\right)}}{d\sqrt{g}-\sqrt{d^2g+e^2f}}+1\right)}{\sqrt{g}\,\sqrt{f+gx^2}}-\frac{b\sqrt{f}\,n\sqrt{\frac{gx^2}{f}+1}\,\sinh^{-1}\left(\frac{\sqrt{g}\,x}{\sqrt{f}}\right)\log\left(\frac{e\sqrt{f}\,e^{\sinh^{-1}\left(\frac{\sqrt{g}\,x}{\sqrt{f}}\right)}}{\sqrt{d^2g+e^2f}+d\sqrt{g}}+1\right)}{\sqrt{g}\,\sqrt{f+gx^2}}+\frac{b\sqrt{f}\,n\sqrt{\frac{gx^2}{f}+1}\,\sinh^{-1}\left(\frac{\sqrt{g}\,x}{\sqrt{f}}\right)^2}{2\sqrt{g}\,\sqrt{f+gx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])/Sqrt[f + g*x^2],x]
```

```
[Out] (b*Sqrt[f]*n*Sqrt[1 + (g*x^2)/f]*ArcSinh[(Sqrt[g]*x)/Sqrt[f]]^2)/(2*Sqrt[g]
*Sqrt[f + g*x^2]) - (b*Sqrt[f]*n*Sqrt[1 + (g*x^2)/f]*ArcSinh[(Sqrt[g]*x)/Sq
rt[f]]*Log[1 + (e*E^ArcSinh[(Sqrt[g]*x)/Sqrt[f]]*Sqrt[f])/(d*Sqrt[g] - Sqrt
[e^2*f + d^2*g])])/(Sqrt[g]*Sqrt[f + g*x^2]) - (b*Sqrt[f]*n*Sqrt[1 + (g*x^2
)/f]*ArcSinh[(Sqrt[g]*x)/Sqrt[f]]*Log[1 + (e*E^ArcSinh[(Sqrt[g]*x)/Sqrt[f]]
*Sqrt[f])/(d*Sqrt[g] + Sqrt[e^2*f + d^2*g])])/(Sqrt[g]*Sqrt[f + g*x^2]) + (
Sqrt[f]*Sqrt[1 + (g*x^2)/f]*ArcSinh[(Sqrt[g]*x)/Sqrt[f]]*(a + b*Log[c*(d +
e*x)^n]))/(Sqrt[g]*Sqrt[f + g*x^2]) - (b*Sqrt[f]*n*Sqrt[1 + (g*x^2)/f]*Poly
Log[2, -((e*E^ArcSinh[(Sqrt[g]*x)/Sqrt[f]]*Sqrt[f])/(d*Sqrt[g] - Sqrt[e^2*f
 + d^2*g]))])/(Sqrt[g]*Sqrt[f + g*x^2]) - (b*Sqrt[f]*n*Sqrt[1 + (g*x^2)/f]*
PolyLog[2, -((e*E^ArcSinh[(Sqrt[g]*x)/Sqrt[f]]*Sqrt[f])/(d*Sqrt[g] + Sqrt[e
^2*f + d^2*g]))])/(Sqrt[g]*Sqrt[f + g*x^2])
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 221

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSinh[Rt[b, 2]*(x/Sqrt
[a])]/Rt[b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && PosQ[b]
```

Rule 2221

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m/(b*f*g*n*Log[F]))*Log[1 + b*((F^(g*(e + f*x)))^n/a)], x] - Di
st[d*(m/(b*f*g*n*Log[F])), Int[(c + d*x)^(m - 1)*Log[1 + b*((F^(g*(e + f*x)
))^n/a)], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2317

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2451

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/Sqrt[(f_) + (g_.)*
(x_)^2], x_Symbol] :> With[{u = IntHide[1/Sqrt[f + g*x^2], x]}, Simp[u*(a +
 b*Log[c*(d + e*x)^n]), x] - Dist[b*e*n, Int[SimplifyIntegrand[u/(d + e*x),
 x], x], x]] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && GtQ[f, 0]
```

Rule 2453

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/Sqrt[(f_) + (g_.)*
(x_)^2], x_Symbol] :> Dist[Sqrt[1 + (g/f)*x^2]/Sqrt[f + g*x^2], Int[(a + b*
Log[c*(d + e*x)^n])/Sqrt[1 + (g/f)*x^2], x], x] /; FreeQ[{a, b, c, d, e, f,
 g, n}, x] &&  !GtQ[f, 0]
```

Rule 5680

```
Int[(Cosh[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin
h[(c_.) + (d_.)*(x_)]), x_Symbol] :> Simp[-(e + f*x)^(m + 1)/(b*f*(m + 1)),
```

```
 x] + (Int[(e + f*x)^m*(E^(c + d*x)/(a - Rt[a^2 + b^2, 2] + b*E^(c + d*x)))
, x] + Int[(e + f*x)^m*(E^(c + d*x)/(a + Rt[a^2 + b^2, 2] + b*E^(c + d*x)))
, x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0]
```

Rule 5827

```
Int[((a_.) + ArcSinh[(c_.)*(x_)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_Symbo
l] :> Subst[Int[(a + b*x)^n*(Cosh[x]/(c*d + e*Sinh[x])), x], x, ArcSinh[c*x
]] /; FreeQ[{a, b, c, d, e}, x] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{a+b\log\left(c(d+ex)^n\right)}{\sqrt{f+gx^2}}\,dx = \frac{\sqrt{1+\frac{gx^2}{f}}\int \frac{a+b\log(c(d+ex)^n)}{\sqrt{1+\frac{gx^2}{f}}}\,dx}{\sqrt{f+gx^2}}$$

$$= \frac{\sqrt{f}\sqrt{1+\frac{gx^2}{f}}\sinh^{-1}\left(\frac{\sqrt{g}\,x}{\sqrt{f}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{\sqrt{g}\sqrt{f+gx^2}} - \frac{\left(ben\sqrt{1+\frac{gx^2}{f}}\right)}{\sqrt{}}$$

$$= \frac{\sqrt{f}\sqrt{1+\frac{gx^2}{f}}\sinh^{-1}\left(\frac{\sqrt{g}\,x}{\sqrt{f}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{\sqrt{g}\sqrt{f+gx^2}} - \frac{\left(be\sqrt{f}\,n\sqrt{1+\frac{g}{}}\right.}{\sqrt{g}}$$

$$= \frac{\sqrt{f}\sqrt{1+\frac{gx^2}{f}}\sinh^{-1}\left(\frac{\sqrt{g}\,x}{\sqrt{f}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{\sqrt{g}\sqrt{f+gx^2}} - \frac{\left(be\sqrt{f}\,n\sqrt{1+\frac{g}{}}\right.}{}$$

$$= \frac{b\sqrt{f}\,n\sqrt{1+\frac{gx^2}{f}}\sinh^{-1}\left(\frac{\sqrt{g}\,x}{\sqrt{f}}\right)^2}{2\sqrt{g}\sqrt{f+gx^2}} + \frac{\sqrt{f}\sqrt{1+\frac{gx^2}{f}}\sinh^{-1}\left(\frac{\sqrt{g}\,x}{\sqrt{f}}\right)(a+}{\sqrt{g}\sqrt{f+gx^2}}$$

$$= \frac{b\sqrt{f}\,n\sqrt{1+\frac{gx^2}{f}}\sinh^{-1}\left(\frac{\sqrt{g}\,x}{\sqrt{f}}\right)^2}{2\sqrt{g}\sqrt{f+gx^2}} - \frac{b\sqrt{f}\,n\sqrt{1+\frac{gx^2}{f}}\sinh^{-1}\left(\frac{\sqrt{g}\,x}{\sqrt{f}}\right)\log}{\sqrt{g}\sqrt{f+g}}$$

$$= \frac{b\sqrt{f}\,n\sqrt{1+\frac{gx^2}{f}}\sinh^{-1}\left(\frac{\sqrt{g}\,x}{\sqrt{f}}\right)^2}{2\sqrt{g}\sqrt{f+gx^2}} - \frac{b\sqrt{f}\,n\sqrt{1+\frac{gx^2}{f}}\sinh^{-1}\left(\frac{\sqrt{g}\,x}{\sqrt{f}}\right)\log}{\sqrt{g}\sqrt{f+g}}$$

$$= \frac{b\sqrt{f}\,n\sqrt{1+\frac{gx^2}{f}}\sinh^{-1}\left(\frac{\sqrt{g}\,x}{\sqrt{f}}\right)^2}{2\sqrt{g}\sqrt{f+gx^2}} - \frac{b\sqrt{f}\,n\sqrt{1+\frac{gx^2}{f}}\sinh^{-1}\left(\frac{\sqrt{g}\,x}{\sqrt{f}}\right)\log}{\sqrt{g}\sqrt{f+g}}$$

Mathematica [F]
time = 2.82, size = 0, normalized size = 0.00

$$\int \frac{a + b\log\left(c(d + ex)^n\right)}{\sqrt{f + gx^2}}\,dx$$

Verification is not applicable to the result.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])/Sqrt[f + g*x^2],x]
```

```
[Out] Integrate[(a + b*Log[c*(d + e*x)^n])/Sqrt[f + g*x^2], x]
```

Maple [F]
time = 0.14, size = 0, normalized size = 0.00

$$\int \frac{a + b\ln\left(c(ex + d)^n\right)}{\sqrt{g\,x^2 + f}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))/(g*x^2+f)^(1/2),x)
```

```
[Out] int((a+b*ln(c*(e*x+d)^n))/(g*x^2+f)^(1/2),x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x^2+f)^(1/2),x, algorithm="maxima")
```

```
[Out] b*integrate((log((x*e + d)^n) + log(c))/sqrt(g*x^2 + f), x) + a*arcsinh(g*x
/sqrt(f*g))/sqrt(g)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x^2+f)^(1/2),x, algorithm="fricas")
```

```
[Out] integral((sqrt(g*x^2 + f)*b*log((x*e + d)^n*c) + sqrt(g*x^2 + f)*a)/(g*x^2
+ f), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{a + b\log\left(c(d + ex)^n\right)}{\sqrt{f + gx^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))/(g*x**2+f)**(1/2),x)
```

```
[Out] Integral((a + b*log(c*(d + e*x)**n))/sqrt(f + g*x**2), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x^2+f)^(1/2),x, algorithm="giac")
```

```
[Out] integrate((b*log((x*e + d)^n*c) + a)/sqrt(g*x^2 + f), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)}{\sqrt{g\,x^2+f}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))/(f + g*x^2)^(1/2),x)
```

```
[Out] int((a + b*log(c*(d + e*x)^n))/(f + g*x^2)^(1/2), x)
```

3.277 $\int \frac{a+b\log(c(d+ex)^n)}{\sqrt{2-gx}\,\sqrt{2+gx}}\,dx$

Optimal. Leaf size=278

$$\frac{ibn\sin^{-1}\left(\frac{gx}{2}\right)^2}{2g}-\frac{bn\sin^{-1}\left(\frac{gx}{2}\right)\log\left(1+\frac{2ee^{i\sin^{-1}\left(\frac{gx}{2}\right)}}{idg-\sqrt{4e^2-d^2g^2}}\right)}{g}-\frac{bn\sin^{-1}\left(\frac{gx}{2}\right)\log\left(1+\frac{2ee^{i\sin^{-1}\left(\frac{gx}{2}\right)}}{idg+\sqrt{4e^2-d^2g^2}}\right)}{g}+$$

```
[Out] 1/2*I*b*n*arcsin(1/2*g*x)^2/g+arcsin(1/2*g*x)*(a+b*ln(c*(e*x+d)^n))/g-b*n*a
rcsin(1/2*g*x)*ln(1+2*e*(1/2*I*g*x+1/2*(-g^2*x^2+4)^(1/2))/(I*d*g-(-d^2*g^2
+4*e^2)^(1/2)))/g-b*n*arcsin(1/2*g*x)*ln(1+2*e*(1/2*I*g*x+1/2*(-g^2*x^2+4)^
(1/2))/(I*d*g+(-d^2*g^2+4*e^2)^(1/2)))/g+I*b*n*polylog(2,-2*e*(1/2*I*g*x+1/
2*(-g^2*x^2+4)^(1/2))/(I*d*g-(-d^2*g^2+4*e^2)^(1/2)))/g+I*b*n*polylog(2,-2*
e*(1/2*I*g*x+1/2*(-g^2*x^2+4)^(1/2))/(I*d*g+(-d^2*g^2+4*e^2)^(1/2)))/g
```

Rubi [A]
time = 0.32, antiderivative size = 278, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 7, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}} = 0.206$, Rules used = {222, 2452, 4825, 4617, 2221, 2317, 2438}

$$\frac{ibn\text{PolyLog}\left(2,-\frac{2ee^{i\text{ArcSin}\left(\frac{gx}{2}\right)}}{-\sqrt{4e^2-d^2g^2}+idg}\right)}{g}+\frac{ibn\text{PolyLog}\left(2,-\frac{2ee^{i\text{ArcSin}\left(\frac{gx}{2}\right)}}{\sqrt{4e^2-d^2g^2}+idg}\right)}{g}+\frac{\text{ArcSin}\left(\frac{gx}{2}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{g}-\frac{bn\text{ArcSin}\left(\frac{gx}{2}\right)\log\left(1+\frac{2ee^{i\text{ArcSin}\left(\frac{gx}{2}\right)}}{-\sqrt{4e^2-d^2g^2}+idg}\right)}{g}-\frac{bn\text{ArcSin}\left(\frac{gx}{2}\right)\log\left(1+\frac{2ee^{i\text{ArcSin}\left(\frac{gx}{2}\right)}}{\sqrt{4e^2-d^2g^2}+idg}\right)}{g}+\frac{ibn\text{ArcSin}\left(\frac{gx}{2}\right)^2}{2g}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])/(Sqrt[2 - g*x]*Sqrt[2 + g*x]),x]
```

```
[Out] ((I/2)*b*n*ArcSin[(g*x)/2]^2)/g - (b*n*ArcSin[(g*x)/2]*Log[1 + (2*e*E^(I*Ar
cSin[(g*x)/2]))/(I*d*g - Sqrt[4*e^2 - d^2*g^2])])/g - (b*n*ArcSin[(g*x)/2]*
Log[1 + (2*e*E^(I*ArcSin[(g*x)/2]))/(I*d*g + Sqrt[4*e^2 - d^2*g^2])])/g + (
ArcSin[(g*x)/2]*(a + b*Log[c*(d + e*x)^n]))/g + (I*b*n*PolyLog[2, (-2*e*E^(
I*ArcSin[(g*x)/2]))/(I*d*g - Sqrt[4*e^2 - d^2*g^2])])/g + (I*b*n*PolyLog[2,
 (-2*e*E^(I*ArcSin[(g*x)/2]))/(I*d*g + Sqrt[4*e^2 - d^2*g^2])])/g
```

Rule 222

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[Rt[-b, 2]*(x/Sqrt
[a])]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 2221

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m/(b*f*g*n*Log[F]))*Log[1 + b*((F^(g*(e + f*x)))^n/a)], x] - Di
st[d*(m/(b*f*g*n*Log[F])), Int[(c + d*x)^(m - 1)*Log[1 + b*((F^(g*(e + f*x)
))^n/a)], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2317

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2452

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/(Sqrt[(f1_) + (g1_
.)*(x_)]*Sqrt[(f2_) + (g2_.)*(x_)]), x_Symbol] :> With[{u = IntHide[1/Sqrt[
f1*f2 + g1*g2*x^2], x]}, Simp[u*(a + b*Log[c*(d + e*x)^n]), x] - Dist[b*e*n
, Int[SimplifyIntegrand[u/(d + e*x), x], x], x]] /; FreeQ[{a, b, c, d, e, f
1, g1, f2, g2, n}, x] && EqQ[f2*g1 + f1*g2, 0] && GtQ[f1, 0] && GtQ[f2, 0]
```

Rule 4617

```
Int[(Cos[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin[
(c_.) + (d_.)*(x_)]), x_Symbol] :> Simp[(-I)*((e + f*x)^(m + 1)/(b*f*(m + 1
))), x] + (Dist[I, Int[(e + f*x)^m*(E^(I*(c + d*x))/(I*a - Rt[-a^2 + b^2, 2
] + b*E^(I*(c + d*x)))), x], x] + Dist[I, Int[(e + f*x)^m*(E^(I*(c + d*x))/
(I*a + Rt[-a^2 + b^2, 2] + b*E^(I*(c + d*x)))), x], x]) /; FreeQ[{a, b, c,
d, e, f}, x] && IGtQ[m, 0] && NegQ[a^2 - b^2]
```

Rule 4825

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)), x_Symbol]
 :> Subst[Int[(a + b*x)^n*(Cos[x]/(c*d + e*Sin[x])), x], x, ArcSin[c*x]] /;
 FreeQ[{a, b, c, d, e}, x] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{a+b\log\left(c(d+ex)^n\right)}{\sqrt{2-gx}\,\sqrt{2+gx}}\,dx = \frac{\sin^{-1}\left(\frac{gx}{2}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{g} - (ben)\int \frac{\sin^{-1}\left(\frac{gx}{2}\right)}{dg+egx}\,dx$$

$$= \frac{\sin^{-1}\left(\frac{gx}{2}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{g} - (ben)\text{Subst}\left(\int \frac{x\cos(x)}{\frac{dg^2}{2}+eg\sin(x)}\,dx, x, \text{si}\right.$$

$$= \frac{ibn\sin^{-1}\left(\frac{gx}{2}\right)^2}{2g} + \frac{\sin^{-1}\left(\frac{gx}{2}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{g} - (iben)\text{Subst}\left(\int \frac{}{ee^{ix}g}\right.$$

$$= \frac{ibn\sin^{-1}\left(\frac{gx}{2}\right)^2}{2g} - \frac{bn\sin^{-1}\left(\frac{gx}{2}\right)\log\left(1+\frac{2ee^{i\sin^{-1}\left(\frac{gx}{2}\right)}}{idg-\sqrt{4e^2-d^2g^2}}\right)}{g} - \frac{bn\sin^{-1}\left(\frac{gx}{2}\right)}{}$$

$$= \frac{ibn\sin^{-1}\left(\frac{gx}{2}\right)^2}{2g} - \frac{bn\sin^{-1}\left(\frac{gx}{2}\right)\log\left(1+\frac{2ee^{i\sin^{-1}\left(\frac{gx}{2}\right)}}{idg-\sqrt{4e^2-d^2g^2}}\right)}{g} - \frac{bn\sin^{-1}\left(\frac{gx}{2}\right)}{}$$

$$= \frac{ibn\sin^{-1}\left(\frac{gx}{2}\right)^2}{2g} - \frac{bn\sin^{-1}\left(\frac{gx}{2}\right)\log\left(1+\frac{2ee^{i\sin^{-1}\left(\frac{gx}{2}\right)}}{idg-\sqrt{4e^2-d^2g^2}}\right)}{g} - \frac{bn\sin^{-1}\left(\frac{gx}{2}\right)}{}$$

Mathematica [A]
time = 0.02, size = 307, normalized size = 1.10

$$\frac{a\sin^{-1}\left(\frac{gx}{2}\right)}{g} + \frac{ibn\sin^{-1}\left(\frac{gx}{2}\right)^2}{2g} - \frac{bn\sin^{-1}\left(\frac{gx}{2}\right)\log\left(1+\frac{ee^{i\sin^{-1}\left(\frac{gx}{2}\right)}g}{\frac{1}{2}idg^2-\frac{1}{2}g\sqrt{4e^2-d^2g^2}}\right)}{g} - \frac{bn\sin^{-1}\left(\frac{gx}{2}\right)\log\left(1+\frac{ee^{i\sin^{-1}\left(\frac{gx}{2}\right)}g}{\frac{1}{2}idg^2+\frac{1}{2}g\sqrt{4e^2-d^2g^2}}\right)}{g} + \frac{b\sin^{-1}\left(\frac{gx}{2}\right)\log\left(c(d+ex)^n\right)}{g} + \frac{ibn\text{Li}_2\left(\frac{2iee^{i\sin^{-1}\left(\frac{gx}{2}\right)}}{dg-i\sqrt{4e^2-d^2g^2}}\right)}{g} + \frac{ibn\text{Li}_2\left(\frac{2iee^{i\sin^{-1}\left(\frac{gx}{2}\right)}}{dg+i\sqrt{4e^2-d^2g^2}}\right)}{g}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])/(Sqrt[2 - g*x]*Sqrt[2 + g*x]),x]
```

```
[Out] (a*ArcSin[(g*x)/2])/g + ((I/2)*b*n*ArcSin[(g*x)/2]^2)/g - (b*n*ArcSin[(g*x)
/2]*Log[1 + (e*E^(I*ArcSin[(g*x)/2])*g)/((I/2)*d*g^2 - (g*Sqrt[4*e^2 - d^2*
g^2])/2)])/g - (b*n*ArcSin[(g*x)/2]*Log[1 + (e*E^(I*ArcSin[(g*x)/2])*g)/((I
/2)*d*g^2 + (g*Sqrt[4*e^2 - d^2*g^2])/2)])/g + (b*ArcSin[(g*x)/2]*Log[c*(d
+ e*x)^n])/g + (I*b*n*PolyLog[2, ((2*I)*e*E^(I*ArcSin[(g*x)/2]))/(d*g - I*S
qrt[4*e^2 - d^2*g^2])])/g + (I*b*n*PolyLog[2, ((2*I)*e*E^(I*ArcSin[(g*x)/2]
))/(d*g + I*Sqrt[4*e^2 - d^2*g^2])])/g
```

Maple [F]
time = 0.32, size = 0, normalized size = 0.00

$$\int \frac{a+b\ln\left(c(ex+d)^n\right)}{\sqrt{-gx+2}\,\sqrt{gx+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))/(-g*x+2)^(1/2)/(g*x+2)^(1/2),x)
```

```
[Out] int((a+b*ln(c*(e*x+d)^n))/(-g*x+2)^(1/2)/(g*x+2)^(1/2),x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(-g*x+2)^(1/2)/(g*x+2)^(1/2),x, algorithm=
"maxima")
```

```
[Out] b*integrate((log((x*e + d)^n) + log(c))/(sqrt(g*x + 2)*sqrt(-g*x + 2)), x)
+ a*arcsin(1/2*g*x)/g
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(-g*x+2)^(1/2)/(g*x+2)^(1/2),x, algorithm=
"fricas")
```

```
[Out] integral(-(sqrt(g*x + 2)*sqrt(-g*x + 2)*b*log((x*e + d)^n*c) + sqrt(g*x + 2
)*sqrt(-g*x + 2)*a)/(g^2*x^2 - 4), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{a + b\log\left(c(d+ex)^n\right)}{\sqrt{-gx+2}\,\sqrt{gx+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))/(-g*x+2)**(1/2)/(g*x+2)**(1/2),x)
```

```
[Out] Integral((a + b*log(c*(d + e*x)**n))/(sqrt(-g*x + 2)*sqrt(g*x + 2)), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(-g*x+2)^(1/2)/(g*x+2)^(1/2),x, algorithm=
"giac")
```

```
[Out] integrate((b*log((x*e + d)^n*c) + a)/(sqrt(g*x + 2)*sqrt(-g*x + 2)), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)}{\sqrt{2-g\,x}\,\sqrt{g\,x+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))/((2 - g*x)^(1/2)*(g*x + 2)^(1/2)),x)
```

```
[Out] int((a + b*log(c*(d + e*x)^n))/((2 - g*x)^(1/2)*(g*x + 2)^(1/2)), x)
```

3.278 $\int \frac{a+b\log(c(d+ex)^n)}{\sqrt{f-gx}\sqrt{f+gx}}\,dx$

Optimal. Leaf size=510

$$\frac{ibfn\sqrt{1-\frac{g^2x^2}{f^2}}\,\sin^{-1}\left(\frac{gx}{f}\right)^2}{2g\sqrt{f-gx}\,\sqrt{f+gx}}-\frac{bfn\sqrt{1-\frac{g^2x^2}{f^2}}\,\sin^{-1}\left(\frac{gx}{f}\right)\log\left(1+\frac{ee^{i\sin^{-1}\left(\frac{gx}{f}\right)}f}{idg-\sqrt{e^2f^2-d^2g^2}}\right)}{g\sqrt{f-gx}\,\sqrt{f+gx}}-\frac{bfn\sqrt{1-\frac{g^2x^2}{f^2}}}{}$$

```
[Out] 1/2*I*b*f*n*arcsin(g*x/f)^2*(1-g^2*x^2/f^2)^(1/2)/g/(-g*x+f)^(1/2)/(g*x+f)^
(1/2)+f*arcsin(g*x/f)*(a+b*ln(c*(e*x+d)^n))*(1-g^2*x^2/f^2)^(1/2)/g/(-g*x+f
)^(1/2)/(g*x+f)^(1/2)-b*f*n*arcsin(g*x/f)*ln(1+e*(I*g*x/f+(1-g^2*x^2/f^2)^(
1/2))*f/(I*d*g-(-d^2*g^2+e^2*f^2)^(1/2)))*(1-g^2*x^2/f^2)^(1/2)/g/(-g*x+f)^
(1/2)/(g*x+f)^(1/2)-b*f*n*arcsin(g*x/f)*ln(1+e*(I*g*x/f+(1-g^2*x^2/f^2)^(1/
2))*f/(I*d*g+(-d^2*g^2+e^2*f^2)^(1/2)))*(1-g^2*x^2/f^2)^(1/2)/g/(-g*x+f)^(1
/2)/(g*x+f)^(1/2)+I*b*f*n*polylog(2,-e*(I*g*x/f+(1-g^2*x^2/f^2)^(1/2))*f/(I
*d*g-(-d^2*g^2+e^2*f^2)^(1/2)))*(1-g^2*x^2/f^2)^(1/2)/g/(-g*x+f)^(1/2)/(g*x
+f)^(1/2)+I*b*f*n*polylog(2,-e*(I*g*x/f+(1-g^2*x^2/f^2)^(1/2))*f/(I*d*g+(-d
^2*g^2+e^2*f^2)^(1/2)))*(1-g^2*x^2/f^2)^(1/2)/g/(-g*x+f)^(1/2)/(g*x+f)^(1/2
)
```

Rubi [A]
time = 0.45, antiderivative size = 510, normalized size of antiderivative = 1.00, number of steps used = 11, number of rules used = 9, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}} = 0.265$, Rules used = {2454, 222, 2451, 12, 4825, 4617, 2221, 2317, 2438}

$$\frac{ibfn\sqrt{1-\frac{g^2x^2}{f^2}}\,\text{PolyLog}\left(2,-\frac{efe^{i\text{ArcSin}\left(\frac{gx}{f}\right)}}{-\sqrt{e^2f^2-d^2g^2}+idg}\right)}{g\sqrt{f-gx}\,\sqrt{f+gx}}+\frac{ibfn\sqrt{1-\frac{g^2x^2}{f^2}}\,\text{PolyLog}\left(2,-\frac{efe^{i\text{ArcSin}\left(\frac{gx}{f}\right)}}{\sqrt{e^2f^2-d^2g^2}+idg}\right)}{g\sqrt{f-gx}\,\sqrt{f+gx}}+\frac{f\sqrt{1-\frac{g^2x^2}{f^2}}\,\text{ArcSin}\left(\frac{gx}{f}\right)(a+b\log(c(d+ex)^n))}{g\sqrt{f-gx}\,\sqrt{f+gx}}-\frac{bfn\sqrt{1-\frac{g^2x^2}{f^2}}\,\text{ArcSin}\left(\frac{gx}{f}\right)\log\left(1+\frac{efe^{i\text{ArcSin}\left(\frac{gx}{f}\right)}}{-\sqrt{e^2f^2-d^2g^2}+idg}\right)}{g\sqrt{f-gx}\,\sqrt{f+gx}}-\frac{bfn\sqrt{1-\frac{g^2x^2}{f^2}}\,\text{ArcSin}\left(\frac{gx}{f}\right)\log\left(1+\frac{efe^{i\text{ArcSin}\left(\frac{gx}{f}\right)}}{\sqrt{e^2f^2-d^2g^2}+idg}\right)}{g\sqrt{f-gx}\,\sqrt{f+gx}}+\frac{ibfn\sqrt{1-\frac{g^2x^2}{f^2}}\,\text{ArcSin}\left(\frac{gx}{f}\right)^2}{2g\sqrt{f-gx}\,\sqrt{f+gx}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])/(Sqrt[f - g*x]*Sqrt[f + g*x]),x]
```

```
[Out] ((I/2)*b*f*n*Sqrt[1 - (g^2*x^2)/f^2]*ArcSin[(g*x)/f]^2)/(g*Sqrt[f - g*x]*Sq
rt[f + g*x]) - (b*f*n*Sqrt[1 - (g^2*x^2)/f^2]*ArcSin[(g*x)/f]*Log[1 + (e*E^
(I*ArcSin[(g*x)/f])*f)/(I*d*g - Sqrt[e^2*f^2 - d^2*g^2])])/(g*Sqrt[f - g*x]
*Sqrt[f + g*x]) - (b*f*n*Sqrt[1 - (g^2*x^2)/f^2]*ArcSin[(g*x)/f]*Log[1 + (e
*E^(I*ArcSin[(g*x)/f])*f)/(I*d*g + Sqrt[e^2*f^2 - d^2*g^2])])/(g*Sqrt[f - g
*x]*Sqrt[f + g*x]) + (f*Sqrt[1 - (g^2*x^2)/f^2]*ArcSin[(g*x)/f]*(a + b*Log[
c*(d + e*x)^n]))/(g*Sqrt[f - g*x]*Sqrt[f + g*x]) + (I*b*f*n*Sqrt[1 - (g^2*x
^2)/f^2]*PolyLog[2, -((e*E^(I*ArcSin[(g*x)/f])*f)/(I*d*g - Sqrt[e^2*f^2 - d
^2*g^2]))])/(g*Sqrt[f - g*x]*Sqrt[f + g*x]) + (I*b*f*n*Sqrt[1 - (g^2*x^2)/f
^2]*PolyLog[2, -((e*E^(I*ArcSin[(g*x)/f])*f)/(I*d*g + Sqrt[e^2*f^2 - d^2*g^
2]))])/(g*Sqrt[f - g*x]*Sqrt[f + g*x])
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 222

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[Rt[-b, 2]*(x/Sqrt
[a])]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 2221

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m/(b*f*g*n*Log[F]))*Log[1 + b*((F^(g*(e + f*x)))^n/a)], x] - Di
st[d*(m/(b*f*g*n*Log[F])), Int[(c + d*x)^(m - 1)*Log[1 + b*((F^(g*(e + f*x)
))^n/a)], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2317

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2451

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/Sqrt[(f_) + (g_.)*
(x_)^2], x_Symbol] :> With[{u = IntHide[1/Sqrt[f + g*x^2], x]}, Simp[u*(a +
 b*Log[c*(d + e*x)^n]), x] - Dist[b*e*n, Int[SimplifyIntegrand[u/(d + e*x),
 x], x], x]] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && GtQ[f, 0]
```

Rule 2454

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/(Sqrt[(f1_) + (g1_
.)*(x_)]*Sqrt[(f2_) + (g2_.)*(x_)]), x_Symbol] :> Dist[Sqrt[1 + g1*(g2/(f1*
f2))*x^2]/(Sqrt[f1 + g1*x]*Sqrt[f2 + g2*x]), Int[(a + b*Log[c*(d + e*x)^n])
/Sqrt[1 + g1*(g2/(f1*f2))*x^2], x], x] /; FreeQ[{a, b, c, d, e, f1, g1, f2,
 g2, n}, x] && EqQ[f2*g1 + f1*g2, 0]
```

Rule 4617

```
Int[(Cos[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin[
(c_.) + (d_.)*(x_)]), x_Symbol] :> Simp[(-I)*((e + f*x)^(m + 1)/(b*f*(m + 1
```

```
))), x] + (Dist[I, Int[(e + f*x)^m*(E^(I*(c + d*x))/(I*a - Rt[-a^2 + b^2, 2
] + b*E^(I*(c + d*x)))), x], x] + Dist[I, Int[(e + f*x)^m*(E^(I*(c + d*x))/
(I*a + Rt[-a^2 + b^2, 2] + b*E^(I*(c + d*x)))), x], x]) /; FreeQ[{a, b, c,
d, e, f}, x] && IGtQ[m, 0] && NegQ[a^2 - b^2]
```

Rule 4825

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)), x_Symbol]
 :> Subst[Int[(a + b*x)^n*(Cos[x]/(c*d + e*Sin[x])), x], x, ArcSin[c*x]] /;
 FreeQ[{a, b, c, d, e}, x] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{a+b\log\left(c(d+ex)^n\right)}{\sqrt{f-gx}\,\sqrt{f+gx}}\,dx = \frac{\sqrt{1-\frac{g^2x^2}{f^2}}\int \frac{a+b\log(c(d+ex)^n)}{\sqrt{1-\frac{g^2x^2}{f^2}}}\,dx}{\sqrt{f-gx}\,\sqrt{f+gx}}$$

$$= \frac{f\sqrt{1-\frac{g^2x^2}{f^2}}\,\sin^{-1}\left(\frac{gx}{f}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{g\sqrt{f-gx}\,\sqrt{f+gx}} - \frac{\left(ben\sqrt{1-\frac{g^2x^2}{f^2}}\right)\int \frac{f\,\mathrm{s}}{}}{\sqrt{f-gx}\,\sqrt{f+}}$$

$$= \frac{f\sqrt{1-\frac{g^2x^2}{f^2}}\,\sin^{-1}\left(\frac{gx}{f}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{g\sqrt{f-gx}\,\sqrt{f+gx}} - \frac{\left(befn\sqrt{1-\frac{g^2x^2}{f^2}}\right)\int}{\sqrt{f-gx}\,\sqrt{f+}}$$

$$= \frac{f\sqrt{1-\frac{g^2x^2}{f^2}}\,\sin^{-1}\left(\frac{gx}{f}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{g\sqrt{f-gx}\,\sqrt{f+gx}} - \frac{\left(befn\sqrt{1-\frac{g^2x^2}{f^2}}\right)\mathrm{Su}}{\sqrt{f}}$$

$$= \frac{ibfn\sqrt{1-\frac{g^2x^2}{f^2}}\,\sin^{-1}\left(\frac{gx}{f}\right)^2}{2g\sqrt{f-gx}\,\sqrt{f+gx}} + \frac{f\sqrt{1-\frac{g^2x^2}{f^2}}\,\sin^{-1}\left(\frac{gx}{f}\right)\left(a+b\log\left(c(d+e\right.\right.}{g\sqrt{f-gx}\,\sqrt{f+gx}}$$

$$= \frac{ibfn\sqrt{1-\frac{g^2x^2}{f^2}}\,\sin^{-1}\left(\frac{gx}{f}\right)^2}{2g\sqrt{f-gx}\,\sqrt{f+gx}} - \frac{bfn\sqrt{1-\frac{g^2x^2}{f^2}}\,\sin^{-1}\left(\frac{gx}{f}\right)\log\left(1+\frac{ee^{i}}{idg-\sqrt{}}\right.}{g\sqrt{f-gx}\,\sqrt{f+gx}}$$

$$= \frac{ibfn\sqrt{1-\frac{g^2x^2}{f^2}}\,\sin^{-1}\left(\frac{gx}{f}\right)^2}{2g\sqrt{f-gx}\,\sqrt{f+gx}} - \frac{bfn\sqrt{1-\frac{g^2x^2}{f^2}}\,\sin^{-1}\left(\frac{gx}{f}\right)\log\left(1+\frac{ee^{i}}{idg-\sqrt{}}\right.}{g\sqrt{f-gx}\,\sqrt{f+gx}}$$

$$= \frac{ibfn\sqrt{1-\frac{g^2x^2}{f^2}}\,\sin^{-1}\left(\frac{gx}{f}\right)^2}{2g\sqrt{f-gx}\,\sqrt{f+gx}} - \frac{bfn\sqrt{1-\frac{g^2x^2}{f^2}}\,\sin^{-1}\left(\frac{gx}{f}\right)\log\left(1+\frac{ee^{i}}{idg-\sqrt{}}\right.}{g\sqrt{f-gx}\,\sqrt{f+gx}}$$

Mathematica [B] Both result and optimal contain complex but leaf count is larger than twice the leaf count of optimal. 1077 vs. 2(510) = 1020.

time = 3.13, size = 1077, normalized size = 2.11

$$\frac{\tan^{-1}\left(\frac{gx}{\sqrt{f-gx}\,\sqrt{f+gx}}\right)\left(a-bn\log(d+ex)+b\log\left(c(d+ex)^n\right)\right)}{g}-\frac{ibn\sqrt{f-gx}\,\sqrt{\frac{f+gx}{f-gx}}\left(2\log(d+ex)\log\left(i-\sqrt{\frac{f+gx}{f-gx}}\right)+\log^2\left(i-\sqrt{\frac{f+gx}{f-gx}}\right)+2\log\left(i-\sqrt{\frac{f+gx}{f-gx}}\right)\log\left(\frac{1}{2}\left(1-i\sqrt{\frac{f+gx}{f-gx}}\right)\right)-2\log(d+ex)\log\left(i+\sqrt{\frac{f+gx}{f-gx}}\right)-2\log\left(\frac{1}{2}\left(1+i\sqrt{\frac{f+gx}{f-gx}}\right)\right)\log\left(i+\sqrt{\frac{f+gx}{f-gx}}\right)-\log^2\left(i+\sqrt{\frac{f+gx}{f-gx}}\right)-2\log\left(i-\sqrt{\frac{f+gx}{f-gx}}\right)\log\left(\frac{\sqrt{ef-dg}-\sqrt{ef+dg}\,\sqrt{\frac{f+gx}{f-gx}}}{\sqrt{ef-dg}-i\sqrt{ef+dg}}\right)+2\log\left(i+\sqrt{\frac{f+gx}{f-gx}}\right)\log\left(\frac{\sqrt{ef-dg}-\sqrt{ef+dg}\,\sqrt{\frac{f+gx}{f-gx}}}{\sqrt{ef-dg}+i\sqrt{ef+dg}}\right)+2\log\left(i+\sqrt{\frac{f+gx}{f-gx}}\right)\log\left(\frac{\sqrt{ef-dg}+\sqrt{ef+dg}\,\sqrt{\frac{f+gx}{f-gx}}}{\sqrt{ef-dg}-i\sqrt{ef+dg}}\right)-2\log\left(i-\sqrt{\frac{f+gx}{f-gx}}\right)\log\left(\frac{\sqrt{ef-dg}+\sqrt{ef+dg}\,\sqrt{\frac{f+gx}{f-gx}}}{\sqrt{ef-dg}+i\sqrt{ef+dg}}\right)-2\operatorname{Li}_2\left(\frac{1}{2}-\frac{1}{2}i\sqrt{\frac{f+gx}{f-gx}}\right)+2\operatorname{Li}_2\left(\frac{1}{2}+\frac{1}{2}i\sqrt{\frac{f+gx}{f-gx}}\right)+2\operatorname{Li}_2\left(\frac{\sqrt{ef+dg}\left(1-i\sqrt{\frac{f+gx}{f-gx}}\right)}{i\sqrt{ef-dg}+\sqrt{ef+dg}}\right)-2\operatorname{Li}_2\left(\frac{\sqrt{ef+dg}\left(1+i\sqrt{\frac{f+gx}{f-gx}}\right)}{-i\sqrt{ef-dg}+\sqrt{ef+dg}}\right)-2\operatorname{Li}_2\left(\frac{\sqrt{ef+dg}\left(1+i\sqrt{\frac{f+gx}{f-gx}}\right)}{i\sqrt{ef-dg}+\sqrt{ef+dg}}\right)+2\operatorname{Li}_2\left(\frac{\sqrt{ef+dg}\left(i+\sqrt{\frac{f+gx}{f-gx}}\right)}{\sqrt{ef-dg}+i\sqrt{ef+dg}}\right)\right)}{2g\sqrt{f+gx}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])/(Sqrt[f - g*x]*Sqrt[f + g*x]),x]
```

```
[Out] (ArcTan[(g*x)/(Sqrt[f - g*x]*Sqrt[f + g*x])]*(a - b*n*Log[d + e*x] + b*Log[
c*(d + e*x)^n]))/g - ((I/2)*b*n*Sqrt[f - g*x]*Sqrt[(f + g*x)/(f - g*x)]*(2*
Log[d + e*x]*Log[I - Sqrt[(f + g*x)/(f - g*x)]] + Log[I - Sqrt[(f + g*x)/(f
 - g*x)]]^2 + 2*Log[I - Sqrt[(f + g*x)/(f - g*x)]]*Log[(1 - I*Sqrt[(f + g*x
)/(f - g*x)])/2] - 2*Log[d + e*x]*Log[I + Sqrt[(f + g*x)/(f - g*x)]] - 2*Lo
g[(1 + I*Sqrt[(f + g*x)/(f - g*x)])/2]*Log[I + Sqrt[(f + g*x)/(f - g*x)]] -
 Log[I + Sqrt[(f + g*x)/(f - g*x)]]^2 - 2*Log[I - Sqrt[(f + g*x)/(f - g*x)]
]*Log[(Sqrt[e*f - d*g] - Sqrt[e*f + d*g]*Sqrt[(f + g*x)/(f - g*x)])/(Sqrt[e
*f - d*g] - I*Sqrt[e*f + d*g])] + 2*Log[I + Sqrt[(f + g*x)/(f - g*x)]]*Log[
(Sqrt[e*f - d*g] - Sqrt[e*f + d*g]*Sqrt[(f + g*x)/(f - g*x)])/(Sqrt[e*f - d
*g] + I*Sqrt[e*f + d*g])] + 2*Log[I + Sqrt[(f + g*x)/(f - g*x)]]*Log[(Sqrt[
e*f - d*g] + Sqrt[e*f + d*g]*Sqrt[(f + g*x)/(f - g*x)])/(Sqrt[e*f - d*g] -
I*Sqrt[e*f + d*g])] - 2*Log[I - Sqrt[(f + g*x)/(f - g*x)]]*Log[(Sqrt[e*f -
d*g] + Sqrt[e*f + d*g]*Sqrt[(f + g*x)/(f - g*x)])/(Sqrt[e*f - d*g] + I*Sqrt
[e*f + d*g])] - 2*PolyLog[2, 1/2 - (I/2)*Sqrt[(f + g*x)/(f - g*x)]] + 2*Pol
yLog[2, 1/2 + (I/2)*Sqrt[(f + g*x)/(f - g*x)]] + 2*PolyLog[2, (Sqrt[e*f + d
*g]*(1 - I*Sqrt[(f + g*x)/(f - g*x)]))/(I*Sqrt[e*f - d*g] + Sqrt[e*f + d*g]
)] - 2*PolyLog[2, (Sqrt[e*f + d*g]*(1 + I*Sqrt[(f + g*x)/(f - g*x)]))/((-I)
*Sqrt[e*f - d*g] + Sqrt[e*f + d*g])] - 2*PolyLog[2, (Sqrt[e*f + d*g]*(1 + I
*Sqrt[(f + g*x)/(f - g*x)]))/(I*Sqrt[e*f - d*g] + Sqrt[e*f + d*g])] + 2*Pol
yLog[2, (Sqrt[e*f + d*g]*(I + Sqrt[(f + g*x)/(f - g*x)]))/(Sqrt[e*f - d*g]
+ I*Sqrt[e*f + d*g])]))/(g*Sqrt[f + g*x])
```

Maple [F]
time = 0.28, size = 0, normalized size = 0.00

$$\int \frac{a+b\ln\left(c(ex+d)^n\right)}{\sqrt{-gx+f}\,\sqrt{gx+f}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))/(-g*x+f)^(1/2)/(g*x+f)^(1/2),x)
```

```
[Out] int((a+b*ln(c*(e*x+d)^n))/(-g*x+f)^(1/2)/(g*x+f)^(1/2),x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(-g*x+f)^(1/2)/(g*x+f)^(1/2),x, algorithm=
"maxima")
```

```
[Out] b*integrate((log((x*e + d)^n) + log(c))/(sqrt(g*x + f)*sqrt(-g*x + f)), x)
+ a*arcsin(g*x/f)/g
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(-g*x+f)^(1/2)/(g*x+f)^(1/2),x, algorithm=
"fricas")
```

```
[Out] integral(-(sqrt(g*x + f)*sqrt(-g*x + f)*b*log((x*e + d)^n*c) + sqrt(g*x + f
)*sqrt(-g*x + f)*a)/(g^2*x^2 - f^2), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{a + b\log\left(c(d + ex)^{n}\right)}{\sqrt{f - gx}\,\sqrt{f + gx}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))/(-g*x+f)**(1/2)/(g*x+f)**(1/2),x)
```

```
[Out] Integral((a + b*log(c*(d + e*x)**n))/(sqrt(f - g*x)*sqrt(f + g*x)), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(-g*x+f)^(1/2)/(g*x+f)^(1/2),x, algorithm=
"giac")
```

```
[Out] integrate((b*log((x*e + d)^n*c) + a)/(sqrt(g*x + f)*sqrt(-g*x + f)), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{a + b\,\ln\left(c\,{\left(d + e\,x\right)}^{n}\right)}{\sqrt{f + g\,x}\,\sqrt{f - g\,x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))/((f + g*x)^(1/2)*(f - g*x)^(1/2)),x)
```

```
[Out] int((a + b*log(c*(d + e*x)^n))/((f + g*x)^(1/2)*(f - g*x)^(1/2)), x)
```

3.279 $\int \frac{\log\left(\frac{2e}{e+fx}\right)}{e^2-f^2x^2}\,dx$

Optimal. Leaf size=24

$$\frac{\text{Li}_2\left(1-\frac{2e}{e+fx}\right)}{2ef}$$

```
[Out] 1/2*polylog(2,1-2*e/(f*x+e))/e/f
```

Rubi [A]
time = 0.02, antiderivative size = 24, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.077$, Rules used = {2449, 2352}

$$\frac{\text{PolyLog}\left(2,1-\frac{2e}{e+fx}\right)}{2ef}$$

Antiderivative was successfully verified.

```
[In] Int[Log[(2*e)/(e + f*x)]/(e^2 - f^2*x^2),x]
```

```
[Out] PolyLog[2, 1 - (2*e)/(e + f*x)]/(2*e*f)
```

Rule 2352

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> Simp[(-e^(-1))*PolyLo
g[2, 1 - c*x], x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2449

```
Int[Log[(c_.)/((d_) + (e_.)*(x_))]/((f_) + (g_.)*(x_)^2), x_Symbol] :> Dist
[-e/g, Subst[Int[Log[2*d*x]/(1 - 2*d*x), x], x, 1/(d + e*x)], x] /; FreeQ[{
c, d, e, f, g}, x] && EqQ[c, 2*d] && EqQ[e^2*f + d^2*g, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{\log\left(\frac{2e}{e+fx}\right)}{e^2-f^2x^2}\,dx &= \frac{\text{Subst}\left(\int \frac{\log(2ex)}{1-2ex}\,dx,x,\frac{1}{e+fx}\right)}{f}\\ &= \frac{\text{Li}_2\left(1-\frac{2e}{e+fx}\right)}{2ef}\end{aligned}$$

Mathematica [A]
time = 0.01, size = 27, normalized size = 1.12

$$\frac{\text{Li}_2\left(\frac{-e+fx}{e+fx}\right)}{2ef}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[(2*e)/(e + f*x)]/(e^2 - f^2*x^2),x]
[Out] PolyLog[2, (-e + f*x)/(e + f*x)]/(2*e*f)
```

Maple [A]
time = 0.72, size = 20, normalized size = 0.83

method	result	size
derivativedivides	$\frac{\text{dilog}\left(\frac{2e}{fx+e}\right)}{2fe}$	20
default	$\frac{\text{dilog}\left(\frac{2e}{fx+e}\right)}{2fe}$	20
risch	$\frac{\text{dilog}\left(\frac{2e}{fx+e}\right)}{2fe}$	20

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(2*e/(f*x+e))/(-f^2*x^2+e^2),x,method=_RETURNVERBOSE)
[Out] 1/2/f/e*dilog(2*e/(f*x+e))
```

Maxima [B] Leaf count of result is larger than twice the leaf count of optimal. 124 vs. 2(22) = 44.
time = 0.27, size = 124, normalized size = 5.17

$$\frac{1}{4}f\left(\frac{\left(\log\left(fx+e\right)^2-2\log\left(fx+e\right)\log\left(fx-e\right)\right)e^{(-1)}}{f^2}+\frac{2\left(\log\left(fx+e\right)\log\left(-\frac{1}{2}\left(fx+e\right)e^{(-1)}+1\right)+\text{Li}_2\left(\frac{1}{2}\left(fx+e\right)e^{(-1)}\right)\right)e^{(-1)}}{f^2}\right)+\frac{1}{2}\left(\frac{e^{(-1)}\log\left(fx+e\right)}{f}-\frac{e^{(-1)}\log\left(fx-e\right)}{f}\right)\log\left(\frac{2e}{fx+e}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(2*e/(f*x+e))/(-f^2*x^2+e^2),x, algorithm="maxima")
[Out] 1/4*f*((log(f*x + e)^2 - 2*log(f*x + e)*log(f*x - e))*e^(-1)/f^2 + 2*(log(f
*x + e)*log(-1/2*(f*x + e)*e^(-1) + 1) + dilog(1/2*(f*x + e)*e^(-1)))*e^(-1
)/f^2) + 1/2*(e^(-1)*log(f*x + e)/f - e^(-1)*log(f*x - e)/f)*log(2*e/(f*x +
 e))
```

Fricas [A]
time = 0.35, size = 22, normalized size = 0.92

$${\frac{\text{Li}_2\left(-\frac{2e}{fx+e}+1\right)e^{(-1)}}{2f}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(2*e/(f*x+e))/(-f^2*x^2+e^2),x, algorithm="fricas")
```

```
[Out] 1/2*dilog(-2*e/(f*x + e) + 1)*e^(-1)/f
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{\log(2)}{-e^2+f^2x^2}\,dx-\int \frac{\log\left(\frac{e}{e+fx}\right)}{-e^2+f^2x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(2*e/(f*x+e))/(-f**2*x**2+e**2),x)
```

```
[Out] -Integral(log(2)/(-e**2 + f**2*x**2), x) - Integral(log(e/(e + f*x))/(-e**2
 + f**2*x**2), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(2*e/(f*x+e))/(-f^2*x^2+e^2),x, algorithm="giac")
```

```
[Out] integrate(-log(2*e/(f*x + e))/(f^2*x^2 - e^2), x)
```

Mupad [B]
time = 0.29, size = 19, normalized size = 0.79

$$\frac{\mathrm{Li}_2\left(\frac{2\,e}{e+f\,x}\right)}{2\,e\,f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(log((2*e)/(e + f*x))/(e^2 - f^2*x^2),x)
```

```
[Out] dilog((2*e)/(e + f*x))/(2*e*f)
```

3.280 $\int \frac{\log\left(\frac{e}{e+fx}\right)}{e^2-f^2x^2}\,dx$

Optimal. Leaf size=42

$$-\frac{\tanh^{-1}\left(\frac{fx}{e}\right)\log(2)}{ef}+\frac{\text{Li}_2\left(1-\frac{2e}{e+fx}\right)}{2ef}$$

```
[Out] -arctanh(f*x/e)*ln(2)/e/f+1/2*polylog(2,1-2*e/(f*x+e))/e/f
```

Rubi [A]
time = 0.04, antiderivative size = 42, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.160$, Rules used = {2450, 214, 2449, 2352}

$$\frac{\text{PolyLog}\left(2,1-\frac{2e}{e+fx}\right)}{2ef}-\frac{\log(2)\tanh^{-1}\left(\frac{fx}{e}\right)}{ef}$$

Antiderivative was successfully verified.

```
[In] Int[Log[e/(e + f*x)]/(e^2 - f^2*x^2),x]
```

```
[Out] -((ArcTanh[(f*x)/e]*Log[2])/(e*f)) + PolyLog[2, 1 - (2*e)/(e + f*x)]/(2*e*f
)
```

Rule 214

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-a/b, 2]/a)*ArcTanh[x
/Rt[-a/b, 2]], x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 2352

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> Simp[(-e^(-1))*PolyLo
g[2, 1 - c*x], x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2449

```
Int[Log[(c_.)/((d_) + (e_.)*(x_))]/((f_) + (g_.)*(x_)^2), x_Symbol] :> Dist
[-e/g, Subst[Int[Log[2*d*x]/(1 - 2*d*x), x], x, 1/(d + e*x)], x] /; FreeQ[{
c, d, e, f, g}, x] && EqQ[c, 2*d] && EqQ[e^2*f + d^2*g, 0]
```

Rule 2450

```
Int[((a_.) + Log[(c_.)/((d_) + (e_.)*(x_))]*(b_.))/((f_) + (g_.)*(x_)^2), x
_Symbol] :> Dist[a + b*Log[c/(2*d)], Int[1/(f + g*x^2), x], x] + Dist[b, In
t[Log[2*(d/(d + e*x))]/(f + g*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g},
```

x] && EqQ[e^2*f + d^2*g, 0] && GtQ[c/(2*d), 0]

Rubi steps

$$\begin{aligned}\int \frac{\log\left(\frac{e}{e+fx}\right)}{e^2-f^2x^2}\,dx &= -\left(\log(2)\int \frac{1}{e^2-f^2x^2}\,dx\right)+\int \frac{\log\left(\frac{2e}{e+fx}\right)}{e^2-f^2x^2}\,dx\\ &= -\frac{\tanh^{-1}\left(\frac{fx}{e}\right)\log(2)}{ef}+\frac{\text{Subst}\left(\int \frac{\log(2ex)}{1-2ex}\,dx,x,\frac{1}{e+fx}\right)}{f}\\ &= -\frac{\tanh^{-1}\left(\frac{fx}{e}\right)\log(2)}{ef}+\frac{\text{Li}_2\left(1-\frac{2e}{e+fx}\right)}{2ef}\end{aligned}$$

Mathematica [A]
time = 0.01, size = 81, normalized size = 1.93

$$-\frac{\log\left(\frac{e-fx}{2e}\right)\log\left(\frac{e}{e+fx}\right)}{2ef}-\frac{\log^2\left(\frac{e}{e+fx}\right)}{4ef}+\frac{\text{Li}_2\left(\frac{e+fx}{2e}\right)}{2ef}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[e/(e + f*x)]/(e^2 - f^2*x^2),x]
[Out] -1/2*(Log[(e - f*x)/(2*e)]*Log[e/(e + f*x)])/(e*f) - Log[e/(e + f*x)]^2/(4*
e*f) + PolyLog[2, (e + f*x)/(2*e)]/(2*e*f)
```

Maple [A]
time = 0.66, size = 62, normalized size = 1.48

method	result	size
derivativedivides	$-\frac{\frac{\left(\ln\left(\frac{e}{fx+e}\right)-\ln\left(\frac{2e}{fx+e}\right)\right)\ln\left(1-\frac{2e}{fx+e}\right)}{2}-\frac{\text{dilog}\left(\frac{2e}{fx+e}\right)}{2}}{fe}$	62
default	$-\frac{\frac{\left(\ln\left(\frac{e}{fx+e}\right)-\ln\left(\frac{2e}{fx+e}\right)\right)\ln\left(1-\frac{2e}{fx+e}\right)}{2}-\frac{\text{dilog}\left(\frac{2e}{fx+e}\right)}{2}}{fe}$	62
risch	$-\frac{\ln\left(1-\frac{2e}{fx+e}\right)\ln\left(\frac{e}{fx+e}\right)}{2ef}+\frac{\ln\left(1-\frac{2e}{fx+e}\right)\ln\left(\frac{2e}{fx+e}\right)}{2ef}+\frac{\text{dilog}\left(\frac{2e}{fx+e}\right)}{2fe}$	84

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(e/(f*x+e))/(-f^2*x^2+e^2),x,method=_RETURNVERBOSE)
[Out] -1/f/e*(1/2*(ln(e/(f*x+e))-ln(2*e/(f*x+e)))*ln(1-2*e/(f*x+e))-1/2*dilog(2*e
/(f*x+e)))
```

Maxima [B] Leaf count of result is larger than twice the leaf count of optimal. 123 vs. $2(38) = 76$.
time = 0.28, size = 123, normalized size = 2.93

$$\frac{1}{4}f\left(\frac{\left(\log\left(fx+e\right)^2-2\log\left(fx+e\right)\log\left(fx-e\right)\right)e^{(-1)}}{f^2}+\frac{2\left(\log\left(fx+e\right)\log\left(-\frac{1}{2}\left(fx+e\right)e^{(-1)}+1\right)+\mathrm{Li}_2\left(\frac{1}{2}\left(fx+e\right)e^{(-1)}\right)\right)e^{(-1)}}{f^2}\right)+\frac{1}{2}\left(\frac{e^{(-1)}\log\left(fx+e\right)}{f}-\frac{e^{(-1)}\log\left(fx-e\right)}{f}\right)\log\left(\frac{e}{fx+e}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(e/(f*x+e))/(-f^2*x^2+e^2),x, algorithm="maxima")
```

```
[Out] 1/4*f*((log(f*x + e)^2 - 2*log(f*x + e)*log(f*x - e))*e^(-1)/f^2 + 2*(log(f
*x + e)*log(-1/2*(f*x + e)*e^(-1) + 1) + dilog(1/2*(f*x + e)*e^(-1)))*e^(-1
)/f^2) + 1/2*(e^(-1)*log(f*x + e)/f - e^(-1)*log(f*x - e)/f)*log(e/(f*x + e
))
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(e/(f*x+e))/(-f^2*x^2+e^2),x, algorithm="fricas")
```

```
[Out] integral(-log(e/(f*x + e))/(f^2*x^2 - e^2), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{\log\left(\frac{e}{e+fx}\right)}{-e^2+f^2x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(e/(f*x+e))/(-f**2*x**2+e**2),x)
```

```
[Out] -Integral(log(e/(e + f*x))/(-e**2 + f**2*x**2), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(e/(f*x+e))/(-f^2*x^2+e^2),x, algorithm="giac")
```

```
[Out] integrate(-log(e/(f*x + e))/(f^2*x^2 - e^2), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{\ln\left(\frac{e}{e+f\,x}\right)}{e^2-f^2\,x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(log(e/(e + f*x))/(e^2 - f^2*x^2),x)
[Out] int(log(e/(e + f*x))/(e^2 - f^2*x^2), x)
```

3.281 $\int \frac{a+b\log\left(\frac{2e}{e+fx}\right)}{e^2-f^2x^2}\,dx$

Optimal. Leaf size=41

$$\frac{a\tanh^{-1}\left(\frac{fx}{e}\right)}{ef}+\frac{b\text{Li}_2\left(1-\frac{2e}{e+fx}\right)}{2ef}$$

```
[Out] a*arctanh(f*x/e)/e/f+1/2*b*polylog(2,1-2*e/(f*x+e))/e/f
```

Rubi [A]
time = 0.04, antiderivative size = 41, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}} = 0.133$, Rules used = {2450, 214, 2449, 2352}

$$\frac{b\text{PolyLog}\left(2,1-\frac{2e}{e+fx}\right)}{2ef}+\frac{a\tanh^{-1}\left(\frac{fx}{e}\right)}{ef}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[(2*e)/(e + f*x)])/(e^2 - f^2*x^2),x]
```

```
[Out] (a*ArcTanh[(f*x)/e])/(e*f) + (b*PolyLog[2, 1 - (2*e)/(e + f*x)])/(2*e*f)
```

Rule 214

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-a/b, 2]/a)*ArcTanh[x
/Rt[-a/b, 2]], x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 2352

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> Simp[(-e^(-1))*PolyLo
g[2, 1 - c*x], x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2449

```
Int[Log[(c_.)/((d_) + (e_.)*(x_))]/((f_) + (g_.)*(x_)^2), x_Symbol] :> Dist
[-e/g, Subst[Int[Log[2*d*x]/(1 - 2*d*x), x], x, 1/(d + e*x)], x] /; FreeQ[{
c, d, e, f, g}, x] && EqQ[c, 2*d] && EqQ[e^2*f + d^2*g, 0]
```

Rule 2450

```
Int[((a_.) + Log[(c_.)/((d_) + (e_.)*(x_))]*(b_.))/((f_) + (g_.)*(x_)^2), x
_Symbol] :> Dist[a + b*Log[c/(2*d)], Int[1/(f + g*x^2), x], x] + Dist[b, In
t[Log[2*(d/(d + e*x))]/(f + g*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g},
x] && EqQ[e^2*f + d^2*g, 0] && GtQ[c/(2*d), 0]
```

Rubi steps

$$\begin{aligned}\int \frac{a+b\log\left(\frac{2e}{e+fx}\right)}{e^2-f^2x^2}\,dx &= a\int \frac{1}{e^2-f^2x^2}\,dx+b\int \frac{\log\left(\frac{2e}{e+fx}\right)}{e^2-f^2x^2}\,dx\\ &= \frac{a\tanh^{-1}\left(\frac{fx}{e}\right)}{ef}+\frac{b\text{Subst}\left(\int \frac{\log(2ex)}{1-2ex}\,dx,x,\frac{1}{e+fx}\right)}{f}\\ &= \frac{a\tanh^{-1}\left(\frac{fx}{e}\right)}{ef}+\frac{b\text{Li}_2\left(1-\frac{2e}{e+fx}\right)}{2ef}\end{aligned}$$

Mathematica [**A**]
time = 0.02, size = 82, normalized size = 2.00

$$\frac{-\left(\left(a+b\log\left(\frac{2e}{e+fx}\right)\right)\left(a+2b\log\left(\frac{e-fx}{2e}\right)+b\log\left(\frac{2e}{e+fx}\right)\right)\right)+2b^2\text{Li}_2\left(\frac{e+fx}{2e}\right)}{4bef}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[(2*e)/(e + f*x)])/(e^2 - f^2*x^2),x]
```

```
[Out] (-((a + b*Log[(2*e)/(e + f*x)])*(a + 2*b*Log[(e - f*x)/(2*e)] + b*Log[(2*e)
/(e + f*x)])) + 2*b^2*PolyLog[2, (e + f*x)/(2*e)])/(4*b*e*f)
```

Maple [**A**]
time = 0.84, size = 44, normalized size = 1.07

method	result	size
derivativedivides	$-\frac{2e\left(\frac{a\ln\left(\frac{2e}{fx+e}-1\right)}{4e^2}-\frac{b\,\text{dilog}\left(\frac{2e}{fx+e}\right)}{4e^2}\right)}{f}$	44
default	$-\frac{2e\left(\frac{a\ln\left(\frac{2e}{fx+e}-1\right)}{4e^2}-\frac{b\,\text{dilog}\left(\frac{2e}{fx+e}\right)}{4e^2}\right)}{f}$	44
risch	$-\frac{a\ln(fx-e)}{2ef}+\frac{a\ln(fx+e)}{2ef}+\frac{b\,\text{dilog}\left(\frac{2e}{fx+e}\right)}{2fe}$	54

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(2*e/(f*x+e)))/(-f^2*x^2+e^2),x,method=_RETURNVERBOSE)
```

```
[Out] -2/f*e*(1/4/e^2*a*ln(2*e/(f*x+e)-1)-1/4/e^2*b*dilog(2*e/(f*x+e)))
```

Maxima [**F**]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(2*e/(f*x+e)))/(-f^2*x^2+e^2),x, algorithm="maxima")
```

```
[Out] 1/2*a*(e^(-1)*log(f*x + e)/f - e^(-1)*log(f*x - e)/f) + b*integrate(-(log(2
) - log(f*x + e) + 1)/(f^2*x^2 - e^2), x)
```

Fricas [A]
time = 0.36, size = 46, normalized size = 1.12

$$\frac{\left(b\mathrm{Li}_2\left(-\frac{2e}{fx+e}+1\right)+a\log\left(fx+e\right)-a\log\left(fx-e\right)\right)e^{(-1)}}{2f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(2*e/(f*x+e)))/(-f^2*x^2+e^2),x, algorithm="fricas")
```

```
[Out] 1/2*(b*dilog(-2*e/(f*x + e) + 1) + a*log(f*x + e) - a*log(f*x - e))*e^(-1)/
f
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$-\int\frac{a}{-e^2+f^2x^2}\,dx-\int\frac{b\log\left(2\right)}{-e^2+f^2x^2}\,dx-\int\frac{b\log\left(\frac{e}{e+fx}\right)}{-e^2+f^2x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(2*e/(f*x+e)))/(-f**2*x**2+e**2),x)
```

```
[Out] -Integral(a/(-e**2 + f**2*x**2), x) - Integral(b*log(2)/(-e**2 + f**2*x**2)
, x) - Integral(b*log(e/(e + f*x))/(-e**2 + f**2*x**2), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(2*e/(f*x+e)))/(-f^2*x^2+e^2),x, algorithm="giac")
```

```
[Out] integrate(-(b*log(2*e/(f*x + e)) + a)/(f^2*x^2 - e^2), x)
```

Mupad [B]
time = 0.34, size = 43, normalized size = 1.05

$$-\frac{a\,\ln\left(f\,x-e\right)-b\,\mathrm{Li}_2\left(\frac{2\,e}{e+f\,x}\right)+a\,\ln\left(\frac{1}{e+f\,x}\right)}{2\,e\,f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log((2*e)/(e + f*x)))/(e^2 - f^2*x^2),x)
```

```
[Out] -(a*log(f*x - e) - b*dilog((2*e)/(e + f*x)) + a*log(1/(e + f*x)))/(2*e*f)
```

3.282 $\int \frac{a+b\log\left(\frac{e}{e+fx}\right)}{e^2-f^2x^2}\,dx$

Optimal. Leaf size=47

$$\frac{\tanh^{-1}\left(\frac{fx}{e}\right)(a-b\log(2))}{ef}+\frac{b\text{Li}_2\left(1-\frac{2e}{e+fx}\right)}{2ef}$$

```
[Out] arctanh(f*x/e)*(a-b*ln(2))/e/f+1/2*b*polylog(2,1-2*e/(f*x+e))/e/f
```

Rubi [A]
time = 0.04, antiderivative size = 47, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.138, Rules used = {2450, 214, 2449, 2352}

$$\frac{b\text{PolyLog}\left(2,1-\frac{2e}{e+fx}\right)}{2ef}+\frac{(a-b\log(2))\tanh^{-1}\left(\frac{fx}{e}\right)}{ef}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[e/(e + f*x)])/(e^2 - f^2*x^2),x]
```

```
[Out] (ArcTanh[(f*x)/e]*(a - b*Log[2]))/(e*f) + (b*PolyLog[2, 1 - (2*e)/(e + f*x)
])/(2*e*f)
```

Rule 214

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-a/b, 2]/a)*ArcTanh[x
/Rt[-a/b, 2]], x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 2352

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> Simp[(-e^(-1))*PolyLo
g[2, 1 - c*x], x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2449

```
Int[Log[(c_.)/((d_) + (e_.)*(x_))]/((f_) + (g_.)*(x_)^2), x_Symbol] :> Dist
[-e/g, Subst[Int[Log[2*d*x]/(1 - 2*d*x), x], x, 1/(d + e*x)], x] /; FreeQ[{
c, d, e, f, g}, x] && EqQ[c, 2*d] && EqQ[e^2*f + d^2*g, 0]
```

Rule 2450

```
Int[((a_.) + Log[(c_.)/((d_) + (e_.)*(x_))]*(b_.))/((f_) + (g_.)*(x_)^2), x
_Symbol] :> Dist[a + b*Log[c/(2*d)], Int[1/(f + g*x^2), x], x] + Dist[b, In
t[Log[2*(d/(d + e*x))]/(f + g*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g},
```

```
x] && EqQ[e^2*f + d^2*g, 0] && GtQ[c/(2*d), 0]
```

Rubi steps

$$\begin{aligned}\int \frac{a+b\log\left(\frac{e}{e+fx}\right)}{e^2-f^2x^2}\,dx &= b\int \frac{\log\left(\frac{2e}{e+fx}\right)}{e^2-f^2x^2}\,dx+(a-b\log(2))\int \frac{1}{e^2-f^2x^2}\,dx\\ &= \frac{\tanh^{-1}\left(\frac{fx}{e}\right)(a-b\log(2))}{ef}+\frac{b\text{Subst}\left(\int \frac{\log(2ex)}{1-2ex}\,dx,x,\frac{1}{e+fx}\right)}{f}\\ &= \frac{\tanh^{-1}\left(\frac{fx}{e}\right)(a-b\log(2))}{ef}+\frac{b\text{Li}_2\left(1-\frac{2e}{e+fx}\right)}{2ef}\end{aligned}$$

Mathematica [A]
time = 0.02, size = 80, normalized size = 1.70

$$\frac{-\left(\left(a+b\log\left(\frac{e}{e+fx}\right)\right)\left(a+2b\log\left(\frac{e-fx}{2e}\right)+b\log\left(\frac{e}{e+fx}\right)\right)\right)+2b^2\text{Li}_2\left(\frac{e+fx}{2e}\right)}{4bef}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[e/(e + f*x)])/(e^2 - f^2*x^2),x]
[Out] (-((a + b*Log[e/(e + f*x)])*(a + 2*b*Log[(e - f*x)/(2*e)] + b*Log[e/(e + f*
x)])) + 2*b^2*PolyLog[2, (e + f*x)/(2*e)])/(4*b*e*f)
```

Maple [B] Leaf count of result is larger than twice the leaf count of optimal. 102 vs. 2(45) = 90.
time = 0.74, size = 103, normalized size = 2.19

method	result	size
derivativedivides	$-\frac{e\left(\frac{a\ln\left(\frac{2e}{fx+e}-1\right)}{2e^2}-\frac{b\ln\left(1-\frac{2e}{fx+e}\right)\ln\left(\frac{2e}{fx+e}\right)}{2e^2}+\frac{b\ln\left(1-\frac{2e}{fx+e}\right)\ln\left(\frac{e}{fx+e}\right)}{2e^2}-\frac{b\,\text{dilog}\left(\frac{2e}{fx+e}\right)}{2e^2}\right)}{f}$	103
default	$-\frac{e\left(\frac{a\ln\left(\frac{2e}{fx+e}-1\right)}{2e^2}-\frac{b\ln\left(1-\frac{2e}{fx+e}\right)\ln\left(\frac{2e}{fx+e}\right)}{2e^2}+\frac{b\ln\left(1-\frac{2e}{fx+e}\right)\ln\left(\frac{e}{fx+e}\right)}{2e^2}-\frac{b\,\text{dilog}\left(\frac{2e}{fx+e}\right)}{2e^2}\right)}{f}$	103
risch	$-\frac{a\ln(fx-e)}{2ef}+\frac{a\ln(fx+e)}{2ef}+\frac{b\ln\left(1-\frac{2e}{fx+e}\right)\ln\left(\frac{2e}{fx+e}\right)}{2ef}-\frac{b\ln\left(1-\frac{2e}{fx+e}\right)\ln\left(\frac{e}{fx+e}\right)}{2ef}+\frac{b\,\text{dilog}\left(\frac{2e}{fx+e}\right)}{2fe}$	119

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(e/(f*x+e)))/(-f^2*x^2+e^2),x,method=_RETURNVERBOSE)
```

```
[Out] -1/f*e*(1/2/e^2*a*ln(2*e/(f*x+e)-1)-1/2/e^2*b*ln(1-2*e/(f*x+e))*ln(2*e/(f*x
+e))+1/2/e^2*b*ln(1-2*e/(f*x+e))*ln(e/(f*x+e))-1/2/e^2*b*dilog(2*e/(f*x+e))
)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(e/(f*x+e)))/(-f^2*x^2+e^2),x, algorithm="maxima")
[Out] 1/2*a*(e^(-1)*log(f*x + e)/f - e^(-1)*log(f*x - e)/f) + b*integrate((log(f*
x + e) - 1)/(f^2*x^2 - e^2), x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(e/(f*x+e)))/(-f^2*x^2+e^2),x, algorithm="fricas")
[Out] integral(-(b*log(e/(f*x + e)) + a)/(f^2*x^2 - e^2), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{a}{-e^2+f^2x^2}\,dx-\int \frac{b\log\left(\frac{e}{e+fx}\right)}{-e^2+f^2x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(e/(f*x+e)))/(-f**2*x**2+e**2),x)
[Out] -Integral(a/(-e**2 + f**2*x**2), x) - Integral(b*log(e/(e + f*x))/(-e**2 +
f**2*x**2), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(e/(f*x+e)))/(-f^2*x^2+e^2),x, algorithm="giac")
[Out] integrate(-(b*log(e/(f*x + e)) + a)/(f^2*x^2 - e^2), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{a+b\ln\left(\frac{e}{e+fx}\right)}{e^2-f^2x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(e/(e + f*x)))/(e^2 - f^2*x^2),x)
[Out] int((a + b*log(e/(e + f*x)))/(e^2 - f^2*x^2), x)
```

3.283 $\int \frac{x^5 \log(c+dx)}{a+bx^3} \, dx$

Optimal. Leaf size=371

$$-\frac{c^2x}{3bd^2}+\frac{cx^2}{6bd}-\frac{x^3}{9b}+\frac{c^3\log(c+dx)}{3bd^3}+\frac{x^3\log(c+dx)}{3b}-\frac{a\log\left(-\frac{d\left(\sqrt[3]{a}+\sqrt[3]{b}x\right)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right)\log(c+dx)}{3b^2}-\frac{a\log\left(-\frac{d\left((-1)^{2/3}\right.}{\sqrt[3]{b}c-(-}\right.}{}$$

```
[Out] -1/3*c^2*x/b/d^2+1/6*c*x^2/b/d-1/9*x^3/b+1/3*c^3*ln(d*x+c)/b/d^3+1/3*x^3*ln
(d*x+c)/b-1/3*a*ln(-d*(a^(1/3)+b^(1/3)*x)/(b^(1/3)*c-a^(1/3)*d))*ln(d*x+c)/
b^2-1/3*a*ln(-d*((-1)^(2/3)*a^(1/3)+b^(1/3)*x)/(b^(1/3)*c-(-1)^(2/3)*a^(1/3
)*d))*ln(d*x+c)/b^2-1/3*a*ln((-1)^(1/3)*d*(a^(1/3)+(-1)^(2/3)*b^(1/3)*x)/(b
^(1/3)*c+(-1)^(1/3)*a^(1/3)*d))*ln(d*x+c)/b^2-1/3*a*polylog(2,b^(1/3)*(d*x+
c)/(b^(1/3)*c-a^(1/3)*d))/b^2-1/3*a*polylog(2,b^(1/3)*(d*x+c)/(b^(1/3)*c+(-
1)^(1/3)*a^(1/3)*d))/b^2-1/3*a*polylog(2,b^(1/3)*(d*x+c)/(b^(1/3)*c-(-1)^(2
/3)*a^(1/3)*d))/b^2
```

Rubi [A]

time = 0.42, antiderivative size = 371, normalized size of antiderivative = 1.00, number of steps used = 16, number of rules used = 8, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.421$, Rules used = {272, 45, 2463, 2442, 266, 2441, 2440, 2438}

$$-\frac{a\,\text{PolyLog}\left(2,\frac{\sqrt[3]{b}(c+dx)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right)}{3b^2}-\frac{a\,\text{PolyLog}\left(2,\frac{\sqrt[3]{b}(c+dx)}{\sqrt[3]{-1}\sqrt[3]{a}d+\sqrt[3]{b}c}\right)}{3b^2}-\frac{a\,\text{PolyLog}\left(2,\frac{\sqrt[3]{b}(c+dx)}{\sqrt[3]{b}c-(-1)^{2/3}\sqrt[3]{a}d}\right)}{3b^2}-\frac{a\log(c+dx)\log\left(-\frac{d\left(\sqrt[3]{a}+\sqrt[3]{b}x\right)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right)}{3b^2}-\frac{a\log(c+dx)\log\left(-\frac{d\left((-1)^{2/3}\sqrt[3]{a}+\sqrt[3]{b}x\right)}{\sqrt[3]{b}c-(-1)^{2/3}\sqrt[3]{a}d}\right)}{3b^2}-\frac{a\log(c+dx)\log\left(\frac{\sqrt[3]{-1}d\left(\sqrt[3]{a}+(-1)^{2/3}\sqrt[3]{b}x\right)}{\sqrt[3]{-1}\sqrt[3]{a}d+\sqrt[3]{b}c}\right)}{3b^2}+\frac{c^3\log(c+dx)}{3bd^3}-\frac{c^2x}{3bd^2}+\frac{x^3\log(c+dx)}{3b}+\frac{cx^2}{6bd}-\frac{x^3}{9b}$$

Antiderivative was successfully verified.

```
[In] Int[(x^5*Log[c + d*x])/(a + b*x^3),x]
```

```
[Out] -1/3*(c^2*x)/(b*d^2) + (c*x^2)/(6*b*d) - x^3/(9*b) + (c^3*Log[c + d*x])/(3*
b*d^3) + (x^3*Log[c + d*x])/(3*b) - (a*Log[-((d*(a^(1/3) + b^(1/3)*x))/(b^(
1/3)*c - a^(1/3)*d))]*Log[c + d*x])/(3*b^2) - (a*Log[-((d*((-1)^(2/3)*a^(1/
3) + b^(1/3)*x))/(b^(1/3)*c - (-1)^(2/3)*a^(1/3)*d))]*Log[c + d*x])/(3*b^2)
 - (a*Log[((-1)^(1/3)*d*(a^(1/3) + (-1)^(2/3)*b^(1/3)*x))/(b^(1/3)*c + (-1)
^(1/3)*a^(1/3)*d)]*Log[c + d*x])/(3*b^2) - (a*PolyLog[2, (b^(1/3)*(c + d*x)
)/(b^(1/3)*c - a^(1/3)*d)])/(3*b^2) - (a*PolyLog[2, (b^(1/3)*(c + d*x))/(b^
(1/3)*c + (-1)^(1/3)*a^(1/3)*d)])/(3*b^2) - (a*PolyLog[2, (b^(1/3)*(c + d*x
))/(b^(1/3)*c - (-1)^(2/3)*a^(1/3)*d)])/(3*b^2)
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 266

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 272

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + c*e*(x/g)])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2441

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d + e*x
)^n])/g), x] - Dist[b*e*(n/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2442

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[(f + g*x)^(q + 1)*((a + b*Log[c*(d + e*x)^n])/(
g*(q + 1))), x] - Dist[b*e*(n/(g*(q + 1))), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 2463

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rubi steps

$$\int \frac{x^5 \log(c+dx)}{a+bx^3}\,dx = \int \left(\frac{x^2\log(c+dx)}{b} - \frac{ax^2\log(c+dx)}{b\,(a+bx^3)}\right)\,dx$$

$$= \frac{\int x^2\log(c+dx)\,dx}{b} - \frac{a\int \frac{x^2\log(c+dx)}{a+bx^3}\,dx}{b}$$

$$= \frac{x^3\log(c+dx)}{3b} - \frac{a\int \left(\frac{\log(c+dx)}{3b^{2/3}\left(\sqrt[3]{a}+\sqrt[3]{b}\,x\right)} + \frac{\log(c+dx)}{3b^{2/3}\left(-\sqrt[3]{-1}\,\sqrt[3]{a}+\sqrt[3]{b}\,x\right)} + \frac{\log(c+dx}{3b^{2/3}\left((-1)^{2/3}\sqrt[3]{a}\right.}}{b}$$

$$= \frac{x^3\log(c+dx)}{3b} - \frac{a\int \frac{\log(c+dx)}{\sqrt[3]{a}+\sqrt[3]{b}\,x}\,dx}{3b^{5/3}} - \frac{a\int \frac{\log(c+dx)}{-\sqrt[3]{-1}\,\sqrt[3]{a}+\sqrt[3]{b}\,x}\,dx}{3b^{5/3}} - \frac{a\int \frac{\log(c+dx)}{(-1)^{2/3}\sqrt[3]{a}+\sqrt[3]{b}}}{3b^{5/3}}$$

$$= -\frac{c^2x}{3bd^2} + \frac{cx^2}{6bd} - \frac{x^3}{9b} + \frac{c^3\log(c+dx)}{3bd^3} + \frac{x^3\log(c+dx)}{3b} - \frac{a\log\left(-\frac{d\left(\sqrt[3]{a}+\sqrt[3]{b}\,x\right)}{\sqrt[3]{b}\,c-\sqrt[3]{a}\,d}\right)\log}{3b^2}$$

$$= -\frac{c^2x}{3bd^2} + \frac{cx^2}{6bd} - \frac{x^3}{9b} + \frac{c^3\log(c+dx)}{3bd^3} + \frac{x^3\log(c+dx)}{3b} - \frac{a\log\left(-\frac{d\left(\sqrt[3]{a}+\sqrt[3]{b}\,x\right)}{\sqrt[3]{b}\,c-\sqrt[3]{a}\,d}\right)\log}{3b^2}$$

$$= -\frac{c^2x}{3bd^2} + \frac{cx^2}{6bd} - \frac{x^3}{9b} + \frac{c^3\log(c+dx)}{3bd^3} + \frac{x^3\log(c+dx)}{3b} - \frac{a\log\left(-\frac{d\left(\sqrt[3]{a}+\sqrt[3]{b}\,x\right)}{\sqrt[3]{b}\,c-\sqrt[3]{a}\,d}\right)\log}{3b^2}$$

<u>Mathematica</u> [A]

time = 0.24, size = 345, normalized size = 0.93

$$-\frac{6bc^2dx - 3bcd^2x^2 + 2bd^3x^3 - 6bc^3\log(c+dx) - 6bd^3x^3\log(c+dx) + 6ad^3\log\left(\frac{d\left(\sqrt[3]{-1}\,\sqrt[3]{a}-\sqrt[3]{b}\,x\right)}{\sqrt[3]{b}\,c+\sqrt[3]{-1}\,\sqrt[3]{a}\,d}\right)\log(c+dx) + 6ad^3\log\left(\frac{d\left(\sqrt[3]{a}+\sqrt[3]{b}\,x\right)}{-\sqrt[3]{b}\,c+\sqrt[3]{a}\,d}\right)\log(c+dx) + 6ad^3\log\left(\frac{d\left((-1)^{2/3}\sqrt[3]{a}+\sqrt[3]{b}\,x\right)}{-\sqrt[3]{b}\,c+(-1)^{2/3}\sqrt[3]{a}\,d}\right)\log(c+dx) + 6ad^3\mathrm{Li}_2\left(\frac{\sqrt[3]{b}\,(c+dx)}{\sqrt[3]{b}\,c-\sqrt[3]{a}\,d}\right) + 6ad^3\mathrm{Li}_2\left(\frac{\sqrt[3]{b}\,(c+dx)}{\sqrt[3]{b}\,c+\sqrt[3]{-1}\,\sqrt[3]{a}\,d}\right) + 6ad^3\mathrm{Li}_2\left(\frac{\sqrt[3]{b}\,(c+dx)}{\sqrt[3]{b}\,c-(-1)^{2/3}\sqrt[3]{a}\,d}\right)}{18b^2d^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^5*Log[c + d*x])/(a + b*x^3),x]
```

```
[Out] -1/18*(6*b*c^2*d*x - 3*b*c*d^2*x^2 + 2*b*d^3*x^3 - 6*b*c^3*Log[c + d*x] - 6
*b*d^3*x^3*Log[c + d*x] + 6*a*d^3*Log[(d*((-1)^(1/3)*a^(1/3) - b^(1/3)*x))/
(b^(1/3)*c + (-1)^(1/3)*a^(1/3)*d)]*Log[c + d*x] + 6*a*d^3*Log[(d*(a^(1/3)
+ b^(1/3)*x))/(-(b^(1/3)*c) + a^(1/3)*d)]*Log[c + d*x] + 6*a*d^3*Log[(d*((-
1)^(2/3)*a^(1/3) + b^(1/3)*x))/(-(b^(1/3)*c) + (-1)^(2/3)*a^(1/3)*d)]*Log[c
 + d*x] + 6*a*d^3*PolyLog[2, (b^(1/3)*(c + d*x))/(b^(1/3)*c - a^(1/3)*d)] +
 6*a*d^3*PolyLog[2, (b^(1/3)*(c + d*x))/(b^(1/3)*c + (-1)^(1/3)*a^(1/3)*d)]
```

```
 + 6*a*d^3*PolyLog[2, (b^(1/3)*(c + d*x))/(b^(1/3)*c - (-1)^(2/3)*a^(1/3)*d
)]])/(b^2*d^3)
```

Maple [C] Result contains higher order function than in optimal. Order 9 vs. order 4.
time = 0.48, size = 170, normalized size = 0.46

method	result
risch	$-\frac{c^2 x}{3b\,d^2} - \frac{11c^3}{18d^3 b} + \frac{c\,x^2}{6bd} + \frac{x^3 \ln(dx+c)}{3b} + \frac{c^3 \ln(dx+c)}{3b\,d^3} - \frac{x^3}{9b} - \frac{\left(\sum_{\_R1=\mathrm{RootOf}\left(b\_Z^3-3cb\_Z^2+3b\,c^2\_Z+a\,d^3-\right.}\right.}{}$
derivativedivides	$\frac{\frac{\left(c^2((dx+c)\ln(dx+c)-dx-c)-2\left(\frac{(dx+c)^2\ln(dx+c)}{2}-\frac{(dx+c)^2}{4}\right)c+\frac{(dx+c)^3\ln(dx+c)}{3}-\frac{(dx+c)^3}{9}\right)d^3}{b}-\frac{\left(\_R1=\mathrm{RootOf}\left(b\_Z^3-3cb\right.\right.}{}}{d^6}$
default	$\frac{\frac{\left(c^2((dx+c)\ln(dx+c)-dx-c)-2\left(\frac{(dx+c)^2\ln(dx+c)}{2}-\frac{(dx+c)^2}{4}\right)c+\frac{(dx+c)^3\ln(dx+c)}{3}-\frac{(dx+c)^3}{9}\right)d^3}{b}-\frac{\left(\_R1=\mathrm{RootOf}\left(b\_Z^3-3cb\right.\right.}{}}{d^6}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^5*ln(d*x+c)/(b*x^3+a),x,method=_RETURNVERBOSE)
```

```
[Out] 1/d^6*((c^2*((d*x+c)*ln(d*x+c)-d*x-c)-2*(1/2*(d*x+c)^2*ln(d*x+c)-1/4*(d*x+c
)^2)*c+1/3*(d*x+c)^3*ln(d*x+c)-1/9*(d*x+c)^3)*d^3/b-1/3/b^2*sum(ln(d*x+c)*l
n((-d*x+_R1-c)/_R1)+dilog((-d*x+_R1-c)/_R1),_R1=RootOf(_Z^3*b-3*_Z^2*b*c+3*
_Z*b*c^2+a*d^3-b*c^3))*a*d^6)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*log(d*x+c)/(b*x^3+a),x, algorithm="maxima")
```

```
[Out] integrate(x^5*log(d*x + c)/(b*x^3 + a), x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*log(d*x+c)/(b*x^3+a),x, algorithm="fricas")
```

```
[Out] integral(x^5*log(d*x + c)/(b*x^3 + a), x)
```

Sympy [**F(-1)**] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**5*ln(d*x+c)/(b*x**3+a),x)
```

```
[Out] Timed out
```

Giac [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*log(d*x+c)/(b*x^3+a),x, algorithm="giac")
```

```
[Out] integrate(x^5*log(d*x + c)/(b*x^3 + a), x)
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x^5 \ln(c + d\,x)}{b\,x^3 + a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^5*log(c + d*x))/(a + b*x^3),x)
```

```
[Out] int((x^5*log(c + d*x))/(a + b*x^3), x)
```

3.284 $\int \frac{x^2 \log(c+dx)}{a+bx^3} dx$

Optimal. Leaf size=292

$$\frac{\log\left(-\frac{d\left(\sqrt[3]{a}+\sqrt[3]{b}x\right)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right)\log(c+dx)}{3b}+\frac{\log\left(-\frac{d\left((-1)^{2/3}\sqrt[3]{a}+\sqrt[3]{b}x\right)}{\sqrt[3]{b}c-(-1)^{2/3}\sqrt[3]{a}d}\right)\log(c+dx)}{3b}+\frac{\log\left(\frac{\sqrt[3]{-1}d\left(\sqrt[3]{a}+(-1)^{2/3}\sqrt[3]{b}x\right)}{\sqrt[3]{b}c+\sqrt[3]{-1}\sqrt[3]{a}d}\right)\log(c+dx)}{3b}$$

```
[Out] 1/3*ln(-d*(a^(1/3)+b^(1/3)*x)/(b^(1/3)*c-a^(1/3)*d))*ln(d*x+c)/b+1/3*ln(-d*
((-1)^(2/3)*a^(1/3)+b^(1/3)*x)/(b^(1/3)*c-(-1)^(2/3)*a^(1/3)*d))*ln(d*x+c)/
b+1/3*ln((-1)^(1/3)*d*(a^(1/3)+(-1)^(2/3)*b^(1/3)*x)/(b^(1/3)*c+(-1)^(1/3)*
a^(1/3)*d))*ln(d*x+c)/b+1/3*polylog(2,b^(1/3)*(d*x+c)/(b^(1/3)*c-a^(1/3)*d)
)/b+1/3*polylog(2,b^(1/3)*(d*x+c)/(b^(1/3)*c+(-1)^(1/3)*a^(1/3)*d))/b+1/3*p
olylog(2,b^(1/3)*(d*x+c)/(b^(1/3)*c-(-1)^(2/3)*a^(1/3)*d))/b
```

Rubi [A]
time = 0.20, antiderivative size = 292, normalized size of antiderivative = 1.00, number of steps used = 11, number of rules used = 5, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.263$, Rules used = {266, 2463, 2441, 2440, 2438}

$$\frac{\text{PolyLog}\left(2,\frac{\sqrt[3]{b}(c+dx)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right)}{3b}+\frac{\text{PolyLog}\left(2,\frac{\sqrt[3]{b}(c+dx)}{\sqrt[3]{-1}\sqrt[3]{a}d+\sqrt[3]{b}c}\right)}{3b}+\frac{\text{PolyLog}\left(2,\frac{\sqrt[3]{b}(c+dx)}{\sqrt[3]{b}c-(-1)^{2/3}\sqrt[3]{a}d}\right)}{3b}+\frac{\log(c+dx)\log\left(-\frac{d\left(\sqrt[3]{a}+\sqrt[3]{b}x\right)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right)}{3b}+\frac{\log(c+dx)\log\left(-\frac{d\left((-1)^{2/3}\sqrt[3]{a}+\sqrt[3]{b}x\right)}{\sqrt[3]{b}c-(-1)^{2/3}\sqrt[3]{a}d}\right)}{3b}+\frac{\log(c+dx)\log\left(\frac{\sqrt[3]{-1}d\left(\sqrt[3]{a}+(-1)^{2/3}\sqrt[3]{b}x\right)}{\sqrt[3]{-1}\sqrt[3]{a}d+\sqrt[3]{b}c}\right)}{3b}$$

Antiderivative was successfully verified.

```
[In] Int[(x^2*Log[c + d*x])/(a + b*x^3),x]
```

```
[Out] (Log[-((d*(a^(1/3) + b^(1/3)*x))/(b^(1/3)*c - a^(1/3)*d))]*Log[c + d*x])/(3
*b) + (Log[-((d*((-1)^(2/3)*a^(1/3) + b^(1/3)*x))/(b^(1/3)*c - (-1)^(2/3)*a
^(1/3)*d))]*Log[c + d*x])/(3*b) + (Log[((-1)^(1/3)*d*(a^(1/3) + (-1)^(2/3)*
b^(1/3)*x))/(b^(1/3)*c + (-1)^(1/3)*a^(1/3)*d)]*Log[c + d*x])/(3*b) + PolyL
og[2, (b^(1/3)*(c + d*x))/(b^(1/3)*c - a^(1/3)*d)]/(3*b) + PolyLog[2, (b^(1
/3)*(c + d*x))/(b^(1/3)*c + (-1)^(1/3)*a^(1/3)*d)]/(3*b) + PolyLog[2, (b^(1
/3)*(c + d*x))/(b^(1/3)*c - (-1)^(2/3)*a^(1/3)*d)]/(3*b)
```

Rule 266

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + c*e*(x/g)])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2441

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d + e*x
)^n])/g), x] - Dist[b*e*(n/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2463

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rubi steps

$$\int \frac{x^2 \log(c+dx)}{a+bx^3}\,dx = \int \left(\frac{\log(c+dx)}{3b^{2/3}\left(\sqrt[3]{a}+\sqrt[3]{b}\,x\right)}+\frac{\log(c+dx)}{3b^{2/3}\left(-\sqrt[3]{-1}\,\sqrt[3]{a}+\sqrt[3]{b}\,x\right)}+\frac{\log(c+dx)}{3b^{2/3}\left((-1)^{2/3}\sqrt[3]{a}+\sqrt[3]{b}\right.}\right.$$

$$=\frac{\int \frac{\log(c+dx)}{\sqrt[3]{a}+\sqrt[3]{b}\,x}\,dx}{3b^{2/3}}+\frac{\int \frac{\log(c+dx)}{-\sqrt[3]{-1}\,\sqrt[3]{a}+\sqrt[3]{b}\,x}\,dx}{3b^{2/3}}+\frac{\int \frac{\log(c+dx)}{(-1)^{2/3}\sqrt[3]{a}+\sqrt[3]{b}\,x}\,dx}{3b^{2/3}}$$

$$=\frac{\log\left(-\frac{d\left(\sqrt[3]{a}+\sqrt[3]{b}\,x\right)}{\sqrt[3]{b}\,c-\sqrt[3]{a}\,d}\right)\log(c+dx)}{3b}+\frac{\log\left(-\frac{d\left((-1)^{2/3}\sqrt[3]{a}+\sqrt[3]{b}\,x\right)}{\sqrt[3]{b}\,c-(-1)^{2/3}\sqrt[3]{a}\,d}\right)\log(c+dx)}{3b}+\frac{\text{lo}}{}$$

$$=\frac{\log\left(-\frac{d\left(\sqrt[3]{a}+\sqrt[3]{b}\,x\right)}{\sqrt[3]{b}\,c-\sqrt[3]{a}\,d}\right)\log(c+dx)}{3b}+\frac{\log\left(-\frac{d\left((-1)^{2/3}\sqrt[3]{a}+\sqrt[3]{b}\,x\right)}{\sqrt[3]{b}\,c-(-1)^{2/3}\sqrt[3]{a}\,d}\right)\log(c+dx)}{3b}+\frac{\text{lo}}{}$$

$$=\frac{\log\left(-\frac{d\left(\sqrt[3]{a}+\sqrt[3]{b}\,x\right)}{\sqrt[3]{b}\,c-\sqrt[3]{a}\,d}\right)\log(c+dx)}{3b}+\frac{\log\left(-\frac{d\left((-1)^{2/3}\sqrt[3]{a}+\sqrt[3]{b}\,x\right)}{\sqrt[3]{b}\,c-(-1)^{2/3}\sqrt[3]{a}\,d}\right)\log(c+dx)}{3b}+\frac{\text{lo}}{}$$

Mathematica [A]

time = 0.04, size = 297, normalized size = 1.02

$$\frac{\log\left(-\frac{d\left(\sqrt[3]{a}+\sqrt[3]{b}\,x\right)}{\sqrt[3]{b}\,c-\sqrt[3]{a}\,d}\right)\log(c+dx)}{3b}+\frac{\log\left(-\frac{(-1)^{2/3}d\left(\sqrt[3]{a}-\sqrt[3]{-1}\,\sqrt[3]{b}\,x\right)}{\sqrt[3]{b}\,c-(-1)^{2/3}\sqrt[3]{a}\,d}\right)\log(c+dx)}{3b}+\frac{\log\left(\frac{\sqrt[3]{-1}\,d\left(\sqrt[3]{a}+(-1)^{2/3}\sqrt[3]{b}\,x\right)}{\sqrt[3]{b}\,c+\sqrt[3]{-1}\,\sqrt[3]{a}\,d}\right)\log(c+dx)}{3b}+\frac{\operatorname{Li}_2\left(\frac{\sqrt[3]{b}\,(c+dx)}{\sqrt[3]{b}\,c-\sqrt[3]{a}\,d}\right)}{3b}+\frac{\operatorname{Li}_2\left(\frac{\sqrt[3]{b}\,(c+dx)}{\sqrt[3]{b}\,c+\sqrt[3]{-1}\,\sqrt[3]{a}\,d}\right)}{3b}+\frac{\operatorname{Li}_2\left(\frac{\sqrt[3]{b}\,(c+dx)}{\sqrt[3]{b}\,c-(-1)^{2/3}\sqrt[3]{a}\,d}\right)}{3b}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^2*Log[c + d*x])/(a + b*x^3),x]
```

```
[Out] (Log[-((d*(a^(1/3) + b^(1/3)*x))/(b^(1/3)*c - a^(1/3)*d))]*Log[c + d*x])/(3
*b) + (Log[-(((-1)^(2/3)*d*(a^(1/3) - (-1)^(1/3)*b^(1/3)*x))/(b^(1/3)*c - (
-1)^(2/3)*a^(1/3)*d))]*Log[c + d*x])/(3*b) + (Log[((-1)^(1/3)*d*(a^(1/3) +
(-1)^(2/3)*b^(1/3)*x))/(b^(1/3)*c + (-1)^(1/3)*a^(1/3)*d)]*Log[c + d*x])/(3
*b) + PolyLog[2, (b^(1/3)*(c + d*x))/(b^(1/3)*c - a^(1/3)*d)]/(3*b) + PolyL
og[2, (b^(1/3)*(c + d*x))/(b^(1/3)*c + (-1)^(1/3)*a^(1/3)*d)]/(3*b) + PolyL
og[2, (b^(1/3)*(c + d*x))/(b^(1/3)*c - (-1)^(2/3)*a^(1/3)*d)]/(3*b)
```

Maple [C] Result contains higher order function than in optimal. Order 9 vs. order 4.
time = 0.51, size = 77, normalized size = 0.26

method	result	size
derivativedivides	$\frac{\sum_{\_R1=\operatorname{RootOf}\left(b\_Z^3-3cb\_Z^2+3b\,c^2\_Z+a\,d^3-b\,c^3\right)}\left(\ln(dx+c)\ln\left(\frac{-dx+\_R1-c}{\_R1}\right)+\operatorname{dilog}\left(\frac{-dx+\_R1-c}{\_R1}\right)\right)}{3b}$	77
default	$\frac{\sum_{\_R1=\operatorname{RootOf}\left(b\_Z^3-3cb\_Z^2+3b\,c^2\_Z+a\,d^3-b\,c^3\right)}\left(\ln(dx+c)\ln\left(\frac{-dx+\_R1-c}{\_R1}\right)+\operatorname{dilog}\left(\frac{-dx+\_R1-c}{\_R1}\right)\right)}{3b}$	77
risch	$\frac{\sum_{\_R1=\operatorname{RootOf}\left(b\_Z^3-3cb\_Z^2+3b\,c^2\_Z+a\,d^3-b\,c^3\right)}\left(\ln(dx+c)\ln\left(\frac{-dx+\_R1-c}{\_R1}\right)+\operatorname{dilog}\left(\frac{-dx+\_R1-c}{\_R1}\right)\right)}{3b}$	77

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*ln(d*x+c)/(b*x^3+a),x,method=_RETURNVERBOSE)
```

```
[Out] 1/3/b*sum(ln(d*x+c)*ln((-d*x+_R1-c)/_R1)+dilog((-d*x+_R1-c)/_R1),_R1=RootOf
(_Z^3*b-3*_Z^2*b*c+3*_Z*b*c^2+a*d^3-b*c^3))
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*log(d*x+c)/(b*x^3+a),x, algorithm="maxima")
```

```
[Out] integrate(x^2*log(d*x + c)/(b*x^3 + a), x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*log(d*x+c)/(b*x^3+a),x, algorithm="fricas")
[Out] integral(x^2*log(d*x + c)/(b*x^3 + a), x)
```

Sympy [F(-1)] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*ln(d*x+c)/(b*x**3+a),x)
[Out] Timed out
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*log(d*x+c)/(b*x^3+a),x, algorithm="giac")
[Out] integrate(x^2*log(d*x + c)/(b*x^3 + a), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x^2\,\ln\left(c+d\,x\right)}{b\,x^3+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^2*log(c + d*x))/(a + b*x^3),x)
[Out] int((x^2*log(c + d*x))/(a + b*x^3), x)
```

3.285 $\int \frac{\log(c+dx)}{x(a+bx^3)}\,dx$

Optimal. Leaf size=324

$$\frac{\log\left(-\frac{dx}{c}\right)\log(c+dx)}{a}-\frac{\log\left(-\frac{d\left(\sqrt[3]{a}+\sqrt[3]{b}\,x\right)}{\sqrt[3]{b}\,c-\sqrt[3]{a}\,d}\right)\log(c+dx)}{3a}-\frac{\log\left(-\frac{d\left((-1)^{2/3}\sqrt[3]{a}+\sqrt[3]{b}\,x\right)}{\sqrt[3]{b}\,c-(-1)^{2/3}\sqrt[3]{a}\,d}\right)\log(c+dx)}{3a}-\,-\,\text{lo}$$

```
[Out] ln(-d*x/c)*ln(d*x+c)/a-1/3*ln(-d*(a^(1/3)+b^(1/3)*x)/(b^(1/3)*c-a^(1/3)*d))
*ln(d*x+c)/a-1/3*ln(-d*((-1)^(2/3)*a^(1/3)+b^(1/3)*x)/(b^(1/3)*c-(-1)^(2/3)
*a^(1/3)*d))*ln(d*x+c)/a-1/3*ln((-1)^(1/3)*d*(a^(1/3)+(-1)^(2/3)*b^(1/3)*x)
/(b^(1/3)*c+(-1)^(1/3)*a^(1/3)*d))*ln(d*x+c)/a-1/3*polylog(2,b^(1/3)*(d*x+c
)/(b^(1/3)*c-a^(1/3)*d))/a-1/3*polylog(2,b^(1/3)*(d*x+c)/(b^(1/3)*c+(-1)^(1
/3)*a^(1/3)*d))/a-1/3*polylog(2,b^(1/3)*(d*x+c)/(b^(1/3)*c-(-1)^(2/3)*a^(1/
3)*d))/a+polylog(2,1+d*x/c)/a
```

Rubi [A]
time = 0.30, antiderivative size = 324, normalized size of antiderivative = 1.00, number of steps used = 15, number of rules used = 10, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.526$, Rules used = {272, 36, 29, 31, 2463, 2441, 2352, 266, 2440, 2438}

$$-\frac{\text{PolyLog}\left(2,\frac{\sqrt[3]{b}\,(c+dx)}{\sqrt[3]{b}\,c-\sqrt[3]{a}\,d}\right)}{3a}-\frac{\text{PolyLog}\left(2,\frac{\sqrt[3]{b}\,(c+dx)}{\sqrt[3]{-1}\,\sqrt[3]{a}\,d+\sqrt[3]{b}\,c}\right)}{3a}-\frac{\text{PolyLog}\left(2,\frac{\sqrt[3]{b}\,(c+dx)}{\sqrt[3]{b}\,c-(-1)^{2/3}\sqrt[3]{a}\,d}\right)}{3a}+\frac{\text{PolyLog}\left(2,\frac{dx}{c}+1\right)}{a}-\frac{\log(c+dx)\log\left(-\frac{d\left(\sqrt[3]{a}+\sqrt[3]{b}\,x\right)}{\sqrt[3]{b}\,c-\sqrt[3]{a}\,d}\right)}{3a}-\frac{\log(c+dx)\log\left(-\frac{d\left((-1)^{2/3}\sqrt[3]{a}+\sqrt[3]{b}\,x\right)}{\sqrt[3]{b}\,c-(-1)^{2/3}\sqrt[3]{a}\,d}\right)}{3a}-\frac{\log(c+dx)\log\left(\frac{\sqrt[3]{-1}\,d\left(\sqrt[3]{a}+(-1)^{2/3}\sqrt[3]{b}\,x\right)}{\sqrt[3]{-1}\,\sqrt[3]{a}\,d+\sqrt[3]{b}\,c}\right)}{3a}+\frac{\log\left(-\frac{dx}{c}\right)\log(c+dx)}{a}$$

Antiderivative was successfully verified.

```
[In] Int[Log[c + d*x]/(x*(a + b*x^3)),x]
```

```
[Out] (Log[-((d*x)/c)]*Log[c + d*x])/a - (Log[-((d*(a^(1/3) + b^(1/3)*x))/(b^(1/3
)*c - a^(1/3)*d))]*Log[c + d*x])/(3*a) - (Log[-((d*((-1)^(2/3)*a^(1/3) + b^
(1/3)*x))/(b^(1/3)*c - (-1)^(2/3)*a^(1/3)*d))]*Log[c + d*x])/(3*a) - (Log[(
(-1)^(1/3)*d*(a^(1/3) + (-1)^(2/3)*b^(1/3)*x))/(b^(1/3)*c + (-1)^(1/3)*a^(1
/3)*d)]*Log[c + d*x])/(3*a) - PolyLog[2, (b^(1/3)*(c + d*x))/(b^(1/3)*c - a
^(1/3)*d)]/(3*a) - PolyLog[2, (b^(1/3)*(c + d*x))/(b^(1/3)*c + (-1)^(1/3)*a
^(1/3)*d)]/(3*a) - PolyLog[2, (b^(1/3)*(c + d*x))/(b^(1/3)*c - (-1)^(2/3)*a
^(1/3)*d)]/(3*a) + PolyLog[2, 1 + (d*x)/c]/a
```

Rule 29

```
Int[(x_)^(-1), x_Symbol] :> Simp[Log[x], x]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 36

```
Int[1/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))), x_Symbol] :> Dist[b/(b*c
 - a*d), Int[1/(a + b*x), x], x] - Dist[d/(b*c - a*d), Int[1/(c + d*x), x],
 x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0]
```

Rule 266

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 272

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 2352

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> Simp[(-e^(-1))*PolyLo
g[2, 1 - c*x], x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + c*e*(x/g)])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2441

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d + e*x
)^n])/g), x] - Dist[b*e*(n/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2463

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
```

```
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rubi steps

$$\int \frac{\log(c+dx)}{x\left(a+bx^3\right)}\,dx = \int \left(\frac{\log(c+dx)}{ax} - \frac{bx^2\log(c+dx)}{a\left(a+bx^3\right)}\right)dx$$

$$= \frac{\int \frac{\log(c+dx)}{x}\,dx}{a} - \frac{b\int \frac{x^2\log(c+dx)}{a+bx^3}\,dx}{a}$$

$$= \frac{\log\left(-\frac{dx}{c}\right)\log(c+dx)}{a} - \frac{b\int \left(\frac{\log(c+dx)}{3b^{2/3}\left(\sqrt[3]{a}+\sqrt[3]{b}\,x\right)} + \frac{\log(c+dx)}{3b^{2/3}\left(-\sqrt[3]{-1}\,\sqrt[3]{a}+\sqrt[3]{b}\,x\right)} + \frac{\text{lo}}{3b^{2/3}\left((-1)\right.}\right.}{a}$$

$$= \frac{\log\left(-\frac{dx}{c}\right)\log(c+dx)}{a} + \frac{\text{Li}_2\left(1+\frac{dx}{c}\right)}{a} - \frac{\sqrt[3]{b}\int \frac{\log(c+dx)}{\sqrt[3]{a}+\sqrt[3]{b}\,x}\,dx}{3a} - \frac{\sqrt[3]{b}\int \frac{\log(c+dx)}{-\sqrt[3]{-1}\,\sqrt[3]{a}+\sqrt[3]{b}}}{3a}$$

$$= \frac{\log\left(-\frac{dx}{c}\right)\log(c+dx)}{a} - \frac{\log\left(-\frac{d\left(\sqrt[3]{a}+\sqrt[3]{b}\,x\right)}{\sqrt[3]{b}\,c-\sqrt[3]{a}\,d}\right)\log(c+dx)}{3a} - \frac{\log\left(-\frac{d\left((-1)^{2/3}\sqrt[3]{a}+\sqrt{\right.}}{\sqrt[3]{b}\,c-(-1)^{2/3}\sqrt[3]{}}\right.}{3a}$$

$$= \frac{\log\left(-\frac{dx}{c}\right)\log(c+dx)}{a} - \frac{\log\left(-\frac{d\left(\sqrt[3]{a}+\sqrt[3]{b}\,x\right)}{\sqrt[3]{b}\,c-\sqrt[3]{a}\,d}\right)\log(c+dx)}{3a} - \frac{\log\left(-\frac{d\left((-1)^{2/3}\sqrt[3]{a}+\sqrt[3]{}\right.}{\sqrt[3]{b}\,c-(-1)^{2/3}\sqrt[3]{}}\right.}{3a}$$

$$= \frac{\log\left(-\frac{dx}{c}\right)\log(c+dx)}{a} - \frac{\log\left(-\frac{d\left(\sqrt[3]{a}+\sqrt[3]{b}\,x\right)}{\sqrt[3]{b}\,c-\sqrt[3]{a}\,d}\right)\log(c+dx)}{3a} - \frac{\log\left(-\frac{d\left((-1)^{2/3}\sqrt[3]{a}+\sqrt[3]{}\right.}{\sqrt[3]{b}\,c-(-1)^{2/3}\sqrt[3]{}}\right.}{3a}$$

Mathematica [A]
time = 0.07, size = 330, normalized size = 1.02

$$\frac{\log\left(-\frac{dx}{c}\right)\log(c+dx)}{a} - \frac{\log\left(-\frac{d\left(\sqrt[3]{a}+\sqrt[3]{b}\,x\right)}{\sqrt[3]{b}\,c-\sqrt[3]{a}\,d}\right)\log(c+dx)}{3a} - \frac{\log\left(-\frac{(-1)^{2/3}d\left(\sqrt[3]{a}-\sqrt[3]{-1}\,\sqrt[3]{b}\,x\right)}{\sqrt[3]{b}\,c-(-1)^{2/3}\sqrt[3]{a}\,d}\right)\log(c+dx)}{3a} - \frac{\log\left(\frac{\sqrt[3]{-1}\,d\left(\sqrt[3]{a}+(-1)^{2/3}\sqrt[3]{b}\,x\right)}{\sqrt[3]{b}\,c+\sqrt[3]{-1}\,\sqrt[3]{a}\,d}\right)\log(c+dx)}{3a} + \frac{\text{Li}_2\left(\frac{c+dx}{c}\right)}{a} - \frac{\text{Li}_2\left(\frac{\sqrt[3]{b}\,(c+dx)}{\sqrt[3]{b}\,c-\sqrt[3]{a}\,d}\right)}{3a} - \frac{\text{Li}_2\left(\frac{\sqrt[3]{b}\,(c+dx)}{\sqrt[3]{b}\,c+\sqrt[3]{-1}\,\sqrt[3]{a}\,d}\right)}{3a} - \frac{\text{Li}_2\left(\frac{\sqrt[3]{b}\,(c+dx)}{\sqrt[3]{b}\,c-(-1)^{2/3}\sqrt[3]{a}\,d}\right)}{3a}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[c + d*x]/(x*(a + b*x^3)),x]
```

```
[Out] (Log[-((d*x)/c)]*Log[c + d*x])/a - (Log[-((d*(a^(1/3) + b^(1/3)*x))/(b^(1/3
)*c - a^(1/3)*d))]*Log[c + d*x])/(3*a) - (Log[-(((-1)^(2/3)*d*(a^(1/3) - (-
1)^(1/3)*b^(1/3)*x))/(b^(1/3)*c - (-1)^(2/3)*a^(1/3)*d))]*Log[c + d*x])/(3*
```

```
a) - (Log[((-1)^(1/3)*d*(a^(1/3) + (-1)^(2/3)*b^(1/3)*x))/(b^(1/3)*c + (-1)
^(1/3)*a^(1/3)*d)]*Log[c + d*x])/(3*a) + PolyLog[2, (c + d*x)/c]/a - PolyLo
g[2, (b^(1/3)*(c + d*x))/(b^(1/3)*c - a^(1/3)*d)]/(3*a) - PolyLog[2, (b^(1/
3)*(c + d*x))/(b^(1/3)*c + (-1)^(1/3)*a^(1/3)*d)]/(3*a) - PolyLog[2, (b^(1/
3)*(c + d*x))/(b^(1/3)*c - (-1)^(2/3)*a^(1/3)*d)]/(3*a)
```

Maple [C] Result contains higher order function than in optimal. Order 9 vs. order 4.
time = 0.73, size = 106, normalized size = 0.33

method	result
derivativedivides	$-\frac{\sum_{\_R1=\mathrm{RootOf}\left(b\_Z^3-3cb\_Z^2+3bc^2\_Z+a\,d^3-b\,c^3\right)}\left(\ln(dx+c)\ln\left(\frac{-dx+\_R1-c}{\_R1}\right)+\mathrm{dilog}\left(\frac{-dx+\_R1-c}{\_R1}\right)\right)}{3a}+\frac{\mathrm{dilog}}{}$
default	$-\frac{\sum_{\_R1=\mathrm{RootOf}\left(b\_Z^3-3cb\_Z^2+3bc^2\_Z+a\,d^3-b\,c^3\right)}\left(\ln(dx+c)\ln\left(\frac{-dx+\_R1-c}{\_R1}\right)+\mathrm{dilog}\left(\frac{-dx+\_R1-c}{\_R1}\right)\right)}{3a}+\frac{\mathrm{dilog}}{}$
risch	$-\frac{\sum_{\_R1=\mathrm{RootOf}\left(b\_Z^3-3cb\_Z^2+3bc^2\_Z+a\,d^3-b\,c^3\right)}\left(\ln(dx+c)\ln\left(\frac{-dx+\_R1-c}{\_R1}\right)+\mathrm{dilog}\left(\frac{-dx+\_R1-c}{\_R1}\right)\right)}{3a}+\frac{\ln(-}{}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(d*x+c)/x/(b*x^3+a),x,method=_RETURNVERBOSE)
```

```
[Out] -1/3*sum(ln(d*x+c)*ln((-d*x+_R1-c)/_R1)+dilog((-d*x+_R1-c)/_R1),_R1=RootOf(
_Z^3*b-3*_Z^2*b*c+3*_Z*b*c^2+a*d^3-b*c^3))/a+(dilog(-x*d/c)+ln(d*x+c)*ln(-x
*d/c))/a
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(d*x+c)/x/(b*x^3+a),x, algorithm="maxima")
```

```
[Out] integrate(log(d*x + c)/((b*x^3 + a)*x), x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(d*x+c)/x/(b*x^3+a),x, algorithm="fricas")
```

```
[Out] integral(log(d*x + c)/(b*x^4 + a*x), x)
```

Sympy [**F(-1)**] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(d*x+c)/x/(b*x**3+a),x)
```

```
[Out] Timed out
```

Giac [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(d*x+c)/x/(b*x^3+a),x, algorithm="giac")
```

```
[Out] integrate(log(d*x + c)/((b*x^3 + a)*x), x)
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\ln(c+d\,x)}{x\,\left(b\,x^3+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(log(c + d*x)/(x*(a + b*x^3)),x)
```

```
[Out] int(log(c + d*x)/(x*(a + b*x^3)), x)
```

3.286 $\int \frac{\log(c+dx)}{x^4\left(a+bx^3\right)}\,dx$

Optimal. Leaf size=414

$$-\frac{d}{6acx^2}+\frac{d^2}{3ac^2x}+\frac{d^3\log(x)}{3ac^3}-\frac{d^3\log(c+dx)}{3ac^3}-\frac{\log(c+dx)}{3ax^3}-\frac{b\log\left(-\frac{dx}{c}\right)\log(c+dx)}{a^2}+\frac{b\log\left(-\frac{d\left(\sqrt[3]{a}+\sqrt[3]{b}\,x\right)}{\sqrt[3]{b}\,c-\sqrt[3]{a}\,d}\right)}{3a^2}$$

```
[Out] -1/6*d/a/c/x^2+1/3*d^2/a/c^2/x+1/3*d^3*ln(x)/a/c^3-1/3*d^3*ln(d*x+c)/a/c^3-
1/3*ln(d*x+c)/a/x^3-b*ln(-d*x/c)*ln(d*x+c)/a^2+1/3*b*ln(-d*(a^(1/3)+b^(1/3)
*x)/(b^(1/3)*c-a^(1/3)*d))*ln(d*x+c)/a^2+1/3*b*ln(-d*((-1)^(2/3)*a^(1/3)+b^
(1/3)*x)/(b^(1/3)*c-(-1)^(2/3)*a^(1/3)*d))*ln(d*x+c)/a^2+1/3*b*ln((-1)^(1/3
)*d*(a^(1/3)+(-1)^(2/3)*b^(1/3)*x)/(b^(1/3)*c+(-1)^(1/3)*a^(1/3)*d))*ln(d*x
+c)/a^2+1/3*b*polylog(2,b^(1/3)*(d*x+c)/(b^(1/3)*c-a^(1/3)*d))/a^2+1/3*b*po
lylog(2,b^(1/3)*(d*x+c)/(b^(1/3)*c+(-1)^(1/3)*a^(1/3)*d))/a^2+1/3*b*polylog
(2,b^(1/3)*(d*x+c)/(b^(1/3)*c-(-1)^(2/3)*a^(1/3)*d))/a^2-b*polylog(2,1+d*x/
c)/a^2
```

Rubi [A]
time = 0.36, antiderivative size = 414, normalized size of antiderivative = 1.00, number of steps used = 18, number of rules used = 9, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.474$, Rules used = {272, 46, 2463, 2442, 2441, 2352, 266, 2440, 2438}

$$\frac{b\,\text{PolyLog}\left(2,\frac{\sqrt[3]{b}(c+dx)}{\sqrt[3]{b}\,c-\sqrt[3]{a}\,d}\right)}{3a^2}+\frac{b\,\text{PolyLog}\left(2,\frac{\sqrt[3]{b}(c+dx)}{\sqrt[3]{-1}\sqrt[3]{a}\,d+\sqrt[3]{b}\,c}\right)}{3a^2}+\frac{b\,\text{PolyLog}\left(2,\frac{\sqrt[3]{b}(c+dx)}{\sqrt[3]{b}\,c-(-1)^{2/3}\sqrt[3]{a}\,d}\right)}{3a^2}-\frac{b\,\text{PolyLog}\left(2,\frac{dx}{c}+1\right)}{a^2}-\frac{b\log\left(-\frac{dx}{c}\right)\log(c+dx)}{a^2}+\frac{b\log(c+dx)\log\left(-\frac{d\left(\sqrt[3]{a}+\sqrt[3]{b}\,x\right)}{\sqrt[3]{b}\,c-\sqrt[3]{a}\,d}\right)}{3a^2}+\frac{b\log(c+dx)\log\left(-\frac{d\left((-1)^{2/3}\sqrt[3]{a}+\sqrt[3]{b}\,x\right)}{\sqrt[3]{b}\,c-(-1)^{2/3}\sqrt[3]{a}\,d}\right)}{3a^2}+\frac{b\log(c+dx)\log\left(\frac{\sqrt[3]{-1}\,d\left(\sqrt[3]{a}+(-1)^{2/3}\sqrt[3]{b}\,x\right)}{\sqrt[3]{-1}\sqrt[3]{a}\,d+\sqrt[3]{b}\,c}\right)}{3a^2}+\frac{d^3\log(x)}{3ac^3}-\frac{d^3\log(c+dx)}{3ac^3}+\frac{d^2}{3ac^2x}-\frac{\log(c+dx)}{3ax^3}-\frac{d}{6acx^2}$$

Antiderivative was successfully verified.

```
[In] Int[Log[c + d*x]/(x^4*(a + b*x^3)),x]
```

```
[Out] -1/6*d/(a*c*x^2) + d^2/(3*a*c^2*x) + (d^3*Log[x])/(3*a*c^3) - (d^3*Log[c +
d*x])/(3*a*c^3) - Log[c + d*x]/(3*a*x^3) - (b*Log[-((d*x)/c)]*Log[c + d*x])
/a^2 + (b*Log[-((d*(a^(1/3) + b^(1/3)*x))/(b^(1/3)*c - a^(1/3)*d))]*Log[c +
 d*x])/(3*a^2) + (b*Log[-((d*((-1)^(2/3)*a^(1/3) + b^(1/3)*x))/(b^(1/3)*c -
 (-1)^(2/3)*a^(1/3)*d))]*Log[c + d*x])/(3*a^2) + (b*Log[((-1)^(1/3)*d*(a^(1
/3) + (-1)^(2/3)*b^(1/3)*x))/(b^(1/3)*c + (-1)^(1/3)*a^(1/3)*d)]*Log[c + d*
x])/(3*a^2) + (b*PolyLog[2, (b^(1/3)*(c + d*x))/(b^(1/3)*c - a^(1/3)*d)])/(
3*a^2) + (b*PolyLog[2, (b^(1/3)*(c + d*x))/(b^(1/3)*c + (-1)^(1/3)*a^(1/3)*
d)])/(3*a^2) + (b*PolyLog[2, (b^(1/3)*(c + d*x))/(b^(1/3)*c - (-1)^(2/3)*a^
(1/3)*d)])/(3*a^2) - (b*PolyLog[2, 1 + (d*x)/c])/a^2
```

Rule 46

```
Int[((a_) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[E
xpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m +
```

```
n + 2, 0])
```

Rule 266

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 272

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 2352

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> Simp[(-e^(-1))*PolyLo
g[2, 1 - c*x], x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + c*e*(x/g)])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2441

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d + e*x
)^n])/g), x] - Dist[b*e*(n/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2442

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[(f + g*x)^(q + 1)*((a + b*Log[c*(d + e*x)^n])/(
g*(q + 1))), x] - Dist[b*e*(n/(g*(q + 1))), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 2463

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rubi steps

$$\int \frac{\log(c+dx)}{x^4\left(a+bx^3\right)}\,dx = \int \left(\frac{\log(c+dx)}{ax^4} - \frac{b\log(c+dx)}{a^2x} + \frac{b^2x^2\log(c+dx)}{a^2\left(a+bx^3\right)}\right)dx$$

$$= \frac{\int \frac{\log(c+dx)}{x^4}\,dx}{a} - \frac{b\int \frac{\log(c+dx)}{x}\,dx}{a^2} + \frac{b^2\int \frac{x^2\log(c+dx)}{a+bx^3}\,dx}{a^2}$$

$$= -\frac{\log(c+dx)}{3ax^3} - \frac{b\log\left(-\frac{dx}{c}\right)\log(c+dx)}{a^2} + \frac{b^2\int \left(\frac{\log(c+dx)}{3b^{2/3}\left(\sqrt[3]{a}+\sqrt[3]{b}\,x\right)} + \frac{\log(c+dx)}{3b^{2/3}\left(-\sqrt[3]{-1}\,\sqrt[3]{a}+\right.}\right.}{a^2}$$

$$= -\frac{\log(c+dx)}{3ax^3} - \frac{b\log\left(-\frac{dx}{c}\right)\log(c+dx)}{a^2} - \frac{b\text{Li}_2\left(1+\frac{dx}{c}\right)}{a^2} + \frac{b^{4/3}\int \frac{\log(c+dx)}{\sqrt[3]{a}+\sqrt[3]{b}\,x}\,dx}{3a^2} + \frac{b^{4/3}\int}{}$$

$$= -\frac{d}{6acx^2} + \frac{d^2}{3ac^2x} + \frac{d^3\log(x)}{3ac^3} - \frac{d^3\log(c+dx)}{3ac^3} - \frac{\log(c+dx)}{3ax^3} - \frac{b\log\left(-\frac{dx}{c}\right)\log(c+dx)}{a^2}$$

$$= -\frac{d}{6acx^2} + \frac{d^2}{3ac^2x} + \frac{d^3\log(x)}{3ac^3} - \frac{d^3\log(c+dx)}{3ac^3} - \frac{\log(c+dx)}{3ax^3} - \frac{b\log\left(-\frac{dx}{c}\right)\log(c+dx)}{a^2}$$

$$= -\frac{d}{6acx^2} + \frac{d^2}{3ac^2x} + \frac{d^3\log(x)}{3ac^3} - \frac{d^3\log(c+dx)}{3ac^3} - \frac{\log(c+dx)}{3ax^3} - \frac{b\log\left(-\frac{dx}{c}\right)\log(c+dx)}{a^2}$$

<u>Mathematica</u> [A]
time = 0.11, size = 405, normalized size = 0.98

$$-\frac{\log(c+dx)}{3ax^3} - \frac{b\log\left(-\frac{dx}{c}\right)\log(c+dx)}{a^2} + \frac{b\log\left(-\frac{d\left(\sqrt[3]{a}+\sqrt[3]{b}\,x\right)}{\sqrt[3]{b}\,c-\sqrt[3]{a}\,d}\right)\log(c+dx)}{3a^2} + \frac{b\log\left(-\frac{(-1)^{2/3}d\left(\sqrt[3]{a}-\sqrt[3]{-1}\,\sqrt[3]{b}\,x\right)}{\sqrt[3]{b}\,c-(-1)^{2/3}\sqrt[3]{a}\,d}\right)\log(c+dx)}{3a^2} + \frac{b\log\left(\frac{\sqrt[3]{-1}\,d\left(\sqrt[3]{a}+(-1)^{2/3}\sqrt[3]{b}\,x\right)}{\sqrt[3]{b}\,c+\sqrt[3]{-1}\,\sqrt[3]{a}\,d}\right)\log(c+dx)}{3a^2} - \frac{d\left(\frac{1}{cx^2}-\frac{2d}{c^2x}-\frac{2d^2\log(x)}{c^3}+\frac{2d^2\log(c+dx)}{c^3}\right)}{6a} - \frac{b\text{Li}_2\left(\frac{c+dx}{c}\right)}{a^2} + \frac{b\text{Li}_2\left(\frac{\sqrt[3]{b}\,(c+dx)}{\sqrt[3]{b}\,c-\sqrt[3]{a}\,d}\right)}{3a^2} + \frac{b\text{Li}_2\left(\frac{\sqrt[3]{b}\,(c+dx)}{\sqrt[3]{b}\,c+\sqrt[3]{-1}\,\sqrt[3]{a}\,d}\right)}{3a^2} + \frac{b\text{Li}_2\left(\frac{\sqrt[3]{b}\,(c+dx)}{\sqrt[3]{b}\,c-(-1)^{2/3}\sqrt[3]{a}\,d}\right)}{3a^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[c + d*x]/(x^4*(a + b*x^3)),x]
```

```
[Out] -1/3*Log[c + d*x]/(a*x^3) - (b*Log[-((d*x)/c)]*Log[c + d*x])/a^2 + (b*Log[-
((d*(a^(1/3) + b^(1/3)*x))/(b^(1/3)*c - a^(1/3)*d))]*Log[c + d*x])/(3*a^2)
+ (b*Log[-(((-1)^(2/3)*d*(a^(1/3) - (-1)^(1/3)*b^(1/3)*x))/(b^(1/3)*c - (-1
)^(2/3)*a^(1/3)*d))]*Log[c + d*x])/(3*a^2) + (b*Log[((-1)^(1/3)*d*(a^(1/3)
+ (-1)^(2/3)*b^(1/3)*x))/(b^(1/3)*c + (-1)^(1/3)*a^(1/3)*d)]*Log[c + d*x])/
(3*a^2) - (d*(1/(c*x^2) - (2*d)/(c^2*x) - (2*d^2*Log[x])/c^3 + (2*d^2*Log[c
 + d*x])/c^3))/(6*a) - (b*PolyLog[2, (c + d*x)/c])/a^2 + (b*PolyLog[2, (b^(
1/3)*(c + d*x))/(b^(1/3)*c - a^(1/3)*d)])/(3*a^2) + (b*PolyLog[2, (b^(1/3)*
(c + d*x))/(b^(1/3)*c + (-1)^(1/3)*a^(1/3)*d)])/(3*a^2) + (b*PolyLog[2, (b^
(1/3)*(c + d*x))/(b^(1/3)*c - (-1)^(2/3)*a^(1/3)*d)])/(3*a^2)
```

Maple [C] Result contains higher order function than in optimal. Order 9 vs. order 4.
time = 0.77, size = 199, normalized size = 0.48

method	result
risch	$-\frac{d}{6ac\,x^2}+\frac{d^2}{3a\,c^2x}+\frac{d^3\ln(-dx)}{3a\,c^3}-\frac{d^3\ln(dx+c)}{3a\,c^3}-\frac{\ln(dx+c)}{3x^3a}+\frac{b\left(\sum_{\_R1=\mathrm{RootOf}\left(b\_Z^3-3cb\_Z^2+3b\,c^2\_Z+a\,d^3-\right.}\right.}{}$
derivativedivides	$d^3\left(\frac{-\frac{1}{6c\,d^2x^2}+\frac{1}{3c^2dx}+\frac{\ln(-dx)}{3c^3}-\frac{\ln(dx+c)(dx+c)\left(3c^2-3c(dx+c)+(dx+c)^2\right)}{3c^3d^3x^3}}{a}+\frac{b\left(\sum_{\_R1=\mathrm{RootOf}\left(b\_Z^3-3cb\_Z^2+3b\,c^2\_\right.}\right.}{}\right.$
default	$d^3\left(\frac{-\frac{1}{6c\,d^2x^2}+\frac{1}{3c^2dx}+\frac{\ln(-dx)}{3c^3}-\frac{\ln(dx+c)(dx+c)\left(3c^2-3c(dx+c)+(dx+c)^2\right)}{3c^3d^3x^3}}{a}+\frac{b\left(\sum_{\_R1=\mathrm{RootOf}\left(b\_Z^3-3cb\_Z^2+3b\,c^2\_\right.}\right.}{}\right.$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(d*x+c)/x^4/(b*x^3+a),x,method=_RETURNVERBOSE)
```

```
[Out] d^3*((-1/6/c/d^2/x^2+1/3/c^2/d/x+1/3/c^3*ln(-d*x)-1/3*ln(d*x+c)*(d*x+c)*(3*
c^2-3*c*(d*x+c)+(d*x+c)^2)/c^3/d^3/x^3)/a+1/3*b*sum(ln(d*x+c)*ln((-d*x+_R1-
c)/_R1)+dilog((-d*x+_R1-c)/_R1),_R1=RootOf(_Z^3*b-3*_Z^2*b*c+3*_Z*b*c^2+a*d
^3-b*c^3))/a^2/d^3-(dilog(-x*d/c)+ln(d*x+c)*ln(-x*d/c))/a^2/d^3*b)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(d*x+c)/x^4/(b*x^3+a),x, algorithm="maxima")
```

```
[Out] integrate(log(d*x + c)/((b*x^3 + a)*x^4), x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(d*x+c)/x^4/(b*x^3+a),x, algorithm="fricas")
```

```
[Out] integral(log(d*x + c)/(b*x^7 + a*x^4), x)
```

Sympy [F(-1)] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(d*x+c)/x**4/(b*x**3+a),x)
```

```
[Out] Timed out
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(d*x+c)/x^4/(b*x^3+a),x, algorithm="giac")
```

```
[Out] integrate(log(d*x + c)/((b*x^3 + a)*x^4), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\ln (c+d\,x)}{x^4\,\left(b\,x^3+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(log(c + d*x)/(x^4*(a + b*x^3)),x)
```

```
[Out] int(log(c + d*x)/(x^4*(a + b*x^3)), x)
```

3.287 $\int \frac{x^4 \log(c+dx)}{a+bx^3} \, dx$

Optimal. Leaf size=416

$$\frac{cx}{2bd}-\frac{x^2}{4b}-\frac{c^2\log(c+dx)}{2bd^2}+\frac{x^2\log(c+dx)}{2b}+\frac{a^{2/3}\log\left(-\frac{d\left(\sqrt[3]{a}+\sqrt[3]{b}\,x\right)}{\sqrt[3]{b}\,c-\sqrt[3]{a}\,d}\right)\log(c+dx)}{3b^{5/3}}-\frac{\sqrt[3]{-1}\,a^{2/3}\log\left(\frac{d\left(\sqrt[3]{a}\right.}{\sqrt[3]{-1}}\right.}{}$$

```
[Out] 1/2*c*x/b/d-1/4*x^2/b-1/2*c^2*ln(d*x+c)/b/d^2+1/2*x^2*ln(d*x+c)/b+1/3*a^(2/
3)*ln(-d*(a^(1/3)+b^(1/3)*x)/(b^(1/3)*c-a^(1/3)*d))*ln(d*x+c)/b^(5/3)-1/3*(
-1)^(1/3)*a^(2/3)*ln(d*(a^(1/3)-(-1)^(1/3)*b^(1/3)*x)/((-1)^(1/3)*b^(1/3)*c
+a^(1/3)*d))*ln(d*x+c)/b^(5/3)+1/3*(-1)^(2/3)*a^(2/3)*ln(-d*(a^(1/3)+(-1)^(
2/3)*b^(1/3)*x)/((-1)^(2/3)*b^(1/3)*c-a^(1/3)*d))*ln(d*x+c)/b^(5/3)+1/3*a^(
2/3)*polylog(2,b^(1/3)*(d*x+c)/(b^(1/3)*c-a^(1/3)*d))/b^(5/3)+1/3*(-1)^(2/3
)*a^(2/3)*polylog(2,(-1)^(2/3)*b^(1/3)*(d*x+c)/((-1)^(2/3)*b^(1/3)*c-a^(1/3
)*d))/b^(5/3)-1/3*(-1)^(1/3)*a^(2/3)*polylog(2,(-1)^(1/3)*b^(1/3)*(d*x+c)/(
(-1)^(1/3)*b^(1/3)*c+a^(1/3)*d))/b^(5/3)
```

Rubi [A]

time = 0.48, antiderivative size = 416, normalized size of antiderivative = 1.00, number of steps used = 16, number of rules used = 13, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.684$, Rules used = {327, 298, 31, 648, 631, 210, 642, 2463, 2442, 45, 2441, 2440, 2438}

$$\frac{a^{2/3}\text{PolyLog}\left(2,\frac{\sqrt[3]{b}\,(c+dx)}{\sqrt[3]{b}\,c-\sqrt[3]{a}\,d}\right)}{3b^{5/3}}+\frac{(-1)^{2/3}a^{2/3}\text{PolyLog}\left(2,\frac{(-1)^{2/3}\sqrt[3]{b}\,(c+dx)}{(-1)^{2/3}\sqrt[3]{b}\,c-\sqrt[3]{a}\,d}\right)}{3b^{5/3}}-\frac{\sqrt[3]{-1}\,a^{2/3}\text{PolyLog}\left(2,\frac{\sqrt[3]{-1}\,\sqrt[3]{b}\,(c+dx)}{\sqrt[3]{a}\,d+\sqrt[3]{-1}\,\sqrt[3]{b}\,c}\right)}{3b^{5/3}}+\frac{a^{2/3}\log(c+dx)\log\left(-\frac{d\left(\sqrt[3]{a}+\sqrt[3]{b}\,x\right)}{\sqrt[3]{b}\,c-\sqrt[3]{a}\,d}\right)}{3b^{5/3}}-\frac{\sqrt[3]{-1}\,a^{2/3}\log(c+dx)\log\left(\frac{d\left(\sqrt[3]{a}-\sqrt[3]{-1}\,\sqrt[3]{b}\,x\right)}{\sqrt[3]{a}\,d+\sqrt[3]{-1}\,\sqrt[3]{b}\,c}\right)}{3b^{5/3}}+\frac{(-1)^{2/3}a^{2/3}\log(c+dx)\log\left(-\frac{d\left(\sqrt[3]{a}+(-1)^{2/3}\sqrt[3]{b}\,x\right)}{(-1)^{2/3}\sqrt[3]{b}\,c-\sqrt[3]{a}\,d}\right)}{3b^{5/3}}-\frac{c^2\log(c+dx)}{2bd^2}+\frac{x^2\log(c+dx)}{2b}+\frac{cx}{2bd}-\frac{x^2}{4b}$$

Antiderivative was successfully verified.

```
[In] Int[(x^4*Log[c + d*x])/(a + b*x^3),x]
```

```
[Out] (c*x)/(2*b*d) - x^2/(4*b) - (c^2*Log[c + d*x])/(2*b*d^2) + (x^2*Log[c + d*x
])/(2*b) + (a^(2/3)*Log[-((d*(a^(1/3) + b^(1/3)*x))/(b^(1/3)*c - a^(1/3)*d)
)]*Log[c + d*x])/(3*b^(5/3)) - ((-1)^(1/3)*a^(2/3)*Log[(d*(a^(1/3) - (-1)^(
1/3)*b^(1/3)*x))/((-1)^(1/3)*b^(1/3)*c + a^(1/3)*d)]*Log[c + d*x])/(3*b^(5/
3)) + ((-1)^(2/3)*a^(2/3)*Log[-((d*(a^(1/3) + (-1)^(2/3)*b^(1/3)*x))/((-1)^
(2/3)*b^(1/3)*c - a^(1/3)*d))]*Log[c + d*x])/(3*b^(5/3)) + (a^(2/3)*PolyLog
[2, (b^(1/3)*(c + d*x))/(b^(1/3)*c - a^(1/3)*d)])/(3*b^(5/3)) + ((-1)^(2/3)
*a^(2/3)*PolyLog[2, ((-1)^(2/3)*b^(1/3)*(c + d*x))/((-1)^(2/3)*b^(1/3)*c -
a^(1/3)*d)])/(3*b^(5/3)) - ((-1)^(1/3)*a^(2/3)*PolyLog[2, ((-1)^(1/3)*b^(1/
3)*(c + d*x))/((-1)^(1/3)*b^(1/3)*c + a^(1/3)*d)])/(3*b^(5/3))
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 210

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(-(Rt[-a, 2]*Rt[-b, 2])^(
-1))*ArcTan[Rt[-b, 2]*(x/Rt[-a, 2])], x] /; FreeQ[{a, b}, x] && PosQ[a/b] &
& (LtQ[a, 0] || LtQ[b, 0])
```

Rule 298

```
Int[(x_)/((a_) + (b_.)*(x_)^3), x_Symbol] :> Dist[-(3*Rt[a, 3]*Rt[b, 3])^(-
1), Int[1/(Rt[a, 3] + Rt[b, 3]*x), x], x] + Dist[1/(3*Rt[a, 3]*Rt[b, 3]), I
nt[(Rt[a, 3] + Rt[b, 3]*x)/(Rt[a, 3]^2 - Rt[a, 3]*Rt[b, 3]*x + Rt[b, 3]^2*x
^2), x], x] /; FreeQ[{a, b}, x]
```

Rule 327

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[c^(n
 - 1)*(c*x)^(m - n + 1)*((a + b*x^n)^(p + 1)/(b*(m + n*p + 1))), x] - Dist[
a*c^n*((m - n + 1)/(b*(m + n*p + 1))), Int[(c*x)^(m - n)*(a + b*x^n)^p, x],
 x] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && GtQ[m, n - 1] && NeQ[m + n*p
 + 1, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 631

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[a*(c/b^2)]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + 2*c*(x/b)
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 642

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[d*(Log[RemoveContent[a + b*x + c*x^2, x]]/b), x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 648

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> D
ist[(2*c*d - b*e)/(2*c), Int[1/(a + b*x + c*x^2), x], x] + Dist[e/(2*c), In
t[(b + 2*c*x)/(a + b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ
```

```
[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] &&  !NiceSqrtQ[b^2 - 4*a*c]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + c*e*(x/g)])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2441

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d + e*x
)^n])/g), x] - Dist[b*e*(n/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2442

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[(f + g*x)^(q + 1)*((a + b*Log[c*(d + e*x)^n])/(
g*(q + 1))), x] - Dist[b*e*(n/(g*(q + 1))), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 2463

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rubi steps

$$\int \frac{x^4 \log(c+dx)}{a+bx^3}\,dx = \int \left(\frac{x\log(c+dx)}{b} - \frac{ax\log(c+dx)}{b\,(a+bx^3)}\right)\,dx$$

$$= \frac{\int x\log(c+dx)\,dx}{b} - \frac{a\int \frac{x\log(c+dx)}{a+bx^3}\,dx}{b}$$

$$= \frac{x^2\log(c+dx)}{2b} - \frac{a\int \left(-\frac{\log(c+dx)}{3\sqrt[3]{a}\,\sqrt[3]{b}\left(\sqrt[3]{a}+\sqrt[3]{b}\,x\right)} - \frac{(-1)^{2/3}\log(c+dx)}{3\sqrt[3]{a}\,\sqrt[3]{b}\left(\sqrt[3]{a}-\sqrt[3]{-1}\,\sqrt[3]{b}\,x\right)} + \frac{}{3\sqrt[3]{a}}\right.}{b}$$

$$= \frac{x^2\log(c+dx)}{2b} + \frac{a^{2/3}\int \frac{\log(c+dx)}{\sqrt[3]{a}+\sqrt[3]{b}\,x}\,dx}{3b^{4/3}} - \frac{\left(\sqrt[3]{-1}\,a^{2/3}\right)\int \frac{\log(c+dx)}{\sqrt[3]{a}+(-1)^{2/3}\sqrt[3]{b}\,x}\,dx}{3b^{4/3}} + \frac{((-1)^2}{}$$

$$= \frac{cx}{2bd} - \frac{x^2}{4b} - \frac{c^2\log(c+dx)}{2bd^2} + \frac{x^2\log(c+dx)}{2b} + \frac{a^{2/3}\log\left(-\frac{d\left(\sqrt[3]{a}+\sqrt[3]{b}\,x\right)}{\sqrt[3]{b}\,c-\sqrt[3]{a}\,d}\right)\log(c+dx}{3b^{5/3}}$$

$$= \frac{cx}{2bd} - \frac{x^2}{4b} - \frac{c^2\log(c+dx)}{2bd^2} + \frac{x^2\log(c+dx)}{2b} + \frac{a^{2/3}\log\left(-\frac{d\left(\sqrt[3]{a}+\sqrt[3]{b}\,x\right)}{\sqrt[3]{b}\,c-\sqrt[3]{a}\,d}\right)\log(c+dx}{3b^{5/3}}$$

$$= \frac{cx}{2bd} - \frac{x^2}{4b} - \frac{c^2\log(c+dx)}{2bd^2} + \frac{x^2\log(c+dx)}{2b} + \frac{a^{2/3}\log\left(-\frac{d\left(\sqrt[3]{a}+\sqrt[3]{b}\,x\right)}{\sqrt[3]{b}\,c-\sqrt[3]{a}\,d}\right)\log(c+dx}{3b^{5/3}}$$

Mathematica [A]
time = 0.23, size = 403, normalized size = 0.97

$$\frac{6b^{2/3}cdx - 3b^{2/3}d^2x^2 - 6b^{2/3}c^2\log(c+dx) + 6b^{2/3}d^2x^2\log(c+dx) + 4a^{2/3}d^2\log\left(\frac{d\left(\sqrt[3]{a}+\sqrt[3]{b}\,x\right)}{-\sqrt[3]{b}\,c+\sqrt[3]{a}\,d}\right)\log(c+dx) - 4\sqrt[3]{-1}\,a^{2/3}d^2\log\left(\frac{d\left(\sqrt[3]{a}-\sqrt[3]{-1}\,\sqrt[3]{b}\,x\right)}{\sqrt[3]{-1}\,\sqrt[3]{b}\,c+\sqrt[3]{a}\,d}\right)\log(c+dx) + 4(-1)^{2/3}a^{2/3}d^2\log\left(\frac{d\left(\sqrt[3]{a}+(-1)^{2/3}\sqrt[3]{b}\,x\right)}{-(-1)^{2/3}\sqrt[3]{b}\,c+\sqrt[3]{a}\,d}\right)\log(c+dx) + 4a^{2/3}d^2\mathrm{Li}_2\left(\frac{\sqrt[3]{b}\,(c+dx)}{\sqrt[3]{b}\,c-\sqrt[3]{a}\,d}\right) + 4(-1)^{2/3}a^{2/3}d^2\mathrm{Li}_2\left(\frac{(-1)^{2/3}\sqrt[3]{b}\,(c+dx)}{(-1)^{2/3}\sqrt[3]{b}\,c-\sqrt[3]{a}\,d}\right) - 4\sqrt[3]{-1}\,a^{2/3}d^2\mathrm{Li}_2\left(\frac{\sqrt[3]{-1}\,\sqrt[3]{b}\,(c+dx)}{\sqrt[3]{-1}\,\sqrt[3]{b}\,c+\sqrt[3]{a}\,d}\right)}{12b^{5/3}d^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^4*Log[c + d*x])/(a + b*x^3),x]
```

```
[Out] (6*b^(2/3)*c*d*x - 3*b^(2/3)*d^2*x^2 - 6*b^(2/3)*c^2*Log[c + d*x] + 6*b^(2/
3)*d^2*x^2*Log[c + d*x] + 4*a^(2/3)*d^2*Log[(d*(a^(1/3) + b^(1/3)*x))/(-(b^
(1/3)*c) + a^(1/3)*d)]*Log[c + d*x] - 4*(-1)^(1/3)*a^(2/3)*d^2*Log[(d*(a^(1
/3) - (-1)^(1/3)*b^(1/3)*x))/((-1)^(1/3)*b^(1/3)*c + a^(1/3)*d)]*Log[c + d*
x] + 4*(-1)^(2/3)*a^(2/3)*d^2*Log[(d*(a^(1/3) + (-1)^(2/3)*b^(1/3)*x))/(-((
-1)^(2/3)*b^(1/3)*c) + a^(1/3)*d)]*Log[c + d*x] + 4*a^(2/3)*d^2*PolyLog[2,
(b^(1/3)*(c + d*x))/(b^(1/3)*c - a^(1/3)*d)] + 4*(-1)^(2/3)*a^(2/3)*d^2*Pol
```

```
yLog[2, ((-1)^(2/3)*b^(1/3)*(c + d*x))/((-1)^(2/3)*b^(1/3)*c - a^(1/3)*d)]
- 4*(-1)^(1/3)*a^(2/3)*d^2*PolyLog[2, ((-1)^(1/3)*b^(1/3)*(c + d*x))/((-1)^
(1/3)*b^(1/3)*c + a^(1/3)*d)])/(12*b^(5/3)*d^2)
```

Maple [C] Result contains higher order function than in optimal. Order 9 vs. order 4.
time = 0.49, size = 149, normalized size = 0.36

method	result
risch	$\frac{x^2\ln(dx+c)}{2b}-\frac{c^2\ln(dx+c)}{2b\,d^2}-\frac{x^2}{4b}+\frac{cx}{2bd}+\frac{3c^2}{4d^2b}+\frac{d\left(\sum_{\_R1=\mathrm{RootOf}\left(b\_Z^3-3cb\_Z^2+3b\,c^2\_Z+a\,d^3-b\,c^3\right)}\frac{\ln(dx+c)}{}\right.}{3b^2}$
derivativedivides	$\frac{-\frac{\left(-\frac{(dx+c)^2\ln(dx+c)}{2}+\frac{(dx+c)^2}{4}+c((dx+c)\ln(dx+c)-dx-c)\right)d^3}{b}+\frac{\left(\sum_{\_R1=\mathrm{RootOf}\left(b\_Z^3-3cb\_Z^2+3b\,c^2\_Z+a\,d^3-b\,c^3\right)}\frac{\ln(dx}{}\right.}{3b^2}}{d^5}$
default	$\frac{-\frac{\left(-\frac{(dx+c)^2\ln(dx+c)}{2}+\frac{(dx+c)^2}{4}+c((dx+c)\ln(dx+c)-dx-c)\right)d^3}{b}+\frac{\left(\sum_{\_R1=\mathrm{RootOf}\left(b\_Z^3-3cb\_Z^2+3b\,c^2\_Z+a\,d^3-b\,c^3\right)}\frac{\ln(dx}{}\right.}{3b^2}}{d^5}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*ln(d*x+c)/(b*x^3+a),x,method=_RETURNVERBOSE)
```

```
[Out] 1/d^5*(-(-1/2*(d*x+c)^2*ln(d*x+c)+1/4*(d*x+c)^2+c*((d*x+c)*ln(d*x+c)-d*x-c)
)*d^3/b+1/3/b^2*sum(1/(-_R1+c)*(ln(d*x+c)*ln((-d*x+_R1-c)/_R1)+dilog((-d*x+
_R1-c)/_R1)),_R1=RootOf(_Z^3*b-3*_Z^2*b*c+3*_Z*b*c^2+a*d^3-b*c^3))*a*d^6)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*log(d*x+c)/(b*x^3+a),x, algorithm="maxima")
```

```
[Out] integrate(x^4*log(d*x + c)/(b*x^3 + a), x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*log(d*x+c)/(b*x^3+a),x, algorithm="fricas")
```

```
[Out] integral(x^4*log(d*x + c)/(b*x^3 + a), x)
```

Sympy [**F(-1)**] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**4*ln(d*x+c)/(b*x**3+a),x)
```

```
[Out] Timed out
```

Giac [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*log(d*x+c)/(b*x^3+a),x, algorithm="giac")
```

```
[Out] integrate(x^4*log(d*x + c)/(b*x^3 + a), x)
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x^4\,\ln\left(c+d\,x\right)}{b\,x^3+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^4*log(c + d*x))/(a + b*x^3),x)
```

```
[Out] int((x^4*log(c + d*x))/(a + b*x^3), x)
```

3.288 $\int \frac{x^3 \log(c+dx)}{a+bx^3} \, dx$

Optimal. Leaf size=383

$$-\frac{x}{b}+\frac{(c+dx)\log(c+dx)}{bd}-\frac{\sqrt[3]{a}\log\left(-\frac{d\left(\sqrt[3]{a}+\sqrt[3]{b}x\right)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right)\log(c+dx)}{3b^{4/3}}-\frac{(-1)^{2/3}\sqrt[3]{a}\log\left(\frac{d\left(\sqrt[3]{a}-\sqrt[3]{-1}\sqrt[3]{b}x\right)}{\sqrt[3]{-1}\sqrt[3]{b}c+\sqrt[3]{a}d}\right.}{3b^{4/3}}$$

```
[Out] -x/b+(d*x+c)*ln(d*x+c)/b/d-1/3*a^(1/3)*ln(-d*(a^(1/3)+b^(1/3)*x)/(b^(1/3)*c
-a^(1/3)*d))*ln(d*x+c)/b^(4/3)-1/3*(-1)^(2/3)*a^(1/3)*ln(d*(a^(1/3)-(-1)^(1
/3)*b^(1/3)*x)/((-1)^(1/3)*b^(1/3)*c+a^(1/3)*d))*ln(d*x+c)/b^(4/3)+1/3*(-1)
^(1/3)*a^(1/3)*ln(-d*(a^(1/3)+(-1)^(2/3)*b^(1/3)*x)/((-1)^(2/3)*b^(1/3)*c-a
^(1/3)*d))*ln(d*x+c)/b^(4/3)-1/3*a^(1/3)*polylog(2,b^(1/3)*(d*x+c)/(b^(1/3)
*c-a^(1/3)*d))/b^(4/3)+1/3*(-1)^(1/3)*a^(1/3)*polylog(2,(-1)^(2/3)*b^(1/3)*
(d*x+c)/((-1)^(2/3)*b^(1/3)*c-a^(1/3)*d))/b^(4/3)-1/3*(-1)^(2/3)*a^(1/3)*po
lylog(2,(-1)^(1/3)*b^(1/3)*(d*x+c)/((-1)^(1/3)*b^(1/3)*c+a^(1/3)*d))/b^(4/3
)
```

Rubi [A]

time = 0.32, antiderivative size = 383, normalized size of antiderivative = 1.00, number of steps used = 15, number of rules used = 14, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.737$, Rules used = {327, 206, 31, 648, 631, 210, 642, 2463, 2436, 2332, 2456, 2441, 2440, 2438}

$$-\frac{\sqrt[3]{a}\,\text{PolyLog}\left(2,\frac{\sqrt[3]{b}(c+dx)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right)}{3b^{4/3}}+\frac{\sqrt[3]{-1}\sqrt[3]{a}\,\text{PolyLog}\left(2,\frac{(-1)^{2/3}\sqrt[3]{b}(c+dx)}{(-1)^{2/3}\sqrt[3]{b}c-\sqrt[3]{a}d}\right)}{3b^{4/3}}-\frac{(-1)^{2/3}\sqrt[3]{a}\,\text{PolyLog}\left(2,\frac{\sqrt[3]{-1}\sqrt[3]{b}(c+dx)}{\sqrt[3]{a}d+\sqrt[3]{-1}\sqrt[3]{b}c}\right)}{3b^{4/3}}-\frac{\sqrt[3]{a}\log(c+dx)\log\left(-\frac{d\left(\sqrt[3]{a}+\sqrt[3]{b}x\right)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right)}{3b^{4/3}}-\frac{(-1)^{2/3}\sqrt[3]{a}\log(c+dx)\log\left(\frac{d\left(\sqrt[3]{a}-\sqrt[3]{-1}\sqrt[3]{b}x\right)}{\sqrt[3]{a}d+\sqrt[3]{-1}\sqrt[3]{b}c}\right)}{3b^{4/3}}+\frac{\sqrt[3]{-1}\sqrt[3]{a}\log(c+dx)\log\left(-\frac{d\left(\sqrt[3]{a}+(-1)^{2/3}\sqrt[3]{b}x\right)}{(-1)^{2/3}\sqrt[3]{b}c-\sqrt[3]{a}d}\right)}{3b^{4/3}}+\frac{(c+dx)\log(c+dx)}{bd}-\frac{x}{b}$$

Antiderivative was successfully verified.

```
[In] Int[(x^3*Log[c + d*x])/(a + b*x^3),x]
```

```
[Out] -(x/b) + ((c + d*x)*Log[c + d*x])/(b*d) - (a^(1/3)*Log[-((d*(a^(1/3) + b^(1
/3)*x))/(b^(1/3)*c - a^(1/3)*d))]*Log[c + d*x])/(3*b^(4/3)) - ((-1)^(2/3)*a
^(1/3)*Log[(d*(a^(1/3) - (-1)^(1/3)*b^(1/3)*x))/((-1)^(1/3)*b^(1/3)*c + a^(
1/3)*d)]*Log[c + d*x])/(3*b^(4/3)) + ((-1)^(1/3)*a^(1/3)*Log[-((d*(a^(1/3)
+ (-1)^(2/3)*b^(1/3)*x))/((-1)^(2/3)*b^(1/3)*c - a^(1/3)*d))]*Log[c + d*x])
/(3*b^(4/3)) - (a^(1/3)*PolyLog[2, (b^(1/3)*(c + d*x))/(b^(1/3)*c - a^(1/3)
*d)])/(3*b^(4/3)) + ((-1)^(1/3)*a^(1/3)*PolyLog[2, ((-1)^(2/3)*b^(1/3)*(c +
 d*x))/((-1)^(2/3)*b^(1/3)*c - a^(1/3)*d)])/(3*b^(4/3)) - ((-1)^(2/3)*a^(1/
3)*PolyLog[2, ((-1)^(1/3)*b^(1/3)*(c + d*x))/((-1)^(1/3)*b^(1/3)*c + a^(1/3
)*d)])/(3*b^(4/3))
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^3)^(-1), x_Symbol] :> Dist[1/(3*Rt[a, 3]^2), Int[1/(
Rt[a, 3] + Rt[b, 3]*x), x], x] + Dist[1/(3*Rt[a, 3]^2), Int[(2*Rt[a, 3] - R
t[b, 3]*x)/(Rt[a, 3]^2 - Rt[a, 3]*Rt[b, 3]*x + Rt[b, 3]^2*x^2), x], x] /; F
reeQ[{a, b}, x]
```

Rule 210

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(-(Rt[-a, 2]*Rt[-b, 2])^(
-1))*ArcTan[Rt[-b, 2]*(x/Rt[-a, 2])], x] /; FreeQ[{a, b}, x] && PosQ[a/b] &
& (LtQ[a, 0] || LtQ[b, 0])
```

Rule 327

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[c^(n
 - 1)*(c*x)^(m - n + 1)*((a + b*x^n)^(p + 1)/(b*(m + n*p + 1))), x] - Dist[
a*c^n*((m - n + 1)/(b*(m + n*p + 1))), Int[(c*x)^(m - n)*(a + b*x^n)^p, x],
 x] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && GtQ[m, n - 1] && NeQ[m + n*p
 + 1, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 631

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[a*(c/b^2)]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + 2*c*(x/b)
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 642

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[d*(Log[RemoveContent[a + b*x + c*x^2, x]]/b), x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 648

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> D
ist[(2*c*d - b*e)/(2*c), Int[1/(a + b*x + c*x^2), x], x] + Dist[e/(2*c), In
t[(b + 2*c*x)/(a + b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ
[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] &&  !NiceSqrtQ[b^2 - 4*a*c]
```

Rule 2332

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2436

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + c*e*(x/g)])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2441

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d + e*x
)^n])/g), x] - Dist[b*e*(n/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2456

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_)^(r_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a + b*Log[c*(d + e*x)
^n])^p, (f + g*x^r)^q, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, r}, x] && I
GtQ[p, 0] && IntegerQ[q] && (GtQ[q, 0] || (IntegerQ[r] && NeQ[r, 1]))
```

Rule 2463

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rubi steps

$$\int \frac{x^3 \log(c+dx)}{a+bx^3}\,dx = \int \left(\frac{\log(c+dx)}{b} - \frac{a\log(c+dx)}{b\,(a+bx^3)}\right)\,dx$$

$$= \frac{\int \log(c+dx)\,dx}{b} - \frac{a\int \frac{\log(c+dx)}{a+bx^3}\,dx}{b}$$

$$= -\frac{a\int \left(-\frac{\log(c+dx)}{3a^{2/3}\left(-\sqrt[3]{a}-\sqrt[3]{b}\,x\right)} - \frac{\log(c+dx)}{3a^{2/3}\left(-\sqrt[3]{a}+\sqrt[3]{-1}\,\sqrt[3]{b}\,x\right)} - \frac{\log(c+dx)}{3a^{2/3}\left(-\sqrt[3]{a}-(-1)^{2/3}\sqrt[3]{b}\,x\right)}\right)}{b}$$

$$= -\frac{x}{b} + \frac{(c+dx)\log(c+dx)}{bd} + \frac{\sqrt[3]{a}\int \frac{\log(c+dx)}{-\sqrt[3]{a}-\sqrt[3]{b}\,x}\,dx}{3b} + \frac{\sqrt[3]{a}\int \frac{\log(c+dx)}{-\sqrt[3]{a}+\sqrt[3]{-1}\,\sqrt[3]{b}\,x}\,dx}{3b} +$$

$$= -\frac{x}{b} + \frac{(c+dx)\log(c+dx)}{bd} - \frac{\sqrt[3]{a}\log\left(-\frac{d\left(\sqrt[3]{a}+\sqrt[3]{b}\,x\right)}{\sqrt[3]{b}\,c-\sqrt[3]{a}\,d}\right)\log(c+dx)}{3b^{4/3}} - \frac{(-1)^{2/3}\sqrt[3]{a}}{}$$

$$= -\frac{x}{b} + \frac{(c+dx)\log(c+dx)}{bd} - \frac{\sqrt[3]{a}\log\left(-\frac{d\left(\sqrt[3]{a}+\sqrt[3]{b}\,x\right)}{\sqrt[3]{b}\,c-\sqrt[3]{a}\,d}\right)\log(c+dx)}{3b^{4/3}} - \frac{(-1)^{2/3}\sqrt[3]{a}}{}$$

$$= -\frac{x}{b} + \frac{(c+dx)\log(c+dx)}{bd} - \frac{\sqrt[3]{a}\log\left(-\frac{d\left(\sqrt[3]{a}+\sqrt[3]{b}\,x\right)}{\sqrt[3]{b}\,c-\sqrt[3]{a}\,d}\right)\log(c+dx)}{3b^{4/3}} - \frac{(-1)^{2/3}\sqrt[3]{a}}{}$$

Mathematica [A]

time = 0.10, size = 369, normalized size = 0.96

$$\frac{-3\sqrt[3]{b}\,dx + 3\sqrt[3]{b}\,c\log(c+dx) + 3\sqrt[3]{b}\,dx\log(c+dx) - \sqrt[3]{a}\,d\log\left(\frac{d\left(\sqrt[3]{a}+\sqrt[3]{b}\,x\right)}{-\sqrt[3]{b}\,c+\sqrt[3]{a}\,d}\right)\log(c+dx) - (-1)^{2/3}\sqrt[3]{a}\,d\log\left(\frac{d\left(\sqrt[3]{a}-\sqrt[3]{-1}\,\sqrt[3]{b}\,x\right)}{\sqrt[3]{-1}\,\sqrt[3]{b}\,c+\sqrt[3]{a}\,d}\right)\log(c+dx) + \sqrt[3]{-1}\,\sqrt[3]{a}\,d\log\left(\frac{d\left(\sqrt[3]{a}+(-1)^{2/3}\sqrt[3]{b}\,x\right)}{-(-1)^{2/3}\sqrt[3]{b}\,c+\sqrt[3]{a}\,d}\right)\log(c+dx) - \sqrt[3]{a}\,d\,\mathrm{Li}_2\left(\frac{\sqrt[3]{b}\,(c+dx)}{\sqrt[3]{b}\,c-\sqrt[3]{a}\,d}\right) + \sqrt[3]{-1}\,\sqrt[3]{a}\,d\,\mathrm{Li}_2\left(\frac{(-1)^{2/3}\sqrt[3]{b}\,(c+dx)}{(-1)^{2/3}\sqrt[3]{b}\,c-\sqrt[3]{a}\,d}\right) - (-1)^{2/3}\sqrt[3]{a}\,d\,\mathrm{Li}_2\left(\frac{\sqrt[3]{-1}\,\sqrt[3]{b}\,(c+dx)}{\sqrt[3]{-1}\,\sqrt[3]{b}\,c+\sqrt[3]{a}\,d}\right)}{3b^{4/3}d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^3*Log[c + d*x])/(a + b*x^3),x]
```

```
[Out] (-3*b^(1/3)*d*x + 3*b^(1/3)*c*Log[c + d*x] + 3*b^(1/3)*d*x*Log[c + d*x] - a
^(1/3)*d*Log[(d*(a^(1/3) + b^(1/3)*x))/(-(b^(1/3)*c) + a^(1/3)*d)]*Log[c +
d*x] - (-1)^(2/3)*a^(1/3)*d*Log[(d*(a^(1/3) - (-1)^(1/3)*b^(1/3)*x))/((-1)^
(1/3)*b^(1/3)*c + a^(1/3)*d)]*Log[c + d*x] + (-1)^(1/3)*a^(1/3)*d*Log[(d*(a
^(1/3) + (-1)^(2/3)*b^(1/3)*x))/(-((-1)^(2/3)*b^(1/3)*c) + a^(1/3)*d)]*Log[
c + d*x] - a^(1/3)*d*PolyLog[2, (b^(1/3)*(c + d*x))/(b^(1/3)*c - a^(1/3)*d)
] + (-1)^(1/3)*a^(1/3)*d*PolyLog[2, ((-1)^(2/3)*b^(1/3)*(c + d*x))/((-1)^(2
```

```
/3)*b^(1/3)*c - a^(1/3)*d)] - (-1)^(2/3)*a^(1/3)*d*PolyLog[2, ((-1)^(1/3)*b
^(1/3)*(c + d*x))/((-1)^(1/3)*b^(1/3)*c + a^(1/3)*d)])/(3*b^(4/3)*d)
```

Maple [C] Result contains higher order function than in optimal. Order 9 vs. order 4.
time = 0.54, size = 127, normalized size = 0.33

method	result
derivativedivides	$\frac{\frac{((dx+c)\ln(dx+c)-dx-c)d^3}{b}-\frac{\left(\sum_{\_R1=\mathrm{RootOf}\left(b\_Z^3-3cb\_Z^2+3b\,c^2\_Z+a\,d^3-b\,c^3\right)}\frac{\ln(dx+c)\ln\left(\frac{-dx+\_R1-c}{\_R1}\right)+\mathrm{dilog}\left(\frac{-dx}{}\right.}{\_R1^2-2\_R1c+c^2}\right.}{3b^2}}{d^4}$
default	$\frac{\frac{((dx+c)\ln(dx+c)-dx-c)d^3}{b}-\frac{\left(\sum_{\_R1=\mathrm{RootOf}\left(b\_Z^3-3cb\_Z^2+3b\,c^2\_Z+a\,d^3-b\,c^3\right)}\frac{\ln(dx+c)\ln\left(\frac{-dx+\_R1-c}{\_R1}\right)+\mathrm{dilog}\left(\frac{-dx}{}\right.}{\_R1^2-2\_R1c+c^2}\right.}{3b^2}}{d^4}$
risch	$\frac{\ln(dx+c)x}{b}+\frac{\ln(dx+c)c}{db}-\frac{x}{b}-\frac{c}{bd}-\frac{d^2\left(\sum_{\_R1=\mathrm{RootOf}\left(b\_Z^3-3cb\_Z^2+3b\,c^2\_Z+a\,d^3-b\,c^3\right)}\frac{\ln(dx+c)\ln\left(\frac{-dx+\_R}{\_R}\right.}{\_R}\right.}{3b^2}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*ln(d*x+c)/(b*x^3+a),x,method=_RETURNVERBOSE)
```

```
[Out] 1/d^4*(((d*x+c)*ln(d*x+c)-d*x-c)*d^3/b-1/3/b^2*sum(1/(_R1^2-2*_R1*c+c^2)*(l
n(d*x+c)*ln((-d*x+_R1-c)/_R1)+dilog((-d*x+_R1-c)/_R1)),_R1=RootOf(_Z^3*b-3*
_Z^2*b*c+3*_Z*b*c^2+a*d^3-b*c^3))*a*d^6)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*log(d*x+c)/(b*x^3+a),x, algorithm="maxima")
```

```
[Out] integrate(x^3*log(d*x + c)/(b*x^3 + a), x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*log(d*x+c)/(b*x^3+a),x, algorithm="fricas")
```

```
[Out] integral(x^3*log(d*x + c)/(b*x^3 + a), x)
```

Sympy [**F(-1)**] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*ln(d*x+c)/(b*x**3+a),x)
```

```
[Out] Timed out
```

Giac [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*log(d*x+c)/(b*x^3+a),x, algorithm="giac")
```

```
[Out] integrate(x^3*log(d*x + c)/(b*x^3 + a), x)
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x^3\,\ln\left(c+d\,x\right)}{b\,x^3+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^3*log(c + d*x))/(a + b*x^3),x)
```

```
[Out] int((x^3*log(c + d*x))/(a + b*x^3), x)
```

3.289 $\int \frac{x \log(c+dx)}{a+bx^3} \, dx$

Optimal. Leaf size=359

$$-\frac{\log\left(-\frac{d\left(\sqrt[3]{a}+\sqrt[3]{b}\,x\right)}{\sqrt[3]{b}\,c-\sqrt[3]{a}\,d}\right)\log(c+dx)}{3\sqrt[3]{a}\,b^{2/3}}+\frac{\sqrt[3]{-1}\,\log\left(\frac{d\left(\sqrt[3]{a}-\sqrt[3]{-1}\,\sqrt[3]{b}\,x\right)}{\sqrt[3]{-1}\,\sqrt[3]{b}\,c+\sqrt[3]{a}\,d}\right)\log(c+dx)}{3\sqrt[3]{a}\,b^{2/3}}-\frac{(-1)^{2/3}\log\left(-\frac{d\left(\sqrt[3]{\ldots}\right.}{(-1\ldots}\right.}{\ldots}$$

```
[Out] -1/3*ln(-d*(a^(1/3)+b^(1/3)*x)/(b^(1/3)*c-a^(1/3)*d))*ln(d*x+c)/a^(1/3)/b^(
2/3)+1/3*(-1)^(1/3)*ln(d*(a^(1/3)-(-1)^(1/3)*b^(1/3)*x)/((-1)^(1/3)*b^(1/3)
*c+a^(1/3)*d))*ln(d*x+c)/a^(1/3)/b^(2/3)-1/3*(-1)^(2/3)*ln(-d*(a^(1/3)+(-1)
^(2/3)*b^(1/3)*x)/((-1)^(2/3)*b^(1/3)*c-a^(1/3)*d))*ln(d*x+c)/a^(1/3)/b^(2/
3)-1/3*polylog(2,b^(1/3)*(d*x+c)/(b^(1/3)*c-a^(1/3)*d))/a^(1/3)/b^(2/3)-1/3
*(-1)^(2/3)*polylog(2,(-1)^(2/3)*b^(1/3)*(d*x+c)/((-1)^(2/3)*b^(1/3)*c-a^(1
/3)*d))/a^(1/3)/b^(2/3)+1/3*(-1)^(1/3)*polylog(2,(-1)^(1/3)*b^(1/3)*(d*x+c)
/((-1)^(1/3)*b^(1/3)*c+a^(1/3)*d))/a^(1/3)/b^(2/3)
```

Rubi [A]

time = 0.23, antiderivative size = 359, normalized size of antiderivative = 1.00, number of steps used = 11, number of rules used = 10, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}} = 0.588$, Rules used = {298, 31, 648, 631, 210, 642, 2463, 2441, 2440, 2438}

$$-\frac{\text{PolyLog}\left(2,\frac{\sqrt[3]{b}(c+dx)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right)}{3\sqrt[3]{a}b^{2/3}}-\frac{(-1)^{2/3}\text{PolyLog}\left(2,\frac{(-1)^{2/3}\sqrt[3]{b}(c+dx)}{(-1)^{2/3}\sqrt[3]{b}c-\sqrt[3]{a}d}\right)}{3\sqrt[3]{a}b^{2/3}}+\frac{\sqrt[3]{-1}\,\text{PolyLog}\left(2,\frac{\sqrt[3]{-1}\sqrt[3]{b}(c+dx)}{\sqrt[3]{a}d+\sqrt[3]{-1}\sqrt[3]{b}c}\right)}{3\sqrt[3]{a}b^{2/3}}-\frac{\log(c+dx)\log\left(-\frac{d\left(\sqrt[3]{a}+\sqrt[3]{b}x\right)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right)}{3\sqrt[3]{a}b^{2/3}}+\frac{\sqrt[3]{-1}\log(c+dx)\log\left(\frac{d\left(\sqrt[3]{a}-\sqrt[3]{-1}\sqrt[3]{b}x\right)}{\sqrt[3]{a}d+\sqrt[3]{-1}\sqrt[3]{b}c}\right)}{3\sqrt[3]{a}b^{2/3}}-\frac{(-1)^{2/3}\log(c+dx)\log\left(-\frac{d\left(\sqrt[3]{a}+(-1)^{2/3}\sqrt[3]{b}x\right)}{(-1)^{2/3}\sqrt[3]{b}c-\sqrt[3]{a}d}\right)}{3\sqrt[3]{a}b^{2/3}}$$

Antiderivative was successfully verified.

```
[In] Int[(x*Log[c + d*x])/(a + b*x^3),x]
```

```
[Out] -1/3*(Log[-((d*(a^(1/3) + b^(1/3)*x))/(b^(1/3)*c - a^(1/3)*d))]*Log[c + d*x
])/(a^(1/3)*b^(2/3)) + ((-1)^(1/3)*Log[(d*(a^(1/3) - (-1)^(1/3)*b^(1/3)*x))
/((-1)^(1/3)*b^(1/3)*c + a^(1/3)*d)]*Log[c + d*x])/(3*a^(1/3)*b^(2/3)) - ((
-1)^(2/3)*Log[-((d*(a^(1/3) + (-1)^(2/3)*b^(1/3)*x))/((-1)^(2/3)*b^(1/3)*c
- a^(1/3)*d))]*Log[c + d*x])/(3*a^(1/3)*b^(2/3)) - PolyLog[2, (b^(1/3)*(c +
 d*x))/(b^(1/3)*c - a^(1/3)*d)]/(3*a^(1/3)*b^(2/3)) - ((-1)^(2/3)*PolyLog[2
, ((-1)^(2/3)*b^(1/3)*(c + d*x))/((-1)^(2/3)*b^(1/3)*c - a^(1/3)*d)])/(3*a^
(1/3)*b^(2/3)) + ((-1)^(1/3)*PolyLog[2, ((-1)^(1/3)*b^(1/3)*(c + d*x))/((-1
)^(1/3)*b^(1/3)*c + a^(1/3)*d)])/(3*a^(1/3)*b^(2/3))
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 210

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(-(Rt[-a, 2]*Rt[-b, 2])^(
-1))*ArcTan[Rt[-b, 2]*(x/Rt[-a, 2])], x] /; FreeQ[{a, b}, x] && PosQ[a/b] &
& (LtQ[a, 0] || LtQ[b, 0])
```

Rule 298

```
Int[(x_)/((a_) + (b_.)*(x_)^3), x_Symbol] :> Dist[-(3*Rt[a, 3]*Rt[b, 3])^(-
1), Int[1/(Rt[a, 3] + Rt[b, 3]*x), x], x] + Dist[1/(3*Rt[a, 3]*Rt[b, 3]), I
nt[(Rt[a, 3] + Rt[b, 3]*x)/(Rt[a, 3]^2 - Rt[a, 3]*Rt[b, 3]*x + Rt[b, 3]^2*x
^2), x], x] /; FreeQ[{a, b}, x]
```

Rule 631

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[a*(c/b^2)]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + 2*c*(x/b)
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 642

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[d*(Log[RemoveContent[a + b*x + c*x^2, x]]/b), x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 648

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> D
ist[(2*c*d - b*e)/(2*c), Int[1/(a + b*x + c*x^2), x], x] + Dist[e/(2*c), In
t[(b + 2*c*x)/(a + b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ
[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] &&  !NiceSqrtQ[b^2 - 4*a*c]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + c*e*(x/g)])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2441

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d + e*x
```

```
)^n])/g), x] - Dist[b*e*(n/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2463

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rubi steps

$$\int \frac{x\log(c+dx)}{a+bx^3}\,dx = \int \left(-\frac{\log(c+dx)}{3\sqrt[3]{a}\sqrt[3]{b}\left(\sqrt[3]{a}+\sqrt[3]{b}x\right)} - \frac{(-1)^{2/3}\log(c+dx)}{3\sqrt[3]{a}\sqrt[3]{b}\left(\sqrt[3]{a}-\sqrt[3]{-1}\sqrt[3]{b}x\right)} + \frac{\sqrt[3]{-1}\,\mathrm{lo}}{3\sqrt[3]{a}\sqrt[3]{b}\left(\sqrt[3]{a}\right.}\right.$$

$$= -\frac{\int \frac{\log(c+dx)}{\sqrt[3]{a}+\sqrt[3]{b}x}\,dx}{3\sqrt[3]{a}\sqrt[3]{b}} + \frac{\sqrt[3]{-1}\int \frac{\log(c+dx)}{\sqrt[3]{a}+(-1)^{2/3}\sqrt[3]{b}x}\,dx}{3\sqrt[3]{a}\sqrt[3]{b}} - \frac{(-1)^{2/3}\int \frac{\log(c+dx)}{\sqrt[3]{a}-\sqrt[3]{-1}\sqrt[3]{b}x}\,dx}{3\sqrt[3]{a}\sqrt[3]{b}}$$

$$= -\frac{\log\left(-\frac{d\left(\sqrt[3]{a}+\sqrt[3]{b}x\right)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right)\log(c+dx)}{3\sqrt[3]{a}\,b^{2/3}} + \frac{\sqrt[3]{-1}\log\left(\frac{d\left(\sqrt[3]{a}-\sqrt[3]{-1}\sqrt[3]{b}x\right)}{\sqrt[3]{-1}\sqrt[3]{b}c+\sqrt[3]{a}d}\right)\log(c+dx}{3\sqrt[3]{a}\,b^{2/3}}$$

$$= -\frac{\log\left(-\frac{d\left(\sqrt[3]{a}+\sqrt[3]{b}x\right)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right)\log(c+dx)}{3\sqrt[3]{a}\,b^{2/3}} + \frac{\sqrt[3]{-1}\log\left(\frac{d\left(\sqrt[3]{a}-\sqrt[3]{-1}\sqrt[3]{b}x\right)}{\sqrt[3]{-1}\sqrt[3]{b}c+\sqrt[3]{a}d}\right)\log(c+dx}{3\sqrt[3]{a}\,b^{2/3}}$$

$$= -\frac{\log\left(-\frac{d\left(\sqrt[3]{a}+\sqrt[3]{b}x\right)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right)\log(c+dx)}{3\sqrt[3]{a}\,b^{2/3}} + \frac{\sqrt[3]{-1}\log\left(\frac{d\left(\sqrt[3]{a}-\sqrt[3]{-1}\sqrt[3]{b}x\right)}{\sqrt[3]{-1}\sqrt[3]{b}c+\sqrt[3]{a}d}\right)\log(c+dx}{3\sqrt[3]{a}\,b^{2/3}}$$

Mathematica [A]
time = 0.06, size = 297, normalized size = 0.83

$$\frac{-\log\left(\frac{d\left(\sqrt[3]{a}+\sqrt[3]{b}x\right)}{-\sqrt[3]{b}c+\sqrt[3]{a}d}\right)\log(c+dx)+\sqrt[3]{-1}\log\left(\frac{d\left(\sqrt[3]{a}-\sqrt[3]{-1}\sqrt[3]{b}x\right)}{\sqrt[3]{-1}\sqrt[3]{b}c+\sqrt[3]{a}d}\right)\log(c+dx)-(-1)^{2/3}\log\left(\frac{d\left(\sqrt[3]{a}+(-1)^{2/3}\sqrt[3]{b}x\right)}{-(-1)^{2/3}\sqrt[3]{b}c+\sqrt[3]{a}d}\right)\log(c+dx)-\mathrm{Li}_2\left(\frac{\sqrt[3]{b}(c+dx)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right)-(-1)^{2/3}\mathrm{Li}_2\left(\frac{(-1)^{2/3}\sqrt[3]{b}(c+dx)}{(-1)^{2/3}\sqrt[3]{b}c-\sqrt[3]{a}d}\right)+\sqrt[3]{-1}\,\mathrm{Li}_2\left(\frac{\sqrt[3]{-1}\sqrt[3]{b}(c+dx)}{\sqrt[3]{-1}\sqrt[3]{b}c+\sqrt[3]{a}d}\right)}{3\sqrt[3]{a}\,b^{2/3}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x*Log[c + d*x])/(a + b*x^3),x]
```

```
[Out] (-(Log[(d*(a^(1/3) + b^(1/3)*x))/(-(b^(1/3)*c) + a^(1/3)*d)]*Log[c + d*x])
+ (-1)^(1/3)*Log[(d*(a^(1/3) - (-1)^(1/3)*b^(1/3)*x))/((-1)^(1/3)*b^(1/3)*c
 + a^(1/3)*d)]*Log[c + d*x] - (-1)^(2/3)*Log[(d*(a^(1/3) + (-1)^(2/3)*b^(1/
3)*x))/(-((-1)^(2/3)*b^(1/3)*c) + a^(1/3)*d)]*Log[c + d*x] - PolyLog[2, (b^
(1/3)*(c + d*x))/(b^(1/3)*c - a^(1/3)*d)] - (-1)^(2/3)*PolyLog[2, ((-1)^(2/
3)*b^(1/3)*(c + d*x))/((-1)^(2/3)*b^(1/3)*c - a^(1/3)*d)] + (-1)^(1/3)*Poly
Log[2, ((-1)^(1/3)*b^(1/3)*(c + d*x))/((-1)^(1/3)*b^(1/3)*c + a^(1/3)*d)])/
(3*a^(1/3)*b^(2/3))
```

Maple [C] Result contains higher order function than in optimal. Order 9 vs. order 4.
time = 0.49, size = 86, normalized size = 0.24

method	result	size
derivativedivides	$-\frac{d\left(\sum_{\_R1=\mathrm{RootOf}\left(b\_Z^3-3cb\_Z^2+3b\,c^2\_Z+a\,d^3-b\,c^3\right)}\frac{\ln(dx+c)\ln\left(\frac{-dx+\_R1-c}{\_R1}\right)+\mathrm{dilog}\left(\frac{-dx+\_R1-c}{\_R1}\right)}{-\_R1+c}\right)}{3b}$	86
default	$-\frac{d\left(\sum_{\_R1=\mathrm{RootOf}\left(b\_Z^3-3cb\_Z^2+3b\,c^2\_Z+a\,d^3-b\,c^3\right)}\frac{\ln(dx+c)\ln\left(\frac{-dx+\_R1-c}{\_R1}\right)+\mathrm{dilog}\left(\frac{-dx+\_R1-c}{\_R1}\right)}{-\_R1+c}\right)}{3b}$	86
risch	$-\frac{d\left(\sum_{\_R1=\mathrm{RootOf}\left(b\_Z^3-3cb\_Z^2+3b\,c^2\_Z+a\,d^3-b\,c^3\right)}\frac{\ln(dx+c)\ln\left(\frac{-dx+\_R1-c}{\_R1}\right)+\mathrm{dilog}\left(\frac{-dx+\_R1-c}{\_R1}\right)}{-\_R1+c}\right)}{3b}$	86

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*ln(d*x+c)/(b*x^3+a),x,method=_RETURNVERBOSE)
```

```
[Out] -1/3*d/b*sum(1/(-_R1+c)*(ln(d*x+c)*ln((-d*x+_R1-c)/_R1)+dilog((-d*x+_R1-c)/
_R1)),_R1=RootOf(_Z^3*b-3*_Z^2*b*c+3*_Z*b*c^2+a*d^3-b*c^3))
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*log(d*x+c)/(b*x^3+a),x, algorithm="maxima")
```

```
[Out] integrate(x*log(d*x + c)/(b*x^3 + a), x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*log(d*x+c)/(b*x^3+a),x, algorithm="fricas")
```

```
[Out] integral(x*log(d*x + c)/(b*x^3 + a), x)
```

Sympy [**F(-1)**] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*ln(d*x+c)/(b*x**3+a),x)
```

```
[Out] Timed out
```

Giac [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*log(d*x+c)/(b*x^3+a),x, algorithm="giac")
```

```
[Out] integrate(x*log(d*x + c)/(b*x^3 + a), x)
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x\,\ln\left(c+d\,x\right)}{b\,x^3+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x*log(c + d*x))/(a + b*x^3),x)
```

```
[Out] int((x*log(c + d*x))/(a + b*x^3), x)
```

3.290 $\int \frac{\log(c+dx)}{a+bx^3}\,dx$

Optimal. Leaf size=359

$$\frac{\log\left(-\frac{d\left(\sqrt[3]{a}+\sqrt[3]{b}\,x\right)}{\sqrt[3]{b}\,c-\sqrt[3]{a}\,d}\right)\log(c+dx)}{3a^{2/3}\sqrt[3]{b}}+\frac{(-1)^{2/3}\log\left(\frac{d\left(\sqrt[3]{a}-\sqrt[3]{-1}\,\sqrt[3]{b}\,x\right)}{\sqrt[3]{-1}\,\sqrt[3]{b}\,c+\sqrt[3]{a}\,d}\right)\log(c+dx)}{3a^{2/3}\sqrt[3]{b}}-\frac{\sqrt[3]{-1}\,\log\left(-\frac{d\left(\sqrt[3]{a}+\dots\right.}{(-1)^{2/3}\dots}\right.}{3a\dots}$$

```
[Out] 1/3*ln(-d*(a^(1/3)+b^(1/3)*x)/(b^(1/3)*c-a^(1/3)*d))*ln(d*x+c)/a^(2/3)/b^(1
/3)+1/3*(-1)^(2/3)*ln(d*(a^(1/3)-(-1)^(1/3)*b^(1/3)*x)/((-1)^(1/3)*b^(1/3)*
c+a^(1/3)*d))*ln(d*x+c)/a^(2/3)/b^(1/3)-1/3*(-1)^(1/3)*ln(-d*(a^(1/3)+(-1)^
(2/3)*b^(1/3)*x)/((-1)^(2/3)*b^(1/3)*c-a^(1/3)*d))*ln(d*x+c)/a^(2/3)/b^(1/3
)+1/3*polylog(2,b^(1/3)*(d*x+c)/(b^(1/3)*c-a^(1/3)*d))/a^(2/3)/b^(1/3)-1/3*
(-1)^(1/3)*polylog(2,(-1)^(2/3)*b^(1/3)*(d*x+c)/((-1)^(2/3)*b^(1/3)*c-a^(1/
3)*d))/a^(2/3)/b^(1/3)+1/3*(-1)^(2/3)*polylog(2,(-1)^(1/3)*b^(1/3)*(d*x+c)/
((-1)^(1/3)*b^(1/3)*c+a^(1/3)*d))/a^(2/3)/b^(1/3)
```

Rubi [A]
time = 0.17, antiderivative size = 359, normalized size of antiderivative = 1.00, number of steps used = 11, number of rules used = 4, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}} = 0.250$, Rules used = {2456, 2441, 2440, 2438}

$$\frac{\text{PolyLog}\left(2,\frac{\sqrt[3]{b}(c+dx)}{\sqrt[3]{b}\,c-\sqrt[3]{a}\,d}\right)}{3a^{2/3}\sqrt[3]{b}}-\frac{\sqrt[3]{-1}\,\text{PolyLog}\left(2,\frac{(-1)^{2/3}\sqrt[3]{b}(c+dx)}{(-1)^{2/3}\sqrt[3]{b}\,c-\sqrt[3]{a}\,d}\right)}{3a^{2/3}\sqrt[3]{b}}+\frac{(-1)^{2/3}\text{PolyLog}\left(2,\frac{\sqrt[3]{-1}\,\sqrt[3]{b}(c+dx)}{\sqrt[3]{a}\,d+\sqrt[3]{-1}\,\sqrt[3]{b}\,c}\right)}{3a^{2/3}\sqrt[3]{b}}+\frac{\log(c+dx)\log\left(-\frac{d\left(\sqrt[3]{a}+\sqrt[3]{b}\,x\right)}{\sqrt[3]{b}\,c-\sqrt[3]{a}\,d}\right)}{3a^{2/3}\sqrt[3]{b}}+\frac{(-1)^{2/3}\log(c+dx)\log\left(\frac{d\left(\sqrt[3]{a}-\sqrt[3]{-1}\,\sqrt[3]{b}\,x\right)}{\sqrt[3]{a}\,d+\sqrt[3]{-1}\,\sqrt[3]{b}\,c}\right)}{3a^{2/3}\sqrt[3]{b}}-\frac{\sqrt[3]{-1}\,\log(c+dx)\log\left(-\frac{d\left(\sqrt[3]{a}+(-1)^{2/3}\sqrt[3]{b}\,x\right)}{(-1)^{2/3}\sqrt[3]{b}\,c-\sqrt[3]{a}\,d}\right)}{3a^{2/3}\sqrt[3]{b}}$$

Antiderivative was successfully verified.

```
[In] Int[Log[c + d*x]/(a + b*x^3),x]
```

```
[Out] (Log[-((d*(a^(1/3) + b^(1/3)*x))/(b^(1/3)*c - a^(1/3)*d))]*Log[c + d*x])/(3
*a^(2/3)*b^(1/3)) + ((-1)^(2/3)*Log[(d*(a^(1/3) - (-1)^(1/3)*b^(1/3)*x))/((
-1)^(1/3)*b^(1/3)*c + a^(1/3)*d)]*Log[c + d*x])/(3*a^(2/3)*b^(1/3)) - ((-1)
^(1/3)*Log[-((d*(a^(1/3) + (-1)^(2/3)*b^(1/3)*x))/((-1)^(2/3)*b^(1/3)*c - a
^(1/3)*d))]*Log[c + d*x])/(3*a^(2/3)*b^(1/3)) + PolyLog[2, (b^(1/3)*(c + d*
x))/(b^(1/3)*c - a^(1/3)*d)]/(3*a^(2/3)*b^(1/3)) - ((-1)^(1/3)*PolyLog[2, (
(-1)^(2/3)*b^(1/3)*(c + d*x))/((-1)^(2/3)*b^(1/3)*c - a^(1/3)*d)])/(3*a^(2/
3)*b^(1/3)) + ((-1)^(2/3)*PolyLog[2, ((-1)^(1/3)*b^(1/3)*(c + d*x))/((-1)^(
1/3)*b^(1/3)*c + a^(1/3)*d)])/(3*a^(2/3)*b^(1/3))
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + c*e*(x/g)])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2441

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d + e*x
)^n])/g), x] - Dist[b*e*(n/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2456

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_)^(r_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a + b*Log[c*(d + e*x)
^n])^p, (f + g*x^r)^q, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, r}, x] && I
GtQ[p, 0] && IntegerQ[q] && (GtQ[q, 0] || (IntegerQ[r] && NeQ[r, 1]))
```

Rubi steps

$$\int \frac{\log(c+dx)}{a+bx^3}\,dx = \int \left(-\frac{\log(c+dx)}{3a^{2/3}\left(-\sqrt[3]{a}-\sqrt[3]{b}\,x\right)}-\frac{\log(c+dx)}{3a^{2/3}\left(-\sqrt[3]{a}+\sqrt[3]{-1}\,\sqrt[3]{b}\,x\right)}-\frac{\log(c+dx)}{3a^{2/3}\left(-\sqrt[3]{a}-(-1)^{2}\right.}\right.$$

$$= -\frac{\int \frac{\log(c+dx)}{-\sqrt[3]{a}-\sqrt[3]{b}\,x}\,dx}{3a^{2/3}}-\frac{\int \frac{\log(c+dx)}{-\sqrt[3]{a}+\sqrt[3]{-1}\,\sqrt[3]{b}\,x}\,dx}{3a^{2/3}}-\frac{\int \frac{\log(c+dx)}{-\sqrt[3]{a}-(-1)^{2/3}\sqrt[3]{b}\,x}\,dx}{3a^{2/3}}$$

$$= \frac{\log\left(-\frac{d\left(\sqrt[3]{a}+\sqrt[3]{b}\,x\right)}{\sqrt[3]{b}\,c-\sqrt[3]{a}\,d}\right)\log(c+dx)}{3a^{2/3}\sqrt[3]{b}}+\frac{(-1)^{2/3}\log\left(\frac{d\left(\sqrt[3]{a}-\sqrt[3]{-1}\,\sqrt[3]{b}\,x\right)}{\sqrt[3]{-1}\,\sqrt[3]{b}\,c+\sqrt[3]{a}\,d}\right)\log(c+dx)}{3a^{2/3}\sqrt[3]{b}}$$

$$= \frac{\log\left(-\frac{d\left(\sqrt[3]{a}+\sqrt[3]{b}\,x\right)}{\sqrt[3]{b}\,c-\sqrt[3]{a}\,d}\right)\log(c+dx)}{3a^{2/3}\sqrt[3]{b}}+\frac{(-1)^{2/3}\log\left(\frac{d\left(\sqrt[3]{a}-\sqrt[3]{-1}\,\sqrt[3]{b}\,x\right)}{\sqrt[3]{-1}\,\sqrt[3]{b}\,c+\sqrt[3]{a}\,d}\right)\log(c+dx)}{3a^{2/3}\sqrt[3]{b}}$$

$$= \frac{\log\left(-\frac{d\left(\sqrt[3]{a}+\sqrt[3]{b}\,x\right)}{\sqrt[3]{b}\,c-\sqrt[3]{a}\,d}\right)\log(c+dx)}{3a^{2/3}\sqrt[3]{b}}+\frac{(-1)^{2/3}\log\left(\frac{d\left(\sqrt[3]{a}-\sqrt[3]{-1}\,\sqrt[3]{b}\,x\right)}{\sqrt[3]{-1}\,\sqrt[3]{b}\,c+\sqrt[3]{a}\,d}\right)\log(c+dx)}{3a^{2/3}\sqrt[3]{b}}$$

Mathematica [A]
time = 0.05, size = 294, normalized size = 0.82

$$\frac{\log\left(\frac{d\left(\sqrt[3]{a}+\sqrt[3]{b}x\right)}{-\sqrt[3]{b}c+\sqrt[3]{a}d}\right)\log(c+dx)+(-1)^{2/3}\log\left(\frac{d\left(\sqrt[3]{a}-\sqrt[3]{-1}\sqrt[3]{b}x\right)}{\sqrt[3]{-1}\sqrt[3]{b}c+\sqrt[3]{a}d}\right)\log(c+dx)-\sqrt[3]{-1}\log\left(\frac{d\left(\sqrt[3]{a}+(-1)^{2/3}\sqrt[3]{b}x\right)}{-(-1)^{2/3}\sqrt[3]{b}c+\sqrt[3]{a}d}\right)\log(c+dx)+\text{Li}_2\left(\frac{\sqrt[3]{b}(c+dx)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right)-\sqrt[3]{-1}\,\text{Li}_2\left(\frac{(-1)^{2/3}\sqrt[3]{b}(c+dx)}{(-1)^{2/3}\sqrt[3]{b}c-\sqrt[3]{a}d}\right)+(-1)^{2/3}\text{Li}_2\left(\frac{\sqrt[3]{-1}\sqrt[3]{b}(c+dx)}{\sqrt[3]{-1}\sqrt[3]{b}c+\sqrt[3]{a}d}\right)}{3a^{2/3}\sqrt[3]{b}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[c + d*x]/(a + b*x^3),x]
```

```
[Out] (Log[(d*(a^(1/3) + b^(1/3)*x))/(-(b^(1/3)*c) + a^(1/3)*d)]*Log[c + d*x] + (
-1)^(2/3)*Log[(d*(a^(1/3) - (-1)^(1/3)*b^(1/3)*x))/((-1)^(1/3)*b^(1/3)*c +
a^(1/3)*d)]*Log[c + d*x] - (-1)^(1/3)*Log[(d*(a^(1/3) + (-1)^(2/3)*b^(1/3)*
x))/(-((-1)^(2/3)*b^(1/3)*c) + a^(1/3)*d)]*Log[c + d*x] + PolyLog[2, (b^(1/
3)*(c + d*x))/(b^(1/3)*c - a^(1/3)*d)] - (-1)^(1/3)*PolyLog[2, ((-1)^(2/3)*
b^(1/3)*(c + d*x))/((-1)^(2/3)*b^(1/3)*c - a^(1/3)*d)] + (-1)^(2/3)*PolyLog
[2, ((-1)^(1/3)*b^(1/3)*(c + d*x))/((-1)^(1/3)*b^(1/3)*c + a^(1/3)*d)])/(3*
a^(2/3)*b^(1/3))
```

Maple [C] Result contains higher order function than in optimal. Order 9 vs. order 4.
time = 0.52, size = 94, normalized size = 0.26

method	result	size
derivativedivides	$\frac{d^{2}\left(\sum_{\_R1=\text{RootOf}\left(b\_Z^{3}-3cb\_Z^{2}+3b\,c^{2}\_Z+a\,d^{3}-b\,c^{3}\right)}\frac{\ln(dx+c)\ln\left(\frac{-dx+\_R1-c}{\_R1}\right)+\text{dilog}\left(\frac{-dx+\_R1-c}{\_R1}\right)}{\_R1^{2}-2\_R1c+c^{2}}\right)}{3b}$	94
default	$\frac{d^{2}\left(\sum_{\_R1=\text{RootOf}\left(b\_Z^{3}-3cb\_Z^{2}+3b\,c^{2}\_Z+a\,d^{3}-b\,c^{3}\right)}\frac{\ln(dx+c)\ln\left(\frac{-dx+\_R1-c}{\_R1}\right)+\text{dilog}\left(\frac{-dx+\_R1-c}{\_R1}\right)}{\_R1^{2}-2\_R1c+c^{2}}\right)}{3b}$	94
risch	$\frac{d^{2}\left(\sum_{\_R1=\text{RootOf}\left(b\_Z^{3}-3cb\_Z^{2}+3b\,c^{2}\_Z+a\,d^{3}-b\,c^{3}\right)}\frac{\ln(dx+c)\ln\left(\frac{-dx+\_R1-c}{\_R1}\right)+\text{dilog}\left(\frac{-dx+\_R1-c}{\_R1}\right)}{\_R1^{2}-2\_R1c+c^{2}}\right)}{3b}$	94

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(d*x+c)/(b*x^3+a),x,method=_RETURNVERBOSE)
```

```
[Out] 1/3*d^2/b*sum(1/(_R1^2-2*_R1*c+c^2)*(ln(d*x+c)*ln((-d*x+_R1-c)/_R1)+dilog((
-d*x+_R1-c)/_R1)),_R1=RootOf(_Z^3*b-3*_Z^2*b*c+3*_Z*b*c^2+a*d^3-b*c^3))
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(d*x+c)/(b*x^3+a),x, algorithm="maxima")
```

```
[Out] integrate(log(d*x + c)/(b*x^3 + a), x)
```

Fricas [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(d*x+c)/(b*x^3+a),x, algorithm="fricas")
```

```
[Out] integral(log(d*x + c)/(b*x^3 + a), x)
```

Sympy [**F(-1)**] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(d*x+c)/(b*x**3+a),x)
```

```
[Out] Timed out
```

Giac [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(d*x+c)/(b*x^3+a),x, algorithm="giac")
```

```
[Out] integrate(log(d*x + c)/(b*x^3 + a), x)
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\ln\left(c+d\,x\right)}{b\,x^3+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(log(c + d*x)/(a + b*x^3),x)
```

```
[Out] int(log(c + d*x)/(a + b*x^3), x)
```

3.291 $\int \frac{\log(c+dx)}{x^2(a+bx^3)}\,dx$

Optimal. Leaf size=398

$$\frac{d\log(x)}{ac}-\frac{d\log(c+dx)}{ac}-\frac{\log(c+dx)}{ax}+\frac{\sqrt[3]{b}\log\left(-\frac{d\left(\sqrt[3]{a}+\sqrt[3]{b}x\right)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right)\log(c+dx)}{3a^{4/3}}-\frac{\sqrt[3]{-1}\sqrt[3]{b}\log\left(\frac{d\left(\sqrt[3]{a}-\sqrt[3]{-}\right.}{\sqrt[3]{-1}\sqrt[3]{b}}\right.}{3a^{4/3}}$$

```
[Out] d*ln(x)/a/c-d*ln(d*x+c)/a/c-ln(d*x+c)/a/x+1/3*b^(1/3)*ln(-d*(a^(1/3)+b^(1/3
)*x)/(b^(1/3)*c-a^(1/3)*d))*ln(d*x+c)/a^(4/3)-1/3*(-1)^(1/3)*b^(1/3)*ln(d*(
a^(1/3)-(-1)^(1/3)*b^(1/3)*x)/((-1)^(1/3)*b^(1/3)*c+a^(1/3)*d))*ln(d*x+c)/a
^(4/3)+1/3*(-1)^(2/3)*b^(1/3)*ln(-d*(a^(1/3)+(-1)^(2/3)*b^(1/3)*x)/((-1)^(2
/3)*b^(1/3)*c-a^(1/3)*d))*ln(d*x+c)/a^(4/3)+1/3*b^(1/3)*polylog(2,b^(1/3)*(
d*x+c)/(b^(1/3)*c-a^(1/3)*d))/a^(4/3)+1/3*(-1)^(2/3)*b^(1/3)*polylog(2,(-1)
^(2/3)*b^(1/3)*(d*x+c)/((-1)^(2/3)*b^(1/3)*c-a^(1/3)*d))/a^(4/3)-1/3*(-1)^(
1/3)*b^(1/3)*polylog(2,(-1)^(1/3)*b^(1/3)*(d*x+c)/((-1)^(1/3)*b^(1/3)*c+a^(
1/3)*d))/a^(4/3)
```

Rubi [A]
time = 0.35, antiderivative size = 398, normalized size of antiderivative = 1.00, number of steps used = 17, number of rules used = 14, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.737$, Rules used = {331, 298, 31, 648, 631, 210, 642, 2463, 2442, 36, 29, 2441, 2440, 2438}

$$\frac{\sqrt[3]{b}\,\text{PolyLog}\left(2,\frac{\sqrt[3]{b}(c+dx)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right)}{3a^{4/3}}+\frac{(-1)^{2/3}\sqrt[3]{b}\,\text{PolyLog}\left(2,\frac{(-1)^{2/3}\sqrt[3]{b}(c+dx)}{(-1)^{2/3}\sqrt[3]{b}c-\sqrt[3]{a}d}\right)}{3a^{4/3}}-\frac{\sqrt[3]{-1}\sqrt[3]{b}\,\text{PolyLog}\left(2,\frac{\sqrt[3]{-1}\sqrt[3]{b}(c+dx)}{\sqrt[3]{a}d+\sqrt[3]{-1}\sqrt[3]{b}c}\right)}{3a^{4/3}}+\frac{\sqrt[3]{b}\log(c+dx)\log\left(-\frac{d\left(\sqrt[3]{a}+\sqrt[3]{b}x\right)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right)}{3a^{4/3}}-\frac{\sqrt[3]{-1}\sqrt[3]{b}\log(c+dx)\log\left(\frac{d\left(\sqrt[3]{a}-\sqrt[3]{-1}\sqrt[3]{b}x\right)}{\sqrt[3]{a}d+\sqrt[3]{-1}\sqrt[3]{b}c}\right)}{3a^{4/3}}+\frac{(-1)^{2/3}\sqrt[3]{b}\log(c+dx)\log\left(-\frac{d\left(\sqrt[3]{a}+(-1)^{2/3}\sqrt[3]{b}x\right)}{(-1)^{2/3}\sqrt[3]{b}c-\sqrt[3]{a}d}\right)}{3a^{4/3}}+\frac{d\log(x)}{ac}-\frac{d\log(c+dx)}{ac}-\frac{\log(c+dx)}{ax}$$

Antiderivative was successfully verified.

```
[In] Int[Log[c + d*x]/(x^2*(a + b*x^3)),x]
```

```
[Out] (d*Log[x])/(a*c) - (d*Log[c + d*x])/(a*c) - Log[c + d*x]/(a*x) + (b^(1/3)*L
og[-((d*(a^(1/3) + b^(1/3)*x))/(b^(1/3)*c - a^(1/3)*d))]*Log[c + d*x])/(3*a
^(4/3)) - ((-1)^(1/3)*b^(1/3)*Log[(d*(a^(1/3) - (-1)^(1/3)*b^(1/3)*x))/((-1
)^(1/3)*b^(1/3)*c + a^(1/3)*d)]*Log[c + d*x])/(3*a^(4/3)) + ((-1)^(2/3)*b^(
1/3)*Log[-((d*(a^(1/3) + (-1)^(2/3)*b^(1/3)*x))/((-1)^(2/3)*b^(1/3)*c - a^(
1/3)*d))]*Log[c + d*x])/(3*a^(4/3)) + (b^(1/3)*PolyLog[2, (b^(1/3)*(c + d*x
))/(b^(1/3)*c - a^(1/3)*d)])/(3*a^(4/3)) + ((-1)^(2/3)*b^(1/3)*PolyLog[2, (
(-1)^(2/3)*b^(1/3)*(c + d*x))/((-1)^(2/3)*b^(1/3)*c - a^(1/3)*d)])/(3*a^(4/
3)) - ((-1)^(1/3)*b^(1/3)*PolyLog[2, ((-1)^(1/3)*b^(1/3)*(c + d*x))/((-1)^(
1/3)*b^(1/3)*c + a^(1/3)*d)])/(3*a^(4/3))
```

Rule 29

```
Int[(x_)^(-1), x_Symbol] :> Simp[Log[x], x]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 36

```
Int[1/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))), x_Symbol] :> Dist[b/(b*c
 - a*d), Int[1/(a + b*x), x], x] - Dist[d/(b*c - a*d), Int[1/(c + d*x), x],
 x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0]
```

Rule 210

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(-(Rt[-a, 2]*Rt[-b, 2])^(
-1))*ArcTan[Rt[-b, 2]*(x/Rt[-a, 2])], x] /; FreeQ[{a, b}, x] && PosQ[a/b] &
& (LtQ[a, 0] || LtQ[b, 0])
```

Rule 298

```
Int[(x_)/((a_) + (b_.)*(x_)^3), x_Symbol] :> Dist[-(3*Rt[a, 3]*Rt[b, 3])^(-
1), Int[1/(Rt[a, 3] + Rt[b, 3]*x), x], x] + Dist[1/(3*Rt[a, 3]*Rt[b, 3]), I
nt[(Rt[a, 3] + Rt[b, 3]*x)/(Rt[a, 3]^2 - Rt[a, 3]*Rt[b, 3]*x + Rt[b, 3]^2*x
^2), x], x] /; FreeQ[{a, b}, x]
```

Rule 331

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(c*x
)^(m + 1)*((a + b*x^n)^(p + 1)/(a*c*(m + 1))), x] - Dist[b*((m + n*(p + 1)
+ 1)/(a*c^n*(m + 1))), Int[(c*x)^(m + n)*(a + b*x^n)^p, x], x] /; FreeQ[{a,
 b, c, p}, x] && IGtQ[n, 0] && LtQ[m, -1] && IntBinomialQ[a, b, c, n, m, p,
 x]
```

Rule 631

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[a*(c/b^2)]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + 2*c*(x/b)
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 642

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[d*(Log[RemoveContent[a + b*x + c*x^2, x]]/b), x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 648

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> D
ist[(2*c*d - b*e)/(2*c), Int[1/(a + b*x + c*x^2), x], x] + Dist[e/(2*c), In
```

```
t[(b + 2*c*x)/(a + b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ
[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] &&  !NiceSqrtQ[b^2 - 4*a*c]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + c*e*(x/g)])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2441

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d + e*x
)^n])/g), x] - Dist[b*e*(n/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2442

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[(f + g*x)^(q + 1)*((a + b*Log[c*(d + e*x)^n])/(
g*(q + 1))), x] - Dist[b*e*(n/(g*(q + 1))), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 2463

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rubi steps

$$\int \frac{\log(c+dx)}{x^2(a+bx^3)}\,dx = \int \left(\frac{\log(c+dx)}{ax^2} - \frac{bx\log(c+dx)}{a(a+bx^3)}\right)dx$$

$$= \frac{\int \frac{\log(c+dx)}{x^2}\,dx}{a} - \frac{b\int \frac{x\log(c+dx)}{a+bx^3}\,dx}{a}$$

$$= -\frac{\log(c+dx)}{ax} - \frac{b\int \left(-\frac{\log(c+dx)}{3\sqrt[3]{a}\sqrt[3]{b}\left(\sqrt[3]{a}+\sqrt[3]{b}x\right)} - \frac{(-1)^{2/3}\log(c+dx)}{3\sqrt[3]{a}\sqrt[3]{b}\left(\sqrt[3]{a}-\sqrt[3]{-1}\sqrt[3]{b}x\right)} + \frac{}{3\sqrt[3]{a}\,\cdots}\right.}{a}$$

$$= -\frac{\log(c+dx)}{ax} + \frac{b^{2/3}\int \frac{\log(c+dx)}{\sqrt[3]{a}+\sqrt[3]{b}x}\,dx}{3a^{4/3}} - \frac{\left(\sqrt[3]{-1}\,b^{2/3}\right)\int \frac{\log(c+dx)}{\sqrt[3]{a}+(-1)^{2/3}\sqrt[3]{b}x}\,dx}{3a^{4/3}} + \frac{((-1)^{2/3}}{\cdots}$$

$$= \frac{d\log(x)}{ac} - \frac{d\log(c+dx)}{ac} - \frac{\log(c+dx)}{ax} + \frac{\sqrt[3]{b}\log\left(-\frac{d\left(\sqrt[3]{a}+\sqrt[3]{b}x\right)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right)\log(c+dx)}{3a^{4/3}} - \cdots$$

$$= \frac{d\log(x)}{ac} - \frac{d\log(c+dx)}{ac} - \frac{\log(c+dx)}{ax} + \frac{\sqrt[3]{b}\log\left(-\frac{d\left(\sqrt[3]{a}+\sqrt[3]{b}x\right)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right)\log(c+dx)}{3a^{4/3}} - \cdots$$

$$= \frac{d\log(x)}{ac} - \frac{d\log(c+dx)}{ac} - \frac{\log(c+dx)}{ax} + \frac{\sqrt[3]{b}\log\left(-\frac{d\left(\sqrt[3]{a}+\sqrt[3]{b}x\right)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right)\log(c+dx)}{3a^{4/3}} - \cdots$$

Mathematica [A]

time = 0.11, size = 378, normalized size = 0.95

$$\frac{3\sqrt[3]{a}\,dx\log(x) - 3\sqrt[3]{a}\,c\log(c+dx) - 3\sqrt[3]{a}\,dx\log(c+dx) + \sqrt[3]{b}\,cx\log\left(\frac{d\left(\sqrt[3]{a}+\sqrt[3]{b}x\right)}{-\sqrt[3]{b}c+\sqrt[3]{a}d}\right)\log(c+dx) - \sqrt[3]{-1}\sqrt[3]{b}\,cx\log\left(\frac{d\left(\sqrt[3]{a}-\sqrt[3]{-1}\sqrt[3]{b}x\right)}{\sqrt[3]{-1}\sqrt[3]{b}c+\sqrt[3]{a}d}\right)\log(c+dx) + (-1)^{2/3}\sqrt[3]{b}\,cx\log\left(\frac{d\left(\sqrt[3]{a}+(-1)^{2/3}\sqrt[3]{b}x\right)}{-(-1)^{2/3}\sqrt[3]{b}c+\sqrt[3]{a}d}\right)\log(c+dx) + \sqrt[3]{b}\,cx\mathrm{Li}_2\left(\frac{\sqrt[3]{b}(c+dx)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right) + (-1)^{2/3}\sqrt[3]{b}\,cx\mathrm{Li}_2\left(\frac{(-1)^{2/3}\sqrt[3]{b}(c+dx)}{(-1)^{2/3}\sqrt[3]{b}c-\sqrt[3]{a}d}\right) - \sqrt[3]{-1}\sqrt[3]{b}\,cx\mathrm{Li}_2\left(\frac{\sqrt[3]{-1}\sqrt[3]{b}(c+dx)}{\sqrt[3]{-1}\sqrt[3]{b}c+\sqrt[3]{a}d}\right)}{3a^{4/3}cx}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[c + d*x]/(x^2*(a + b*x^3)),x]
```

```
[Out] (3*a^(1/3)*d*x*Log[x] - 3*a^(1/3)*c*Log[c + d*x] - 3*a^(1/3)*d*x*Log[c + d*
x] + b^(1/3)*c*x*Log[(d*(a^(1/3) + b^(1/3)*x))/(-(b^(1/3)*c) + a^(1/3)*d)]*
Log[c + d*x] - (-1)^(1/3)*b^(1/3)*c*x*Log[(d*(a^(1/3) - (-1)^(1/3)*b^(1/3)*
x))/((-1)^(1/3)*b^(1/3)*c + a^(1/3)*d)]*Log[c + d*x] + (-1)^(2/3)*b^(1/3)*c
*x*Log[(d*(a^(1/3) + (-1)^(2/3)*b^(1/3)*x))/(-((-1)^(2/3)*b^(1/3)*c) + a^(1
/3)*d)]*Log[c + d*x] + b^(1/3)*c*x*PolyLog[2, (b^(1/3)*(c + d*x))/(b^(1/3)*
c - a^(1/3)*d)] + (-1)^(2/3)*b^(1/3)*c*x*PolyLog[2, ((-1)^(2/3)*b^(1/3)*(c
```

```
+ d*x))/((-1)^(2/3)*b^(1/3)*c - a^(1/3)*d)] - (-1)^(1/3)*b^(1/3)*c*x*PolyLo
g[2, ((-1)^(1/3)*b^(1/3)*(c + d*x))/((-1)^(1/3)*b^(1/3)*c + a^(1/3)*d)])/(3
*a^(4/3)*c*x)
```

Maple [C] Result contains higher order function than in optimal. Order 9 vs. order 4.
time = 0.52, size = 124, normalized size = 0.31

method	result
derivativedivides	$d\left(\frac{\frac{\ln(-dx)}{c}-\frac{\ln(dx+c)(dx+c)}{cdx}}{a}+\frac{\sum_{\_R1=\mathrm{RootOf}\left(b\_Z^3-3cb\_Z^2+3b\,c^2\_Z+a\,d^3-b\,c^3\right)}\frac{\ln(dx+c)\ln\left(\frac{-dx+\_R1-c}{\_R1}\right)+\mathrm{dilog}\left(\cdots\right.}{-\_R1+c}}{3a}\right.$
default	$d\left(\frac{\frac{\ln(-dx)}{c}-\frac{\ln(dx+c)(dx+c)}{cdx}}{a}+\frac{\sum_{\_R1=\mathrm{RootOf}\left(b\_Z^3-3cb\_Z^2+3b\,c^2\_Z+a\,d^3-b\,c^3\right)}\frac{\ln(dx+c)\ln\left(\frac{-dx+\_R1-c}{\_R1}\right)+\mathrm{dilog}\left(\cdots\right.}{-\_R1+c}}{3a}\right.$
risch	$\frac{d\ln(-dx)}{ac}-\frac{d\ln(dx+c)}{ca}-\frac{\ln(dx+c)}{ax}+\frac{d\left(\sum_{\_R1=\mathrm{RootOf}\left(b\_Z^3-3cb\_Z^2+3b\,c^2\_Z+a\,d^3-b\,c^3\right)}\frac{\ln(dx+c)\ln\left(\frac{-dx+\_R1\cdots}{\_R1}\right.}{-\cdots}\right.}{3a}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(d*x+c)/x^2/(b*x^3+a),x,method=_RETURNVERBOSE)
```

```
[Out] d*((1/c*ln(-d*x)-ln(d*x+c)*(d*x+c)/c/d/x)/a+1/3*sum(1/(-_R1+c)*(ln(d*x+c)*l
n((-d*x+_R1-c)/_R1)+dilog((-d*x+_R1-c)/_R1)),_R1=RootOf(_Z^3*b-3*_Z^2*b*c+3
*_Z*b*c^2+a*d^3-b*c^3))/a)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(d*x+c)/x^2/(b*x^3+a),x, algorithm="maxima")
```

```
[Out] integrate(log(d*x + c)/((b*x^3 + a)*x^2), x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(d*x+c)/x^2/(b*x^3+a),x, algorithm="fricas")
```

```
[Out] integral(log(d*x + c)/(b*x^5 + a*x^2), x)
```

Sympy [**F(-1)**] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(d*x+c)/x**2/(b*x**3+a),x)
```

```
[Out] Timed out
```

Giac [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(d*x+c)/x^2/(b*x^3+a),x, algorithm="giac")
```

```
[Out] integrate(log(d*x + c)/((b*x^3 + a)*x^2), x)
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\ln\left(c+d\,x\right)}{x^2\,\left(b\,x^3+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(log(c + d*x)/(x^2*(a + b*x^3)),x)
```

```
[Out] int(log(c + d*x)/(x^2*(a + b*x^3)), x)
```

3.292 $\int \frac{\log(c+dx)}{x^3(a+bx^3)}\,dx$

Optimal. Leaf size=423

$$-\frac{d}{2acx}-\frac{d^2\log(x)}{2ac^2}+\frac{d^2\log(c+dx)}{2ac^2}-\frac{\log(c+dx)}{2ax^2}-\frac{b^{2/3}\log\left(-\frac{d\left(\sqrt[3]{a}+\sqrt[3]{b}\,x\right)}{\sqrt[3]{b}\,c-\sqrt[3]{a}\,d}\right)\log(c+dx)}{3a^{5/3}}-\frac{(-1)^{2/3}b^{2/3}\log\left(\right.}{}$$

```
[Out] -1/2*d/a/c/x-1/2*d^2*ln(x)/a/c^2+1/2*d^2*ln(d*x+c)/a/c^2-1/2*ln(d*x+c)/a/x^
2-1/3*b^(2/3)*ln(-d*(a^(1/3)+b^(1/3)*x)/(b^(1/3)*c-a^(1/3)*d))*ln(d*x+c)/a^
(5/3)-1/3*(-1)^(2/3)*b^(2/3)*ln(d*(a^(1/3)-(-1)^(1/3)*b^(1/3)*x)/((-1)^(1/3
)*b^(1/3)*c+a^(1/3)*d))*ln(d*x+c)/a^(5/3)+1/3*(-1)^(1/3)*b^(2/3)*ln(-d*(a^(
1/3)+(-1)^(2/3)*b^(1/3)*x)/((-1)^(2/3)*b^(1/3)*c-a^(1/3)*d))*ln(d*x+c)/a^(5
/3)-1/3*b^(2/3)*polylog(2,b^(1/3)*(d*x+c)/(b^(1/3)*c-a^(1/3)*d))/a^(5/3)+1/
3*(-1)^(1/3)*b^(2/3)*polylog(2,(-1)^(2/3)*b^(1/3)*(d*x+c)/((-1)^(2/3)*b^(1/
3)*c-a^(1/3)*d))/a^(5/3)-1/3*(-1)^(2/3)*b^(2/3)*polylog(2,(-1)^(1/3)*b^(1/3
)*(d*x+c)/((-1)^(1/3)*b^(1/3)*c+a^(1/3)*d))/a^(5/3)
```

Rubi [A]
time = 0.32, antiderivative size = 423, normalized size of antiderivative = 1.00, number of steps used = 16, number of rules used = 14, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.737$, Rules used = {331, 206, 31, 648, 631, 210, 642, 2463, 2442, 46, 2456, 2441, 2440, 2438}

$$-\frac{b^{2/3}\text{PolyLog}\left(2,\frac{\sqrt[3]{b}(c+dx)}{\sqrt[3]{b}\,c-\sqrt[3]{a}\,d}\right)}{3a^{5/3}}+\frac{\sqrt[3]{-1}\,b^{2/3}\text{PolyLog}\left(2,\frac{(-1)^{2/3}\sqrt[3]{b}(c+dx)}{(-1)^{2/3}\sqrt[3]{b}\,c-\sqrt[3]{a}\,d}\right)}{3a^{5/3}}-\frac{(-1)^{2/3}b^{2/3}\text{PolyLog}\left(2,\frac{\sqrt[3]{-1}\,\sqrt[3]{b}(c+dx)}{\sqrt[3]{a}\,d+\sqrt[3]{-1}\,\sqrt[3]{b}\,c}\right)}{3a^{5/3}}-\frac{b^{2/3}\log(c+dx)\log\left(-\frac{d\left(\sqrt[3]{a}+\sqrt[3]{b}\,x\right)}{\sqrt[3]{b}\,c-\sqrt[3]{a}\,d}\right)}{3a^{5/3}}-\frac{(-1)^{2/3}b^{2/3}\log(c+dx)\log\left(\frac{d\left(\sqrt[3]{a}-\sqrt[3]{-1}\,\sqrt[3]{b}\,x\right)}{\sqrt[3]{a}\,d+\sqrt[3]{-1}\,\sqrt[3]{b}\,c}\right)}{3a^{5/3}}+\frac{\sqrt[3]{-1}\,b^{2/3}\log(c+dx)\log\left(-\frac{d\left(\sqrt[3]{a}+(-1)^{2/3}\sqrt[3]{b}\,x\right)}{(-1)^{2/3}\sqrt[3]{b}\,c-\sqrt[3]{a}\,d}\right)}{3a^{5/3}}-\frac{d^2\log(x)}{2ac^2}+\frac{d^2\log(c+dx)}{2ac^2}-\frac{\log(c+dx)}{2ax^2}-\frac{d}{2acx}$$

Antiderivative was successfully verified.

```
[In] Int[Log[c + d*x]/(x^3*(a + b*x^3)),x]
```

```
[Out] -1/2*d/(a*c*x) - (d^2*Log[x])/(2*a*c^2) + (d^2*Log[c + d*x])/(2*a*c^2) - Lo
g[c + d*x]/(2*a*x^2) - (b^(2/3)*Log[-((d*(a^(1/3) + b^(1/3)*x))/(b^(1/3)*c
- a^(1/3)*d))]*Log[c + d*x])/(3*a^(5/3)) - ((-1)^(2/3)*b^(2/3)*Log[(d*(a^(1
/3) - (-1)^(1/3)*b^(1/3)*x))/((-1)^(1/3)*b^(1/3)*c + a^(1/3)*d)]*Log[c + d*
x])/(3*a^(5/3)) + ((-1)^(1/3)*b^(2/3)*Log[-((d*(a^(1/3) + (-1)^(2/3)*b^(1/3
)*x))/((-1)^(2/3)*b^(1/3)*c - a^(1/3)*d))]*Log[c + d*x])/(3*a^(5/3)) - (b^(
2/3)*PolyLog[2, (b^(1/3)*(c + d*x))/(b^(1/3)*c - a^(1/3)*d)])/(3*a^(5/3)) +
 ((-1)^(1/3)*b^(2/3)*PolyLog[2, ((-1)^(2/3)*b^(1/3)*(c + d*x))/((-1)^(2/3)*
b^(1/3)*c - a^(1/3)*d)])/(3*a^(5/3)) - ((-1)^(2/3)*b^(2/3)*PolyLog[2, ((-1)
^(1/3)*b^(1/3)*(c + d*x))/((-1)^(1/3)*b^(1/3)*c + a^(1/3)*d)])/(3*a^(5/3))
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 46

```
Int[((a_) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[E
xpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m +
 n + 2, 0])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^3)^(-1), x_Symbol] :> Dist[1/(3*Rt[a, 3]^2), Int[1/(
Rt[a, 3] + Rt[b, 3]*x), x], x] + Dist[1/(3*Rt[a, 3]^2), Int[(2*Rt[a, 3] - R
t[b, 3]*x)/(Rt[a, 3]^2 - Rt[a, 3]*Rt[b, 3]*x + Rt[b, 3]^2*x^2), x], x] /; F
reeQ[{a, b}, x]
```

Rule 210

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(-(Rt[-a, 2]*Rt[-b, 2])^(
-1))*ArcTan[Rt[-b, 2]*(x/Rt[-a, 2])], x] /; FreeQ[{a, b}, x] && PosQ[a/b] &
& (LtQ[a, 0] || LtQ[b, 0])
```

Rule 331

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(c*x
)^(m + 1)*((a + b*x^n)^(p + 1)/(a*c*(m + 1))), x] - Dist[b*((m + n*(p + 1)
+ 1)/(a*c^n*(m + 1))), Int[(c*x)^(m + n)*(a + b*x^n)^p, x], x] /; FreeQ[{a,
 b, c, p}, x] && IGtQ[n, 0] && LtQ[m, -1] && IntBinomialQ[a, b, c, n, m, p,
 x]
```

Rule 631

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[a*(c/b^2)]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + 2*c*(x/b)
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 642

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[d*(Log[RemoveContent[a + b*x + c*x^2, x]]/b), x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 648

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> D
ist[(2*c*d - b*e)/(2*c), Int[1/(a + b*x + c*x^2), x], x] + Dist[e/(2*c), In
t[(b + 2*c*x)/(a + b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ
```

```
[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] &&  !NiceSqrtQ[b^2 - 4*a*c]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + c*e*(x/g)])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2441

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d + e*x
)^n])/g), x] - Dist[b*e*(n/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2442

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[(f + g*x)^(q + 1)*((a + b*Log[c*(d + e*x)^n])/(
g*(q + 1))), x] - Dist[b*e*(n/(g*(q + 1))), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 2456

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_)^(r_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a + b*Log[c*(d + e*x)
^n])^p, (f + g*x^r)^q, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, r}, x] && I
GtQ[p, 0] && IntegerQ[q] && (GtQ[q, 0] || (IntegerQ[r] && NeQ[r, 1]))
```

Rule 2463

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rubi steps

$$\begin{aligned}
\int \frac{\log(c+dx)}{x^3\left(a+bx^3\right)}\,dx &= \int \left(\frac{\log(c+dx)}{ax^3}-\frac{b\log(c+dx)}{a\left(a+bx^3\right)}\right)dx \\
&= \frac{\int \frac{\log(c+dx)}{x^3}\,dx}{a}-\frac{b\int \frac{\log(c+dx)}{a+bx^3}\,dx}{a} \\
&= -\frac{\log(c+dx)}{2ax^2}-\frac{b\int \left(-\frac{\log(c+dx)}{3a^{2/3}\left(-\sqrt[3]{a}-\sqrt[3]{b}\,x\right)}-\frac{\log(c+dx)}{3a^{2/3}\left(-\sqrt[3]{a}+\sqrt[3]{-1}\,\sqrt[3]{b}\,x\right)}-\frac{\log(c-}{3a^{2/3}\left(-\sqrt[3]{a}-(\right.}\right.}{a} \\
&= -\frac{\log(c+dx)}{2ax^2}+\frac{b\int \frac{\log(c+dx)}{-\sqrt[3]{a}-\sqrt[3]{b}\,x}\,dx}{3a^{5/3}}+\frac{b\int \frac{\log(c+dx)}{-\sqrt[3]{a}+\sqrt[3]{-1}\,\sqrt[3]{b}\,x}\,dx}{3a^{5/3}}+\frac{b\int \frac{\log(c+dx)}{-\sqrt[3]{a}-(-1)^{2/3}\sqrt[3]{b}}}{3a^{5/3}} \\
&= -\frac{d}{2acx}-\frac{d^2\log(x)}{2ac^2}+\frac{d^2\log(c+dx)}{2ac^2}-\frac{\log(c+dx)}{2ax^2}-\frac{b^{2/3}\log\left(-\frac{d\left(\sqrt[3]{a}+\sqrt[3]{b}\,x\right)}{\sqrt[3]{b}\,c-\sqrt[3]{a}\,d}\right)\log}{3a^{5/3}} \\
&= -\frac{d}{2acx}-\frac{d^2\log(x)}{2ac^2}+\frac{d^2\log(c+dx)}{2ac^2}-\frac{\log(c+dx)}{2ax^2}-\frac{b^{2/3}\log\left(-\frac{d\left(\sqrt[3]{a}+\sqrt[3]{b}\,x\right)}{\sqrt[3]{b}\,c-\sqrt[3]{a}\,d}\right)\log}{3a^{5/3}} \\
&= -\frac{d}{2acx}-\frac{d^2\log(x)}{2ac^2}+\frac{d^2\log(c+dx)}{2ac^2}-\frac{\log(c+dx)}{2ax^2}-\frac{b^{2/3}\log\left(-\frac{d\left(\sqrt[3]{a}+\sqrt[3]{b}\,x\right)}{\sqrt[3]{b}\,c-\sqrt[3]{a}\,d}\right)\log}{3a^{5/3}}
\end{aligned}$$

Mathematica [A]
time = 0.16, size = 371, normalized size = 0.88

$$\frac{-\frac{3a^{2/3}\log(c+dx)}{x^2}-2b^{2/3}\log\left(\frac{d\left(\sqrt[3]{a}+\sqrt[3]{b}\,x\right)}{-\sqrt[3]{b}\,c+\sqrt[3]{a}\,d}\right)\log(c+dx)-2(-1)^{2/3}b^{2/3}\log\left(\frac{d\left(\sqrt[3]{a}-\sqrt[3]{-1}\,\sqrt[3]{b}\,x\right)}{\sqrt[3]{-1}\,\sqrt[3]{b}\,c+\sqrt[3]{a}\,d}\right)\log(c+dx)+2\sqrt[3]{-1}\,b^{2/3}\log\left(\frac{d\left(\sqrt[3]{a}+(-1)^{2/3}\sqrt[3]{b}\,x\right)}{-(-1)^{2/3}\sqrt[3]{b}\,c+\sqrt[3]{a}\,d}\right)\log(c+dx)-\frac{3a^{2/3}d(c+dx\log(x)-dx\log(c+dx))}{c^2x}-2b^{2/3}\mathrm{Li}_2\left(\frac{\sqrt[3]{b}\,(c+dx)}{\sqrt[3]{b}\,c-\sqrt[3]{a}\,d}\right)+2\sqrt[3]{-1}\,b^{2/3}\mathrm{Li}_2\left(\frac{(-1)^{2/3}\sqrt[3]{b}\,(c+dx)}{(-1)^{2/3}\sqrt[3]{b}\,c-\sqrt[3]{a}\,d}\right)-2(-1)^{2/3}b^{2/3}\mathrm{Li}_2\left(\frac{\sqrt[3]{-1}\,\sqrt[3]{b}\,(c+dx)}{\sqrt[3]{-1}\,\sqrt[3]{b}\,c+\sqrt[3]{a}\,d}\right)}{6a^{5/3}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[c + d*x]/(x^3*(a + b*x^3)),x]
```

```
[Out] ((-3*a^(2/3)*Log[c + d*x])/x^2 - 2*b^(2/3)*Log[(d*(a^(1/3) + b^(1/3)*x))/(-
(b^(1/3)*c) + a^(1/3)*d)]*Log[c + d*x] - 2*(-1)^(2/3)*b^(2/3)*Log[(d*(a^(1/
3) - (-1)^(1/3)*b^(1/3)*x))/((-1)^(1/3)*b^(1/3)*c + a^(1/3)*d)]*Log[c + d*x
] + 2*(-1)^(1/3)*b^(2/3)*Log[(d*(a^(1/3) + (-1)^(2/3)*b^(1/3)*x))/(-((-1)^(
2/3)*b^(1/3)*c) + a^(1/3)*d)]*Log[c + d*x] - (3*a^(2/3)*d*(c + d*x*Log[x] -
 d*x*Log[c + d*x]))/(c^2*x) - 2*b^(2/3)*PolyLog[2, (b^(1/3)*(c + d*x))/(b^(
1/3)*c - a^(1/3)*d)] + 2*(-1)^(1/3)*b^(2/3)*PolyLog[2, ((-1)^(2/3)*b^(1/3)*
```

```
(c + d*x))/((-1)^(2/3)*b^(1/3)*c - a^(1/3)*d)] - 2*(-1)^(2/3)*b^(2/3)*PolyL
og[2, ((-1)^(1/3)*b^(1/3)*(c + d*x))/((-1)^(1/3)*b^(1/3)*c + a^(1/3)*d)])/(
6*a^(5/3))
```

Maple [C] Result contains higher order function than in optimal. Order 9 vs. order 4.
time = 0.58, size = 150, normalized size = 0.35

method	result
derivativedivides	$d^{2}\left(-\frac{\sum_{\_R1=\mathrm{RootOf}\left(b\_Z^{3}-3cb\_Z^{2}+3bc^{2}\_Z+a\,d^{3}-b\,c^{3}\right)}\frac{\ln(dx+c)\ln\left(\frac{-dx+\_R1-c}{\_R1}\right)+\mathrm{dilog}\left(\frac{-dx+\_R1-c}{\_R1}\right)}{\_R1^{2}-2\_R1c+c^{2}}}{3a}+\frac{-\frac{1}{2c\cdots}}{\cdots}\right.$
default	$d^{2}\left(-\frac{\sum_{\_R1=\mathrm{RootOf}\left(b\_Z^{3}-3cb\_Z^{2}+3bc^{2}\_Z+a\,d^{3}-b\,c^{3}\right)}\frac{\ln(dx+c)\ln\left(\frac{-dx+\_R1-c}{\_R1}\right)+\mathrm{dilog}\left(\frac{-dx+\_R1-c}{\_R1}\right)}{\_R1^{2}-2\_R1c+c^{2}}}{3a}+\frac{-\frac{1}{2c\cdots}}{\cdots}\right.$
risch	$-\frac{d^{2}\left(\sum_{\_R1=\mathrm{RootOf}\left(b\_Z^{3}-3cb\_Z^{2}+3bc^{2}\_Z+a\,d^{3}-b\,c^{3}\right)}\frac{\ln(dx+c)\ln\left(\frac{-dx+\_R1-c}{\_R1}\right)+\mathrm{dilog}\left(\frac{-dx+\_R1-c}{\_R1}\right)}{\_R1^{2}-2\_R1c+c^{2}}\right)}{3a}-\frac{d}{2ca\cdots}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(d*x+c)/x^3/(b*x^3+a),x,method=_RETURNVERBOSE)
```

```
[Out] d^2*(-1/3*sum(1/(_R1^2-2*_R1*c+c^2)*(ln(d*x+c)*ln((-d*x+_R1-c)/_R1)+dilog((
-d*x+_R1-c)/_R1)),_R1=RootOf(_Z^3*b-3*_Z^2*b*c+3*_Z*b*c^2+a*d^3-b*c^3))/a+(
-1/2/c/d/x-1/2/c^2*ln(-d*x)-1/2*ln(d*x+c)*(d*x+c)*(-d*x+c)/c^2/d^2/x^2)/a)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(d*x+c)/x^3/(b*x^3+a),x, algorithm="maxima")
```

```
[Out] integrate(log(d*x + c)/((b*x^3 + a)*x^3), x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(d*x+c)/x^3/(b*x^3+a),x, algorithm="fricas")
```

```
[Out] integral(log(d*x + c)/(b*x^6 + a*x^3), x)
```

Sympy [**F(-1)**] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(d*x+c)/x**3/(b*x**3+a),x)
```

```
[Out] Timed out
```

Giac [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(d*x+c)/x^3/(b*x^3+a),x, algorithm="giac")
```

```
[Out] integrate(log(d*x + c)/((b*x^3 + a)*x^3), x)
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\ln\left(c+d\,x\right)}{x^3\,\left(b\,x^3+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(log(c + d*x)/(x^3*(a + b*x^3)),x)
```

```
[Out] int(log(c + d*x)/(x^3*(a + b*x^3)), x)
```

3.293 $\int \frac{x^7 \log(c+dx)}{a+bx^4}\,dx$

Optimal. Leaf size=498

$$\frac{c^3x}{4bd^3}-\frac{c^2x^2}{8bd^2}+\frac{cx^3}{12bd}-\frac{x^4}{16b}-\frac{c^4\log(c+dx)}{4bd^4}+\frac{x^4\log(c+dx)}{4b}-\frac{a\log\left(\frac{d\left(\sqrt{-\sqrt{-a}}-\sqrt[4]{b}\,x\right)}{\sqrt[4]{b}\,c+\sqrt{-\sqrt{-a}}\,d}\right)\log(c+dx)}{4b^2}-\frac{a\log}{}$$

[Out] 1/4*c^3*x/b/d^3-1/8*c^2*x^2/b/d^2+1/12*c*x^3/b/d-1/16*x^4/b-1/4*c^4*ln(d*x+c)/b/d^4+1/4*x^4*ln(d*x+c)/b-1/4*a*ln(d*((-a)^(1/4)-b^(1/4)*x)/(b^(1/4)*c+(-a)^(1/4)*d))*ln(d*x+c)/b^2-1/4*a*ln(-d*((-a)^(1/4)+b^(1/4)*x)/(b^(1/4)*c-(-a)^(1/4)*d))*ln(d*x+c)/b^2-1/4*a*ln(d*x+c)*ln(-d*(b^(1/4)*x+(-(-a)^(1/2))^(1/2))/(b^(1/4)*c-d*(-(-a)^(1/2))^(1/2)))/b^2-1/4*a*ln(d*x+c)*ln(d*(-b^(1/4)*x+(-(-a)^(1/2))^(1/2))/(b^(1/4)*c+d*(-(-a)^(1/2))^(1/2)))/b^2-1/4*a*polylog(2,b^(1/4)*(d*x+c)/(b^(1/4)*c-(-a)^(1/4)*d))/b^2-1/4*a*polylog(2,b^(1/4)*(d*x+c)/(b^(1/4)*c+(-a)^(1/4)*d))/b^2-1/4*a*polylog(2,b^(1/4)*(d*x+c)/(b^(1/4)*c-d*(-(-a)^(1/2))^(1/2)))/b^2-1/4*a*polylog(2,b^(1/4)*(d*x+c)/(b^(1/4)*c+d*(-(-a)^(1/2))^(1/2)))/b^2

Rubi [A]
time = 0.61, antiderivative size = 498, normalized size of antiderivative = 1.00, number of steps used = 23, number of rules used = 8, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.421$,
Rules used = {272, 45, 2463, 2442, 266, 2441, 2440, 2438}

$$-\frac{a\,\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}\,c-\sqrt{-\sqrt{-a}}\,d}\right)}{4b^2}-\frac{a\,\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt{-\sqrt{-a}}\,d+\sqrt[4]{b}\,c}\right)}{4b^2}-\frac{a\,\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}\,c-\sqrt[4]{-a}\,d}\right)}{4b^2}-\frac{a\,\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{-a}\,d+\sqrt[4]{b}\,c}\right)}{4b^2}-\frac{a\log(c+dx)\log\left(\frac{d\left(\sqrt{-\sqrt{-a}}-\sqrt[4]{b}\,x\right)}{\sqrt{-\sqrt{-a}}\,d+\sqrt[4]{b}\,c}\right)}{4b^2}-\frac{a\log(c+dx)\log\left(\frac{d\left(\sqrt[4]{-a}-\sqrt[4]{b}\,x\right)}{\sqrt[4]{-a}\,d+\sqrt[4]{b}\,c}\right)}{4b^2}-\frac{a\log(c+dx)\log\left(-\frac{d\left(\sqrt{-\sqrt{-a}}+\sqrt[4]{b}\,x\right)}{\sqrt[4]{b}\,c-\sqrt{-\sqrt{-a}}\,d}\right)}{4b^2}-\frac{a\log(c+dx)\log\left(-\frac{d\left(\sqrt[4]{-a}+\sqrt[4]{b}\,x\right)}{\sqrt[4]{b}\,c-\sqrt[4]{-a}\,d}\right)}{4b^2}-\frac{c^4\log(c+dx)}{4bd^4}+\frac{c^3x}{4bd^3}-\frac{c^2x^2}{8bd^2}+\frac{x^4\log(c+dx)}{4b}+\frac{cx^3}{12bd}-\frac{x^4}{16b}$$

Antiderivative was successfully verified.

[In] Int[(x^7*Log[c + d*x])/(a + b*x^4),x]

[Out] (c^3*x)/(4*b*d^3) - (c^2*x^2)/(8*b*d^2) + (c*x^3)/(12*b*d) - x^4/(16*b) - (c^4*Log[c + d*x])/(4*b*d^4) + (x^4*Log[c + d*x])/(4*b) - (a*Log[(d*(Sqrt[-Sqrt[-a]] - b^(1/4)*x))/(b^(1/4)*c + Sqrt[-Sqrt[-a]]*d)]*Log[c + d*x])/(4*b^2) - (a*Log[(d*((-a)^(1/4) - b^(1/4)*x))/(b^(1/4)*c + (-a)^(1/4)*d)]*Log[c + d*x])/(4*b^2) - (a*Log[-((d*(Sqrt[-Sqrt[-a]] + b^(1/4)*x))/(b^(1/4)*c - Sqrt[-Sqrt[-a]]*d))]*Log[c + d*x])/(4*b^2) - (a*Log[-((d*((-a)^(1/4) + b^(1/4)*x))/(b^(1/4)*c - (-a)^(1/4)*d))]*Log[c + d*x])/(4*b^2) - (a*PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c - Sqrt[-Sqrt[-a]]*d)])/(4*b^2) - (a*PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c + Sqrt[-Sqrt[-a]]*d)])/(4*b^2) - (a*PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c - (-a)^(1/4)*d)])/(4*b^2) - (a*PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c + (-a)^(1/4)*d)])/(4*b^2)

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 266

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 272

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + c*e*(x/g)])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2441

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d + e*x
)^n])/g), x] - Dist[b*e*(n/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2442

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[(f + g*x)^(q + 1)*((a + b*Log[c*(d + e*x)^n])/(
g*(q + 1))), x] - Dist[b*e*(n/(g*(q + 1))), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 2463

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
```

```
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rubi steps

$$\int \frac{x^7 \log(c+dx)}{a+bx^4}\,dx = \int \left(\frac{x^3\log(c+dx)}{b} - \frac{ax^3\log(c+dx)}{b\,(a+bx^4)}\right) dx$$

$$= \frac{\int x^3 \log(c+dx)\,dx}{b} - \frac{a\int \frac{x^3\log(c+dx)}{a+bx^4}\,dx}{b}$$

$$= \frac{x^4\log(c+dx)}{4b} - \frac{a\int\left(\frac{x\log(c+dx)}{2\left(-\sqrt{-a}\,\sqrt{b}+bx^2\right)} + \frac{x\log(c+dx)}{2\left(\sqrt{-a}\,\sqrt{b}+bx^2\right)}\right)dx}{b} - \frac{d\int\frac{x^4}{c+dx}\,dx}{4b}$$

$$= \frac{x^4\log(c+dx)}{4b} - \frac{a\int\frac{x\log(c+dx)}{-\sqrt{-a}\,\sqrt{b}+bx^2}\,dx}{2b} - \frac{a\int\frac{x\log(c+dx)}{\sqrt{-a}\,\sqrt{b}+bx^2}\,dx}{2b} - \frac{d\int\left(-\frac{c^3}{d^4}+\frac{c^2x}{d^3} \cdots\right.}{\cdots}$$

$$= \frac{c^3x}{4bd^3} - \frac{c^2x^2}{8bd^2} + \frac{cx^3}{12bd} - \frac{x^4}{16b} - \frac{c^4\log(c+dx)}{4bd^4} + \frac{x^4\log(c+dx)}{4b} - \frac{a\int\left(-\frac{\log \cdots}{2b^{3/4}\left(\sqrt{-\cdots}\right.}\right.}{\cdots}$$

$$= \frac{c^3x}{4bd^3} - \frac{c^2x^2}{8bd^2} + \frac{cx^3}{12bd} - \frac{x^4}{16b} - \frac{c^4\log(c+dx)}{4bd^4} + \frac{x^4\log(c+dx)}{4b} + \frac{a\int\frac{\log(c+dx)}{\sqrt{-\sqrt{-a}}-\sqrt[4]{\cdots}}}{4b^{7/4}}$$

$$= \frac{c^3x}{4bd^3} - \frac{c^2x^2}{8bd^2} + \frac{cx^3}{12bd} - \frac{x^4}{16b} - \frac{c^4\log(c+dx)}{4bd^4} + \frac{x^4\log(c+dx)}{4b} - \frac{a\log\left(\frac{d\left(\sqrt{-\sqrt{-\cdots}}\right.}{\sqrt[4]{b}\,c+\sqrt{-\cdots}}\right.}{\cdots}$$

$$= \frac{c^3x}{4bd^3} - \frac{c^2x^2}{8bd^2} + \frac{cx^3}{12bd} - \frac{x^4}{16b} - \frac{c^4\log(c+dx)}{4bd^4} + \frac{x^4\log(c+dx)}{4b} - \frac{a\log\left(\frac{d\left(\sqrt{-\sqrt{-\cdots}}\right.}{\sqrt[4]{b}\,c+\sqrt{-\cdots}}\right.}{\cdots}$$

$$= \frac{c^3x}{4bd^3} - \frac{c^2x^2}{8bd^2} + \frac{cx^3}{12bd} - \frac{x^4}{16b} - \frac{c^4\log(c+dx)}{4bd^4} + \frac{x^4\log(c+dx)}{4b} - \frac{a\log\left(\frac{d\left(\sqrt{-\sqrt{-\cdots}}\right.}{\sqrt[4]{b}\,c+\sqrt{-\cdots}}\right.}{\cdots}$$

Mathematica [C] Result contains complex when optimal does not.
time = 0.24, size = 446, normalized size = 0.90

$$-\frac{-12bc^3dx + 6bc^2d^2x^2 - 4bcd^3x^3 + 3bd^4x^4 + 12bc^4\log(c+dx) - 12bd^4x^4\log(c+dx) + 12ad^4\log\left(\frac{d\left(\sqrt[4]{-a}-\sqrt[4]{b}\,x\right)}{\sqrt[4]{b}\,c+\sqrt[4]{-a}\,d}\right)\log(c+dx) + 12ad^4\log\left(\frac{d\left(\sqrt[4]{-a}-i\sqrt[4]{b}\,x\right)}{i\sqrt[4]{b}\,c+\sqrt[4]{-a}\,d}\right)\log(c+dx) + 12ad^4\log\left(\frac{d\left(\sqrt[4]{-a}+i\sqrt[4]{b}\,x\right)}{-i\sqrt[4]{b}\,c+\sqrt[4]{-a}\,d}\right)\log(c+dx) + 12ad^4\log\left(\frac{d\left(\sqrt[4]{-a}+\sqrt[4]{b}\,x\right)}{-\sqrt[4]{b}\,c+\sqrt[4]{-a}\,d}\right)\log(c+dx) + 12ad^4\text{Li}_2\left(\frac{\sqrt[4]{b}\,(c+dx)}{\sqrt[4]{b}\,c-\sqrt[4]{-a}\,d}\right) + 12ad^4\text{Li}_2\left(\frac{\sqrt[4]{b}\,(c+dx)}{\sqrt[4]{b}\,c-i\sqrt[4]{-a}\,d}\right) + 12ad^4\text{Li}_2\left(\frac{\sqrt[4]{b}\,(c+dx)}{\sqrt[4]{b}\,c+i\sqrt[4]{-a}\,d}\right) + 12ad^4\text{Li}_2\left(\frac{\sqrt[4]{b}\,(c+dx)}{\sqrt[4]{b}\,c+\sqrt[4]{-a}\,d}\right)}{48b^2d^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^7*Log[c + d*x])/(a + b*x^4),x]
```

```
[Out] -1/48*(-12*b*c^3*d*x + 6*b*c^2*d^2*x^2 - 4*b*c*d^3*x^3 + 3*b*d^4*x^4 + 12*b
*c^4*Log[c + d*x] - 12*b*d^4*x^4*Log[c + d*x] + 12*a*d^4*Log[(d*((-a)^(1/4)
 - b^(1/4)*x))/(b^(1/4)*c + (-a)^(1/4)*d)]*Log[c + d*x] + 12*a*d^4*Log[(d*(
(-a)^(1/4) - I*b^(1/4)*x))/(I*b^(1/4)*c + (-a)^(1/4)*d)]*Log[c + d*x] + 12*
a*d^4*Log[(d*((-a)^(1/4) + I*b^(1/4)*x))/((-I)*b^(1/4)*c + (-a)^(1/4)*d)]*L
og[c + d*x] + 12*a*d^4*Log[(d*((-a)^(1/4) + b^(1/4)*x))/(-(b^(1/4)*c) + (-a
)^(1/4)*d)]*Log[c + d*x] + 12*a*d^4*PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)
*c - (-a)^(1/4)*d)] + 12*a*d^4*PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c -
I*(-a)^(1/4)*d)] + 12*a*d^4*PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c + I*(
-a)^(1/4)*d)] + 12*a*d^4*PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c + (-a)^(
1/4)*d)])/(b^2*d^4)
```

Maple [C] Result contains higher order function than in optimal. Order 9 vs. order 4.
time = 0.47, size = 209, normalized size = 0.42

method	result
risch	$-\frac{c^4 \ln(dx+c)}{4b\,d^4}+\frac{c^3 x}{4b\,d^3}+\frac{25c^4}{48d^4 b}-\frac{c^2 x^2}{8b\,d^2}+\frac{c\,x^3}{12bd}+\frac{x^4 \ln(dx+c)}{4b}-\frac{x^4}{16b}-\frac{\left(\sum_{\_R1=\text{RootOf}\left(b\_Z^4-4cb\_Z^3+6b\,c^2\_\right.}\right.}{}$
derivativedivides	$-\frac{\frac{\left(c^3((dx+c)\ln(dx+c)-dx-c)-3\left(\frac{(dx+c)^2\ln(dx+c)}{2}-\frac{(dx+c)^2}{4}\right)c^2+3\left(\frac{(dx+c)^3\ln(dx+c)}{3}-\frac{(dx+c)^3}{9}\right)c-\frac{(dx+c)^4\ln(dx+c)}{4}+\frac{(dx+c)}{16}\right.}{b}}{}$
default	$-\frac{\frac{\left(c^3((dx+c)\ln(dx+c)-dx-c)-3\left(\frac{(dx+c)^2\ln(dx+c)}{2}-\frac{(dx+c)^2}{4}\right)c^2+3\left(\frac{(dx+c)^3\ln(dx+c)}{3}-\frac{(dx+c)^3}{9}\right)c-\frac{(dx+c)^4\ln(dx+c)}{4}+\frac{(dx+c)}{16}\right.}{b}}{}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^7*ln(d*x+c)/(b*x^4+a),x,method=_RETURNVERBOSE)
```

```
[Out] 1/d^8*(-(c^3*((d*x+c)*ln(d*x+c)-d*x-c)-3*(1/2*(d*x+c)^2*ln(d*x+c)-1/4*(d*x+
c)^2)*c^2+3*(1/3*(d*x+c)^3*ln(d*x+c)-1/9*(d*x+c)^3)*c-1/4*(d*x+c)^4*ln(d*x+
c)+1/16*(d*x+c)^4)*d^4/b-1/4/b^2*sum(ln(d*x+c)*ln((-d*x+_R1-c)/_R1)+dilog((
-d*x+_R1-c)/_R1),_R1=RootOf(_Z^4*b-4*_Z^3*b*c+6*_Z^2*b*c^2-4*_Z*b*c^3+a*d^4
+b*c^4))*a*d^8)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^7*log(d*x+c)/(b*x^4+a),x, algorithm="maxima")
```

```
[Out] integrate(x^7*log(d*x + c)/(b*x^4 + a), x)
```

Fricas [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^7*log(d*x+c)/(b*x^4+a),x, algorithm="fricas")
```

```
[Out] integral(x^7*log(d*x + c)/(b*x^4 + a), x)
```

Sympy [**F(-1)**] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**7*ln(d*x+c)/(b*x**4+a),x)
```

```
[Out] Timed out
```

Giac [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^7*log(d*x+c)/(b*x^4+a),x, algorithm="giac")
```

```
[Out] integrate(x^7*log(d*x + c)/(b*x^4 + a), x)
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x^7\,\ln\left(c+d\,x\right)}{b\,x^4+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^7*log(c + d*x))/(a + b*x^4),x)
```

```
[Out] int((x^7*log(c + d*x))/(a + b*x^4), x)
```

3.294 $\int \frac{x^3 \log(c+dx)}{a+bx^4} \, dx$

Optimal. Leaf size=401

$$\frac{\log\left(\frac{d\left(\sqrt{-\sqrt{-a}}-\sqrt[4]{b}x\right)}{\sqrt[4]{b}c+\sqrt{-\sqrt{-a}}d}\right)\log(c+dx)}{4b}+\frac{\log\left(\frac{d\left(\sqrt[4]{-a}-\sqrt[4]{b}x\right)}{\sqrt[4]{b}c+\sqrt[4]{-a}d}\right)\log(c+dx)}{4b}+\frac{\log\left(-\frac{d\left(\sqrt{-\sqrt{-a}}+\sqrt[4]{b}x\right)}{\sqrt[4]{b}c-\sqrt{-\sqrt{-a}}d}\right.}{4b}$$

```
[Out] 1/4*ln(d*((-a)^(1/4)-b^(1/4)*x)/(b^(1/4)*c+(-a)^(1/4)*d))*ln(d*x+c)/b+1/4*l
n(-d*((-a)^(1/4)+b^(1/4)*x)/(b^(1/4)*c-(-a)^(1/4)*d))*ln(d*x+c)/b+1/4*ln(d*
x+c)*ln(-d*(b^(1/4)*x+(-(-a)^(1/2))^(1/2))/(b^(1/4)*c-d*(-(-a)^(1/2))^(1/2)
))/b+1/4*ln(d*x+c)*ln(d*(-b^(1/4)*x+(-(-a)^(1/2))^(1/2))/(b^(1/4)*c+d*(-(-a
)^(1/2))^(1/2)))/b+1/4*polylog(2,b^(1/4)*(d*x+c)/(b^(1/4)*c-(-a)^(1/4)*d))/
b+1/4*polylog(2,b^(1/4)*(d*x+c)/(b^(1/4)*c+(-a)^(1/4)*d))/b+1/4*polylog(2,b
^(1/4)*(d*x+c)/(b^(1/4)*c-d*(-(-a)^(1/2))^(1/2)))/b+1/4*polylog(2,b^(1/4)*(
d*x+c)/(b^(1/4)*c+d*(-(-a)^(1/2))^(1/2)))/b
```

Rubi [A]

time = 0.36, antiderivative size = 401, normalized size of antiderivative = 1.00, number of steps used = 18, number of rules used = 5, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.263$, Rules used = {266, 2463, 2441, 2440, 2438}

$$\frac{\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c-\sqrt{-\sqrt{-a}}d}\right)}{4b}+\frac{\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt{-\sqrt{-a}}d+\sqrt[4]{b}c}\right)}{4b}+\frac{\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c-\sqrt[4]{-a}d}\right)}{4b}+\frac{\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{-a}d+\sqrt[4]{b}c}\right)}{4b}+\frac{\log(c+dx)\log\left(\frac{d\left(\sqrt{-\sqrt{-a}}-\sqrt[4]{b}x\right)}{\sqrt{-\sqrt{-a}}d+\sqrt[4]{b}c}\right)}{4b}+\frac{\log(c+dx)\log\left(\frac{d\left(\sqrt[4]{-a}-\sqrt[4]{b}x\right)}{\sqrt[4]{-a}d+\sqrt[4]{b}c}\right)}{4b}+\frac{\log(c+dx)\log\left(-\frac{d\left(\sqrt{-\sqrt{-a}}+\sqrt[4]{b}x\right)}{\sqrt[4]{b}c-\sqrt{-\sqrt{-a}}d}\right)}{4b}+\frac{\log(c+dx)\log\left(-\frac{d\left(\sqrt[4]{-a}+\sqrt[4]{b}x\right)}{\sqrt[4]{b}c-\sqrt[4]{-a}d}\right)}{4b}$$

Antiderivative was successfully verified.

```
[In] Int[(x^3*Log[c + d*x])/(a + b*x^4),x]
```

```
[Out] (Log[(d*(Sqrt[-Sqrt[-a]] - b^(1/4)*x))/(b^(1/4)*c + Sqrt[-Sqrt[-a]]*d)]*Log
[c + d*x])/(4*b) + (Log[(d*((-a)^(1/4) - b^(1/4)*x))/(b^(1/4)*c + (-a)^(1/4
)*d)]*Log[c + d*x])/(4*b) + (Log[-((d*(Sqrt[-Sqrt[-a]] + b^(1/4)*x))/(b^(1/
4)*c - Sqrt[-Sqrt[-a]]*d))]*Log[c + d*x])/(4*b) + (Log[-((d*((-a)^(1/4) + b
^(1/4)*x))/(b^(1/4)*c - (-a)^(1/4)*d))]*Log[c + d*x])/(4*b) + PolyLog[2, (b
^(1/4)*(c + d*x))/(b^(1/4)*c - Sqrt[-Sqrt[-a]]*d)]/(4*b) + PolyLog[2, (b^(1
/4)*(c + d*x))/(b^(1/4)*c + Sqrt[-Sqrt[-a]]*d)]/(4*b) + PolyLog[2, (b^(1/4)
*(c + d*x))/(b^(1/4)*c - (-a)^(1/4)*d)]/(4*b) + PolyLog[2, (b^(1/4)*(c + d*
x))/(b^(1/4)*c + (-a)^(1/4)*d)]/(4*b)
```

Rule 266

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + c*e*(x/g)])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2441

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d + e*x
)^n])/g), x] - Dist[b*e*(n/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2463

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rubi steps

$$\begin{aligned}
\int \frac{x^3 \log(c+dx)}{a+bx^4}\,dx &= \int \left(\frac{x\log(c+dx)}{2\left(-\sqrt{-a}\,\sqrt{b}+bx^2\right)}+\frac{x\log(c+dx)}{2\left(\sqrt{-a}\,\sqrt{b}+bx^2\right)}\right)dx \\
&= \frac{1}{2}\int \frac{x\log(c+dx)}{-\sqrt{-a}\,\sqrt{b}+bx^2}\,dx+\frac{1}{2}\int \frac{x\log(c+dx)}{\sqrt{-a}\,\sqrt{b}+bx^2}\,dx \\
&= \frac{1}{2}\int \left(-\frac{\log(c+dx)}{2b^{3/4}\left(\sqrt{-\sqrt{-a}}-\sqrt[4]{b}\,x\right)}+\frac{\log(c+dx)}{2b^{3/4}\left(\sqrt{-\sqrt{-a}}+\sqrt[4]{b}\,x\right)}\right)dx+\frac{1}{2}\int \Bigg(
\\
&= -\frac{\int \frac{\log(c+dx)}{\sqrt{-\sqrt{-a}}-\sqrt[4]{b}\,x}\,dx}{4b^{3/4}}-\frac{\int \frac{\log(c+dx)}{\sqrt[4]{-a}-\sqrt[4]{b}\,x}\,dx}{4b^{3/4}}+\frac{\int \frac{\log(c+dx)}{\sqrt{-\sqrt{-a}}+\sqrt[4]{b}\,x}\,dx}{4b^{3/4}}+\frac{\int \frac{\log(c+\text{}}{\sqrt[4]{-a}+}}{4b^{3/}}
\\
&= \frac{\log\left(\frac{d\left(\sqrt{-\sqrt{-a}}-\sqrt[4]{b}\,x\right)}{\sqrt[4]{b}\,c+\sqrt{-\sqrt{-a}}\,d}\right)\log(c+dx)}{4b}+\frac{\log\left(\frac{d\left(\sqrt[4]{-a}-\sqrt[4]{b}\,x\right)}{\sqrt[4]{b}\,c+\sqrt[4]{-a}\,d}\right)\log(c+dx)}{4b}+-\ \text{lo}
\\
&= \frac{\log\left(\frac{d\left(\sqrt{-\sqrt{-a}}-\sqrt[4]{b}\,x\right)}{\sqrt[4]{b}\,c+\sqrt{-\sqrt{-a}}\,d}\right)\log(c+dx)}{4b}+\frac{\log\left(\frac{d\left(\sqrt[4]{-a}-\sqrt[4]{b}\,x\right)}{\sqrt[4]{b}\,c+\sqrt[4]{-a}\,d}\right)\log(c+dx)}{4b}+-\ \text{lo}
\\
&= \frac{\log\left(\frac{d\left(\sqrt{-\sqrt{-a}}-\sqrt[4]{b}\,x\right)}{\sqrt[4]{b}\,c+\sqrt{-\sqrt{-a}}\,d}\right)\log(c+dx)}{4b}+\frac{\log\left(\frac{d\left(\sqrt[4]{-a}-\sqrt[4]{b}\,x\right)}{\sqrt[4]{b}\,c+\sqrt[4]{-a}\,d}\right)\log(c+dx)}{4b}+-\ \text{lo}
\end{aligned}$$

Mathematica [C] Result contains complex when optimal does not.
time = 0.05, size = 383, normalized size = 0.96

$$\frac{\log\left(\frac{d\left(i\sqrt[4]{-a}-\sqrt[4]{b}\,x\right)}{\sqrt[4]{b}\,c+i\sqrt[4]{-a}\,d}\right)\log(c+dx)}{4b}+\frac{\log\left(\frac{d\left(\sqrt[4]{-a}-\sqrt[4]{b}\,x\right)}{\sqrt[4]{b}\,c+\sqrt[4]{-a}\,d}\right)\log(c+dx)}{4b}+\frac{\log\left(-\frac{d\left(i\sqrt[4]{-a}+\sqrt[4]{b}\,x\right)}{\sqrt[4]{b}\,c-i\sqrt[4]{-a}\,d}\right)\log(c+dx)}{4b}+\frac{\log\left(-\frac{d\left(\sqrt[4]{-a}+\sqrt[4]{b}\,x\right)}{\sqrt[4]{b}\,c-\sqrt[4]{-a}\,d}\right)\log(c+dx)}{4b}+\frac{\text{Li}_2\left(\frac{\sqrt[4]{b}\,(c+dx)}{\sqrt[4]{b}\,c-\sqrt[4]{-a}\,d}\right)}{4b}+\frac{\text{Li}_2\left(\frac{\sqrt[4]{b}\,(c+dx)}{\sqrt[4]{b}\,c-i\sqrt[4]{-a}\,d}\right)}{4b}+\frac{\text{Li}_2\left(\frac{\sqrt[4]{b}\,(c+dx)}{\sqrt[4]{b}\,c+i\sqrt[4]{-a}\,d}\right)}{4b}+\frac{\text{Li}_2\left(\frac{\sqrt[4]{b}\,(c+dx)}{\sqrt[4]{b}\,c+\sqrt[4]{-a}\,d}\right)}{4b}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^3*Log[c + d*x])/(a + b*x^4),x]
```

```
[Out] (Log[(d*(I*(-a)^(1/4) - b^(1/4)*x))/(b^(1/4)*c + I*(-a)^(1/4)*d)]*Log[c + d
*x])/(4*b) + (Log[(d*((-a)^(1/4) - b^(1/4)*x))/(b^(1/4)*c + (-a)^(1/4)*d)]*
```

```
Log[c + d*x])/(4*b) + (Log[-((d*(I*(-a)^(1/4) + b^(1/4)*x))/(b^(1/4)*c - I*
(-a)^(1/4)*d))]*Log[c + d*x])/(4*b) + (Log[-((d*((-a)^(1/4) + b^(1/4)*x))/(
b^(1/4)*c - (-a)^(1/4)*d))]*Log[c + d*x])/(4*b) + PolyLog[2, (b^(1/4)*(c +
d*x))/(b^(1/4)*c - (-a)^(1/4)*d)]/(4*b) + PolyLog[2, (b^(1/4)*(c + d*x))/(b
^(1/4)*c - I*(-a)^(1/4)*d)]/(4*b) + PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)
*c + I*(-a)^(1/4)*d)]/(4*b) + PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c + (
-a)^(1/4)*d)]/(4*b)
```

Maple [C] Result contains higher order function than in optimal. Order 9 vs. order 4.
time = 0.45, size = 85, normalized size = 0.21

method	result
derivativedivides	$\frac{\sum_{\_R1=\mathrm{RootOf}\left(b\_Z^4-4cb\_Z^3+6b\,c^2\_Z^2-4b\,c^3\_Z+a\,d^4+b\,c^4\right)}\left(\ln(dx+c)\ln\left(\frac{-dx+\_R1-c}{\_R1}\right)+\mathrm{dilog}\left(\frac{-dx+\_R1-c}{\_R1}\right)\right)}{4b}$
default	$\frac{\sum_{\_R1=\mathrm{RootOf}\left(b\_Z^4-4cb\_Z^3+6b\,c^2\_Z^2-4b\,c^3\_Z+a\,d^4+b\,c^4\right)}\left(\ln(dx+c)\ln\left(\frac{-dx+\_R1-c}{\_R1}\right)+\mathrm{dilog}\left(\frac{-dx+\_R1-c}{\_R1}\right)\right)}{4b}$
risch	$\frac{\sum_{\_R1=\mathrm{RootOf}\left(b\_Z^4-4cb\_Z^3+6b\,c^2\_Z^2-4b\,c^3\_Z+a\,d^4+b\,c^4\right)}\left(\ln(dx+c)\ln\left(\frac{-dx+\_R1-c}{\_R1}\right)+\mathrm{dilog}\left(\frac{-dx+\_R1-c}{\_R1}\right)\right)}{4b}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*ln(d*x+c)/(b*x^4+a),x,method=_RETURNVERBOSE)
```

```
[Out] 1/4/b*sum(ln(d*x+c)*ln((-d*x+_R1-c)/_R1)+dilog((-d*x+_R1-c)/_R1),_R1=RootOf
(_Z^4*b-4*_Z^3*b*c+6*_Z^2*b*c^2-4*_Z*b*c^3+a*d^4+b*c^4))
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*log(d*x+c)/(b*x^4+a),x, algorithm="maxima")
```

```
[Out] integrate(x^3*log(d*x + c)/(b*x^4 + a), x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*log(d*x+c)/(b*x^4+a),x, algorithm="fricas")
```

```
[Out] integral(x^3*log(d*x + c)/(b*x^4 + a), x)
```

Sympy [**F(-1)**] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*ln(d*x+c)/(b*x**4+a),x)
```

```
[Out] Timed out
```

Giac [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*log(d*x+c)/(b*x^4+a),x, algorithm="giac")
```

```
[Out] integrate(x^3*log(d*x + c)/(b*x^4 + a), x)
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x^3\,\ln\left(c+d\,x\right)}{b\,x^4+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^3*log(c + d*x))/(a + b*x^4),x)
```

```
[Out] int((x^3*log(c + d*x))/(a + b*x^4), x)
```

3.295 $\int \frac{\log(c+dx)}{x(a+bx^4)}\,dx$

Optimal. Leaf size=433

$$\frac{\log\left(-\frac{dx}{c}\right)\log(c+dx)}{a}-\frac{\log\left(\frac{d\left(\sqrt{-\sqrt{-a}}-\sqrt[4]{b}x\right)}{\sqrt[4]{b}c+\sqrt{-\sqrt{-a}}d}\right)\log(c+dx)}{4a}-\frac{\log\left(\frac{d\left(\sqrt[4]{-a}-\sqrt[4]{b}x\right)}{\sqrt[4]{b}c+\sqrt[4]{-a}d}\right)\log(c+dx)}{4a}-\ldots$$

```
[Out] ln(-d*x/c)*ln(d*x+c)/a-1/4*ln(d*((-a)^(1/4)-b^(1/4)*x)/(b^(1/4)*c+(-a)^(1/4
)*d))*ln(d*x+c)/a-1/4*ln(-d*((-a)^(1/4)+b^(1/4)*x)/(b^(1/4)*c-(-a)^(1/4)*d)
)*ln(d*x+c)/a-1/4*ln(d*x+c)*ln(-d*(b^(1/4)*x+(-(-a)^(1/2))^(1/2))/(b^(1/4)*
c-d*(-(-a)^(1/2))^(1/2)))/a-1/4*ln(d*x+c)*ln(d*(-b^(1/4)*x+(-(-a)^(1/2))^(1
/2))/(b^(1/4)*c+d*(-(-a)^(1/2))^(1/2)))/a-1/4*polylog(2,b^(1/4)*(d*x+c)/(b^
(1/4)*c-(-a)^(1/4)*d))/a-1/4*polylog(2,b^(1/4)*(d*x+c)/(b^(1/4)*c+(-a)^(1/4
)*d))/a+polylog(2,1+d*x/c)/a-1/4*polylog(2,b^(1/4)*(d*x+c)/(b^(1/4)*c-d*(-(
-a)^(1/2))^(1/2)))/a-1/4*polylog(2,b^(1/4)*(d*x+c)/(b^(1/4)*c+d*(-(-a)^(1/2
))^(1/2)))/a
```

Rubi [A]
time = 0.46, antiderivative size = 433, normalized size of antiderivative = 1.00, number of steps used = 22, number of rules used = 10, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.526$, Rules used = {272, 36, 29, 31, 2463, 2441, 2352, 266, 2440, 2438}

$$-\frac{\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c-\sqrt{-\sqrt{-a}}d}\right)}{4a}-\frac{\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt{-\sqrt{-a}}d+\sqrt[4]{b}c}\right)}{4a}-\frac{\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c-\sqrt[4]{-a}d}\right)}{4a}-\frac{\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{-a}d+\sqrt[4]{b}c}\right)}{4a}+\frac{\text{PolyLog}\left(2,\frac{dx}{c}+1\right)}{a}-\frac{\log(c+dx)\log\left(\frac{d\left(\sqrt{-\sqrt{-a}}-\sqrt[4]{b}x\right)}{\sqrt{-\sqrt{-a}}d+\sqrt[4]{b}c}\right)}{4a}-\frac{\log(c+dx)\log\left(\frac{d\left(\sqrt[4]{-a}-\sqrt[4]{b}x\right)}{\sqrt[4]{-a}d+\sqrt[4]{b}c}\right)}{4a}-\frac{\log(c+dx)\log\left(-\frac{d\left(\sqrt{-\sqrt{-a}}+\sqrt[4]{b}x\right)}{\sqrt[4]{b}c-\sqrt{-\sqrt{-a}}d}\right)}{4a}-\frac{\log(c+dx)\log\left(-\frac{d\left(\sqrt[4]{-a}+\sqrt[4]{b}x\right)}{\sqrt[4]{b}c-\sqrt[4]{-a}d}\right)}{4a}+\frac{\log\left(-\frac{dx}{c}\right)\log(c+dx)}{a}$$

Antiderivative was successfully verified.

```
[In] Int[Log[c + d*x]/(x*(a + b*x^4)),x]
```

```
[Out] (Log[-((d*x)/c)]*Log[c + d*x])/a - (Log[(d*(Sqrt[-Sqrt[-a]] - b^(1/4)*x))/(
b^(1/4)*c + Sqrt[-Sqrt[-a]]*d)]*Log[c + d*x])/(4*a) - (Log[(d*((-a)^(1/4) -
 b^(1/4)*x))/(b^(1/4)*c + (-a)^(1/4)*d)]*Log[c + d*x])/(4*a) - (Log[-((d*(S
qrt[-Sqrt[-a]] + b^(1/4)*x))/(b^(1/4)*c - Sqrt[-Sqrt[-a]]*d))]*Log[c + d*x]
)/(4*a) - (Log[-((d*((-a)^(1/4) + b^(1/4)*x))/(b^(1/4)*c - (-a)^(1/4)*d))]*
Log[c + d*x])/(4*a) - PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c - Sqrt[-Sqr
t[-a]]*d)]/(4*a) - PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c + Sqrt[-Sqrt[-
a]]*d)]/(4*a) - PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c - (-a)^(1/4)*d)]/
(4*a) - PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c + (-a)^(1/4)*d)]/(4*a) +
PolyLog[2, 1 + (d*x)/c]/a
```

Rule 29

```
Int[(x_)^(-1), x_Symbol] :> Simp[Log[x], x]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 36

```
Int[1/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))), x_Symbol] :> Dist[b/(b*c
 - a*d), Int[1/(a + b*x), x], x] - Dist[d/(b*c - a*d), Int[1/(c + d*x), x],
 x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0]
```

Rule 266

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 272

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 2352

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> Simp[(-e^(-1))*PolyLo
g[2, 1 - c*x], x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + c*e*(x/g)])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2441

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d + e*x
)^n])/g), x] - Dist[b*e*(n/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2463

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rubi steps

$$
\begin{aligned}
\int \frac{\log(c+dx)}{x\left(a+bx^4\right)}\,dx &= \int \left(\frac{\log(c+dx)}{ax}-\frac{bx^3\log(c+dx)}{a\left(a+bx^4\right)}\right)dx \\
&= \frac{\int \frac{\log(c+dx)}{x}\,dx}{a}-\frac{b\int \frac{x^3\log(c+dx)}{a+bx^4}\,dx}{a} \\
&= \frac{\log\left(-\frac{dx}{c}\right)\log(c+dx)}{a}-\frac{b\int \left(\frac{x\log(c+dx)}{2\left(-\sqrt{-a}\sqrt{b}+bx^2\right)}+\frac{x\log(c+dx)}{2\left(\sqrt{-a}\sqrt{b}+bx^2\right)}\right)dx}{a}-\frac{d\int \frac{\log\left(-\right.}{c+d}}{a} \\
&= \frac{\log\left(-\frac{dx}{c}\right)\log(c+dx)}{a}+\frac{\operatorname{Li}_2\left(1+\frac{dx}{c}\right)}{a}-\frac{b\int \frac{x\log(c+dx)}{-\sqrt{-a}\sqrt{b}+bx^2}\,dx}{2a}-\frac{b\int \frac{x\log(c+dx)}{\sqrt{-a}\sqrt{b}+bx^2}\,dx}{2a} \\
&= \frac{\log\left(-\frac{dx}{c}\right)\log(c+dx)}{a}+\frac{\operatorname{Li}_2\left(1+\frac{dx}{c}\right)}{a}-\frac{b\int \left(-\frac{\log(c+dx)}{2b^{3/4}\left(\sqrt{-\sqrt{-a}}-\sqrt[4]{b}x\right)}+\frac{\log(c}{2b^{3/4}\left(\sqrt{-\sqrt{}}\right.}\right.}{2a} \\
&= \frac{\log\left(-\frac{dx}{c}\right)\log(c+dx)}{a}+\frac{\operatorname{Li}_2\left(1+\frac{dx}{c}\right)}{a}+\frac{\sqrt[4]{b}\int \frac{\log(c+dx)}{\sqrt{-\sqrt{-a}}-\sqrt[4]{b}x}\,dx}{4a}+\frac{\sqrt[4]{b}\int \frac{\log(c+dx)}{\sqrt[4]{-a}-\sqrt[4]{b}}}{4a} \\
&= \frac{\log\left(-\frac{dx}{c}\right)\log(c+dx)}{a}-\frac{\log\left(\frac{d\left(\sqrt{-\sqrt{-a}}-\sqrt[4]{b}x\right)}{\sqrt[4]{b}c+\sqrt{-\sqrt{-a}}d}\right)\log(c+dx)}{4a}-\frac{\log\left(\frac{d\left(\sqrt[4]{-a}-\sqrt[4]{b}\right.}{\sqrt[4]{b}c+\sqrt[4]{-a}}\right.}{4a} \\
&= \frac{\log\left(-\frac{dx}{c}\right)\log(c+dx)}{a}-\frac{\log\left(\frac{d\left(\sqrt{-\sqrt{-a}}-\sqrt[4]{b}x\right)}{\sqrt[4]{b}c+\sqrt{-\sqrt{-a}}d}\right)\log(c+dx)}{4a}-\frac{\log\left(\frac{d\left(\sqrt[4]{-a}-\sqrt[4]{b}\right.}{\sqrt[4]{b}c+\sqrt[4]{-a}}\right.}{4a} \\
&= \frac{\log\left(-\frac{dx}{c}\right)\log(c+dx)}{a}-\frac{\log\left(\frac{d\left(\sqrt{-\sqrt{-a}}-\sqrt[4]{b}x\right)}{\sqrt[4]{b}c+\sqrt{-\sqrt{-a}}d}\right)\log(c+dx)}{4a}-\frac{\log\left(\frac{d\left(\sqrt[4]{-a}-\sqrt[4]{b}\right.}{\sqrt[4]{b}c+\sqrt[4]{-a}}\right.}{4a}
\end{aligned}
$$

Mathematica [C] Result contains complex when optimal does not.

time = 0.08, size = 416, normalized size = 0.96

$$\frac{\log\left(-\frac{dx}{c}\right)\log(c+dx)}{a}-\frac{\log\left(\frac{d\left(i\sqrt[4]{-a}-\sqrt[4]{b}\,x\right)}{\sqrt[4]{b}\,c+i\sqrt[4]{-a}\,d}\right)\log(c+dx)}{4a}-\frac{\log\left(\frac{d\left(\sqrt[4]{-a}-\sqrt[4]{b}\,x\right)}{\sqrt[4]{b}\,c+\sqrt[4]{-a}\,d}\right)\log(c+dx)}{4a}-\frac{\log\left(-\frac{d\left(i\sqrt[4]{-a}+\sqrt[4]{b}\,x\right)}{\sqrt[4]{b}\,c-i\sqrt[4]{-a}\,d}\right)\log(c+dx)}{4a}-\frac{\log\left(-\frac{d\left(\sqrt[4]{-a}+\sqrt[4]{b}\,x\right)}{\sqrt[4]{b}\,c-\sqrt[4]{-a}\,d}\right)\log(c+dx)}{4a}+\frac{\text{Li}_2\left(\frac{c+dx}{c}\right)}{a}-\frac{\text{Li}_2\left(\frac{\sqrt[4]{b}\,(c+dx)}{\sqrt[4]{b}\,c-\sqrt[4]{-a}\,d}\right)}{4a}-\frac{\text{Li}_2\left(\frac{\sqrt[4]{b}\,(c+dx)}{\sqrt[4]{b}\,c-i\sqrt[4]{-a}\,d}\right)}{4a}-\frac{\text{Li}_2\left(\frac{\sqrt[4]{b}\,(c+dx)}{\sqrt[4]{b}\,c+i\sqrt[4]{-a}\,d}\right)}{4a}-\frac{\text{Li}_2\left(\frac{\sqrt[4]{b}\,(c+dx)}{\sqrt[4]{b}\,c+\sqrt[4]{-a}\,d}\right)}{4a}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[c + d*x]/(x*(a + b*x^4)),x]
```

```
[Out] (Log[-((d*x)/c)]*Log[c + d*x])/a - (Log[(d*(I*(-a)^(1/4) - b^(1/4)*x))/(b^(
1/4)*c + I*(-a)^(1/4)*d)]*Log[c + d*x])/(4*a) - (Log[(d*((-a)^(1/4) - b^(1/
4)*x))/(b^(1/4)*c + (-a)^(1/4)*d)]*Log[c + d*x])/(4*a) - (Log[-((d*(I*(-a)^
(1/4) + b^(1/4)*x))/(b^(1/4)*c - I*(-a)^(1/4)*d))]*Log[c + d*x])/(4*a) - (L
og[-((d*((-a)^(1/4) + b^(1/4)*x))/(b^(1/4)*c - (-a)^(1/4)*d))]*Log[c + d*x]
)/(4*a) + PolyLog[2, (c + d*x)/c]/a - PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/
4)*c - (-a)^(1/4)*d)]/(4*a) - PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c - I
*(-a)^(1/4)*d)]/(4*a) - PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c + I*(-a)^
(1/4)*d)]/(4*a) - PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c + (-a)^(1/4)*d)
]/(4*a)
```

Maple [C] Result contains higher order function than in optimal. Order 9 vs. order 4.
time = 0.75, size = 114, normalized size = 0.26

method	result
derivativedivides	$-\frac{\sum_{\_R1=\text{RootOf}\left(b\,\_Z^4-4cb\,\_Z^3+6b\,c^2\,\_Z^2-4b\,c^3\,\_Z+a\,d^4+b\,c^4\right)}\left(\ln(dx+c)\ln\left(\frac{-dx+\_R1-c}{\_R1}\right)+\text{dilog}\left(\frac{-dx+\_R1-c}{\_R1}\right)\right.}{4a}$
default	$-\frac{\sum_{\_R1=\text{RootOf}\left(b\,\_Z^4-4cb\,\_Z^3+6b\,c^2\,\_Z^2-4b\,c^3\,\_Z+a\,d^4+b\,c^4\right)}\left(\ln(dx+c)\ln\left(\frac{-dx+\_R1-c}{\_R1}\right)+\text{dilog}\left(\frac{-dx+\_R1-c}{\_R1}\right)\right.}{4a}$
risch	$-\frac{\sum_{\_R1=\text{RootOf}\left(b\,\_Z^4-4cb\,\_Z^3+6b\,c^2\,\_Z^2-4b\,c^3\,\_Z+a\,d^4+b\,c^4\right)}\left(\ln(dx+c)\ln\left(\frac{-dx+\_R1-c}{\_R1}\right)+\text{dilog}\left(\frac{-dx+\_R1-c}{\_R1}\right)\right.}{4a}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(d*x+c)/x/(b*x^4+a),x,method=_RETURNVERBOSE)
```

```
[Out] -1/4*sum(ln(d*x+c)*ln((-d*x+_R1-c)/_R1)+dilog((-d*x+_R1-c)/_R1),_R1=RootOf(
_Z^4*b-4*_Z^3*b*c+6*_Z^2*b*c^2-4*_Z*b*c^3+a*d^4+b*c^4))/a+(dilog(-x*d/c)+ln
(d*x+c)*ln(-x*d/c))/a
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(d*x+c)/x/(b*x^4+a),x, algorithm="maxima")
```

```
[Out] integrate(log(d*x + c)/((b*x^4 + a)*x), x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(d*x+c)/x/(b*x^4+a),x, algorithm="fricas")
```

```
[Out] integral(log(d*x + c)/(b*x^5 + a*x), x)
```

Sympy [F(-1)] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(d*x+c)/x/(b*x**4+a),x)
```

```
[Out] Timed out
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(d*x+c)/x/(b*x^4+a),x, algorithm="giac")
```

```
[Out] integrate(log(d*x + c)/((b*x^4 + a)*x), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\ln(c + d\,x)}{x\,\left(b\,x^4 + a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(log(c + d*x)/(x*(a + b*x^4)),x)
```

```
[Out] int(log(c + d*x)/(x*(a + b*x^4)), x)
```

3.296 $\int \frac{x^5 \log(c+dx)}{a+bx^4} \, dx$

Optimal. Leaf size=530

$$\frac{cx}{2bd}-\frac{x^2}{4b}-\frac{c^2\log(c+dx)}{2bd^2}+\frac{x^2\log(c+dx)}{2b}-\frac{\sqrt{-a}\,\log\left(\frac{d\left(\sqrt{-\sqrt{-a}}-\sqrt[4]{b}\,x\right)}{\sqrt[4]{b}\,c+\sqrt{-\sqrt{-a}}\,d}\right)\log(c+dx)}{4b^{3/2}}+\frac{\sqrt{-a}\,\log\left(\frac{d\left(\right.}{}\right.}{}$$

```
[Out] 1/2*c*x/b/d-1/4*x^2/b-1/2*c^2*ln(d*x+c)/b/d^2+1/2*x^2*ln(d*x+c)/b+1/4*ln(d*
((-a)^(1/4)-b^(1/4)*x)/(b^(1/4)*c+(-a)^(1/4)*d))*ln(d*x+c)*(-a)^(1/2)/b^(3/
2)+1/4*ln(-d*((-a)^(1/4)+b^(1/4)*x)/(b^(1/4)*c-(-a)^(1/4)*d))*ln(d*x+c)*(-a
)^(1/2)/b^(3/2)-1/4*ln(d*x+c)*ln(-d*(b^(1/4)*x+(-(-a)^(1/2))^(1/2))/(b^(1/4
)*c-d*(-(-a)^(1/2))^(1/2)))*(-a)^(1/2)/b^(3/2)-1/4*ln(d*x+c)*ln(d*(-b^(1/4)
*x+(-(-a)^(1/2))^(1/2))/(b^(1/4)*c+d*(-(-a)^(1/2))^(1/2)))*(-a)^(1/2)/b^(3/
2)+1/4*polylog(2,b^(1/4)*(d*x+c)/(b^(1/4)*c-(-a)^(1/4)*d))*(-a)^(1/2)/b^(3/
2)+1/4*polylog(2,b^(1/4)*(d*x+c)/(b^(1/4)*c+(-a)^(1/4)*d))*(-a)^(1/2)/b^(3/
2)-1/4*polylog(2,b^(1/4)*(d*x+c)/(b^(1/4)*c-d*(-(-a)^(1/2))^(1/2)))*(-a)^(1
/2)/b^(3/2)-1/4*polylog(2,b^(1/4)*(d*x+c)/(b^(1/4)*c+d*(-(-a)^(1/2))^(1/2))
)*(-a)^(1/2)/b^(3/2)
```

Rubi [A]
time = 0.55, antiderivative size = 530, normalized size of antiderivative = 1.00, number of steps used = 23, number of rules used = 10, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.526$, Rules used = {281, 327, 211, 2463, 2442, 45, 266, 2441, 2440, 2438}

$$-\frac{\sqrt{-a}\,\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}\,c-\sqrt{-\sqrt{-a}}\,d}\right)}{4b^{3/2}}-\frac{\sqrt{-a}\,\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt{-\sqrt{-a}}\,d+\sqrt[4]{b}\,c}\right)}{4b^{3/2}}+\frac{\sqrt{-a}\,\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}\,c-\sqrt[4]{-a}\,d}\right)}{4b^{3/2}}+\frac{\sqrt{-a}\,\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{-a}\,d+\sqrt[4]{b}\,c}\right)}{4b^{3/2}}-\frac{\sqrt{-a}\,\log(c+dx)\log\left(\frac{d\left(\sqrt{-\sqrt{-a}}-\sqrt[4]{b}\,x\right)}{\sqrt{-\sqrt{-a}}\,d+\sqrt[4]{b}\,c}\right)}{4b^{3/2}}+\frac{\sqrt{-a}\,\log(c+dx)\log\left(\frac{d\left(\sqrt[4]{-a}-\sqrt[4]{b}\,x\right)}{\sqrt[4]{-a}\,d+\sqrt[4]{b}\,c}\right)}{4b^{3/2}}-\frac{\sqrt{-a}\,\log(c+dx)\log\left(-\frac{d\left(\sqrt{-\sqrt{-a}}+\sqrt[4]{b}\,x\right)}{\sqrt[4]{b}\,c-\sqrt{-\sqrt{-a}}\,d}\right)}{4b^{3/2}}+\frac{\sqrt{-a}\,\log(c+dx)\log\left(-\frac{d\left(\sqrt[4]{-a}+\sqrt[4]{b}\,x\right)}{\sqrt[4]{b}\,c-\sqrt[4]{-a}\,d}\right)}{4b^{3/2}}-\frac{c^2\log(c+dx)}{2bd^2}+\frac{x^2\log(c+dx)}{2b}+\frac{cx}{2bd}-\frac{x^2}{4b}$$

Antiderivative was successfully verified.

```
[In] Int[(x^5*Log[c + d*x])/(a + b*x^4),x]
```

```
[Out] (c*x)/(2*b*d) - x^2/(4*b) - (c^2*Log[c + d*x])/(2*b*d^2) + (x^2*Log[c + d*x
])/(2*b) - (Sqrt[-a]*Log[(d*(Sqrt[-Sqrt[-a]] - b^(1/4)*x))/(b^(1/4)*c + Sqr
t[-Sqrt[-a]]*d)]*Log[c + d*x])/(4*b^(3/2)) + (Sqrt[-a]*Log[(d*((-a)^(1/4) -
 b^(1/4)*x))/(b^(1/4)*c + (-a)^(1/4)*d)]*Log[c + d*x])/(4*b^(3/2)) - (Sqrt[
-a]*Log[-((d*(Sqrt[-Sqrt[-a]] + b^(1/4)*x))/(b^(1/4)*c - Sqrt[-Sqrt[-a]]*d)
)]*Log[c + d*x])/(4*b^(3/2)) + (Sqrt[-a]*Log[-((d*((-a)^(1/4) + b^(1/4)*x))
/(b^(1/4)*c - (-a)^(1/4)*d))]*Log[c + d*x])/(4*b^(3/2)) - (Sqrt[-a]*PolyLog
[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c - Sqrt[-Sqrt[-a]]*d)])/(4*b^(3/2)) - (Sq
rt[-a]*PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c + Sqrt[-Sqrt[-a]]*d)])/(4*
b^(3/2)) + (Sqrt[-a]*PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c - (-a)^(1/4)
*d)])/(4*b^(3/2)) + (Sqrt[-a]*PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c + (
-a)^(1/4)*d)])/(4*b^(3/2))
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 211

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]/a)*ArcTan[x/R
t[a/b, 2]], x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 266

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 281

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> With[{k = GCD[m
+ 1, n]}, Dist[1/k, Subst[Int[x^((m + 1)/k - 1)*(a + b*x^(n/k))^p, x], x, x
^k], x] /; k != 1] /; FreeQ[{a, b, p}, x] && IGtQ[n, 0] && IntegerQ[m]
```

Rule 327

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[c^(n
 - 1)*(c*x)^(m - n + 1)*((a + b*x^n)^(p + 1)/(b*(m + n*p + 1))), x] - Dist[
a*c^n*((m - n + 1)/(b*(m + n*p + 1))), Int[(c*x)^(m - n)*(a + b*x^n)^p, x],
 x] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && GtQ[m, n - 1] && NeQ[m + n*p
 + 1, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + c*e*(x/g)])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2441

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d + e*x
```

```
)^n])/g), x] - Dist[b*e*(n/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2442

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[(f + g*x)^(q + 1)*((a + b*Log[c*(d + e*x)^n])/(
g*(q + 1))), x] - Dist[b*e*(n/(g*(q + 1))), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 2463

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rubi steps

$$\int \frac{x^5\log(c+dx)}{a+bx^4}\,dx = \int \left(\frac{x\log(c+dx)}{b} - \frac{ax\log(c+dx)}{b\,(a+bx^4)}\right)\,dx$$

$$= \frac{\int x\log(c+dx)\,dx}{b} - \frac{a\int \frac{x\log(c+dx)}{a+bx^4}\,dx}{b}$$

$$= \frac{x^2\log(c+dx)}{2b} - \frac{a\int \left(-\frac{\sqrt{b}\,x\log(c+dx)}{2\sqrt{-a}\left(\sqrt{-a}\,\sqrt{b}-bx^2\right)} - \frac{\sqrt{b}\,x\log(c+dx)}{2\sqrt{-a}\left(\sqrt{-a}\,\sqrt{b}+bx^2\right)}\right)dx}{b} - \frac{d}{\cdots}$$

$$= \frac{x^2\log(c+dx)}{2b} - \frac{\sqrt{-a}\int \frac{x\log(c+dx)}{\sqrt{-a}\,\sqrt{b}-bx^2}\,dx}{2\sqrt{b}} - \frac{\sqrt{-a}\int \frac{x\log(c+dx)}{\sqrt{-a}\,\sqrt{b}+bx^2}\,dx}{2\sqrt{b}} - \frac{d\int\left(-\frac{c}{d^2}\cdots\right.}{\cdots}$$

$$= \frac{cx}{2bd} - \frac{x^2}{4b} - \frac{c^2\log(c+dx)}{2bd^2} + \frac{x^2\log(c+dx)}{2b} - \frac{\sqrt{-a}\int\left(-\frac{\log(c+dx)}{2b^{3/4}\left(\sqrt{-\sqrt{-a}}-\sqrt[4]{b}\,x\right)}\cdots\right.}{2\sqrt{b}\cdots}$$

$$= \frac{cx}{2bd} - \frac{x^2}{4b} - \frac{c^2\log(c+dx)}{2bd^2} + \frac{x^2\log(c+dx)}{2b} + \frac{\sqrt{-a}\int \frac{\log(c+dx)}{\sqrt{-\sqrt{-a}}-\sqrt[4]{b}\,x}\,dx}{4b^{5/4}} - \frac{\sqrt{-a}\cdots}{\cdots}$$

$$= \frac{cx}{2bd} - \frac{x^2}{4b} - \frac{c^2\log(c+dx)}{2bd^2} + \frac{x^2\log(c+dx)}{2b} - \frac{\sqrt{-a}\,\log\left(\frac{d\left(\sqrt{-\sqrt{-a}}-\sqrt[4]{b}\,x\right)}{\sqrt[4]{b}\,c+\sqrt{-\sqrt{-a}}\,d}\right)\log\cdots}{4b^{3/2}\cdots}$$

$$= \frac{cx}{2bd} - \frac{x^2}{4b} - \frac{c^2\log(c+dx)}{2bd^2} + \frac{x^2\log(c+dx)}{2b} - \frac{\sqrt{-a}\,\log\left(\frac{d\left(\sqrt{-\sqrt{-a}}-\sqrt[4]{b}\,x\right)}{\sqrt[4]{b}\,c+\sqrt{-\sqrt{-a}}\,d}\right)\log\cdots}{4b^{3/2}\cdots}$$

$$= \frac{cx}{2bd} - \frac{x^2}{4b} - \frac{c^2\log(c+dx)}{2bd^2} + \frac{x^2\log(c+dx)}{2b} - \frac{\sqrt{-a}\,\log\left(\frac{d\left(\sqrt{-\sqrt{-a}}-\sqrt[4]{b}\,x\right)}{\sqrt[4]{b}\,c+\sqrt{-\sqrt{-a}}\,d}\right)\log\cdots}{4b^{3/2}\cdots}$$

Mathematica [C] Result contains complex when optimal does not.

time = 0.17, size = 484, normalized size = 0.91

$$\frac{2\sqrt{b}\,cdx-\sqrt{b}\,d^2x^2-2\sqrt{b}\,c^2\log(c+dx)+2\sqrt{b}\,d^2x^2\log(c+dx)+\sqrt{-a}\,d^2\log\left(\frac{d\left(\sqrt[4]{-a}-\sqrt[4]{b}\,x\right)}{\sqrt[4]{b}\,c+\sqrt[4]{-a}\,d}\right)\log(c+dx)-\sqrt{-a}\,d^2\log\left(\frac{d\left(\sqrt[4]{-a}-i\sqrt[4]{b}\,x\right)}{i\sqrt[4]{b}\,c+\sqrt[4]{-a}\,d}\right)\log(c+dx)-\sqrt{-a}\,d^2\log\left(\frac{d\left(\sqrt[4]{-a}+i\sqrt[4]{b}\,x\right)}{-i\sqrt[4]{b}\,c+\sqrt[4]{-a}\,d}\right)\log(c+dx)+\sqrt{-a}\,d^2\log\left(\frac{d\left(\sqrt[4]{-a}+\sqrt[4]{b}\,x\right)}{-\sqrt[4]{b}\,c+\sqrt[4]{-a}\,d}\right)\log(c+dx)+\sqrt{-a}\,d^2\mathrm{Li}_2\left(\frac{\sqrt[4]{b}\,(c+dx)}{\sqrt[4]{b}\,c-\sqrt[4]{-a}\,d}\right)-\sqrt{-a}\,d^2\mathrm{Li}_2\left(\frac{\sqrt[4]{b}\,(c+dx)}{\sqrt[4]{b}\,c-i\sqrt[4]{-a}\,d}\right)-\sqrt{-a}\,d^2\mathrm{Li}_2\left(\frac{\sqrt[4]{b}\,(c+dx)}{\sqrt[4]{b}\,c+i\sqrt[4]{-a}\,d}\right)+\sqrt{-a}\,d^2\mathrm{Li}_2\left(\frac{\sqrt[4]{b}\,(c+dx)}{\sqrt[4]{b}\,c+\sqrt[4]{-a}\,d}\right)}{4b^{3/2}d^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^5*Log[c + d*x])/(a + b*x^4),x]
```

```
[Out] (2*Sqrt[b]*c*d*x - Sqrt[b]*d^2*x^2 - 2*Sqrt[b]*c^2*Log[c + d*x] + 2*Sqrt[b]
*d^2*x^2*Log[c + d*x] + Sqrt[-a]*d^2*Log[(d*((-a)^(1/4) - b^(1/4)*x))/(b^(1
/4)*c + (-a)^(1/4)*d)]*Log[c + d*x] - Sqrt[-a]*d^2*Log[(d*((-a)^(1/4) - I*b
^(1/4)*x))/(I*b^(1/4)*c + (-a)^(1/4)*d)]*Log[c + d*x] - Sqrt[-a]*d^2*Log[(d
*((-a)^(1/4) + I*b^(1/4)*x))/((-I)*b^(1/4)*c + (-a)^(1/4)*d)]*Log[c + d*x]
+ Sqrt[-a]*d^2*Log[(d*((-a)^(1/4) + b^(1/4)*x))/(-(b^(1/4)*c) + (-a)^(1/4)*
d)]*Log[c + d*x] + Sqrt[-a]*d^2*PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c -
 (-a)^(1/4)*d)] - Sqrt[-a]*d^2*PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c -
I*(-a)^(1/4)*d)] - Sqrt[-a]*d^2*PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c +
 I*(-a)^(1/4)*d)] + Sqrt[-a]*d^2*PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c
+ (-a)^(1/4)*d)])/(4*b^(3/2)*d^2)
```

Maple [**C**] Result contains higher order function than in optimal. Order 9 vs. order 4.
time = 0.47, size = 163, normalized size = 0.31

method	result
derivativedivides	$\frac{-\frac{\left(-\frac{(dx+c)^2\ln(dx+c)}{2}+\frac{(dx+c)^2}{4}+c((dx+c)\ln(dx+c)-dx-c)\right)d^4}{b}-\frac{\left(\sum_{\_R1=\mathrm{RootOf}\left(b\_Z^4-4cb\_Z^3+6b\,c^2\_Z^2-4b\,c^3\_Z+a\,d^4+\right.}\right.}{}}{d^6}$
default	$\frac{-\frac{\left(-\frac{(dx+c)^2\ln(dx+c)}{2}+\frac{(dx+c)^2}{4}+c((dx+c)\ln(dx+c)-dx-c)\right)d^4}{b}-\frac{\left(\sum_{\_R1=\mathrm{RootOf}\left(b\_Z^4-4cb\_Z^3+6b\,c^2\_Z^2-4b\,c^3\_Z+a\,d^4+\right.}\right.}{}}{d^6}$
risch	$\frac{x^2\ln(dx+c)}{2b}-\frac{c^2\ln(dx+c)}{2b\,d^2}-\frac{x^2}{4b}+\frac{cx}{2bd}+\frac{3c^2}{4d^2b}-\frac{d^2\left(\sum_{\_R1=\mathrm{RootOf}\left(b\_Z^4-4cb\_Z^3+6b\,c^2\_Z^2-4b\,c^3\_Z+a\,d^4+b\right.}\right.}{4b}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^5*ln(d*x+c)/(b*x^4+a),x,method=_RETURNVERBOSE)
```

```
[Out] 1/d^6*(-(-1/2*(d*x+c)^2*ln(d*x+c)+1/4*(d*x+c)^2+c*((d*x+c)*ln(d*x+c)-d*x-c)
)*d^4/b-1/4/b^2*sum(1/(_R1^2-2*_R1*c+c^2)*(ln(d*x+c)*ln((-d*x+_R1-c)/_R1)+d
ilog((-d*x+_R1-c)/_R1)),_R1=RootOf(_Z^4*b-4*_Z^3*b*c+6*_Z^2*b*c^2-4*_Z*b*c^
3+a*d^4+b*c^4))*a*d^8)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*log(d*x+c)/(b*x^4+a),x, algorithm="maxima")
[Out] integrate(x^5*log(d*x + c)/(b*x^4 + a), x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*log(d*x+c)/(b*x^4+a),x, algorithm="fricas")
[Out] integral(x^5*log(d*x + c)/(b*x^4 + a), x)
```

Sympy [F(-1)] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**5*ln(d*x+c)/(b*x**4+a),x)
[Out] Timed out
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*log(d*x+c)/(b*x^4+a),x, algorithm="giac")
[Out] integrate(x^5*log(d*x + c)/(b*x^4 + a), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x^5\,\ln\left(c+d\,x\right)}{b\,x^4+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^5*log(c + d*x))/(a + b*x^4),x)
[Out] int((x^5*log(c + d*x))/(a + b*x^4), x)
```

3.297 $\int \frac{x \log(c+dx)}{a+bx^4}\,dx$

Optimal. Leaf size=473

$$-\frac{\log\left(\frac{d\left(\sqrt{-\sqrt{-a}}-\sqrt[4]{b}\,x\right)}{\sqrt[4]{b}\,c+\sqrt{-\sqrt{-a}}\,d}\right)\log(c+dx)}{4\sqrt{-a}\,\sqrt{b}}+\frac{\log\left(\frac{d\left(\sqrt[4]{-a}-\sqrt[4]{b}\,x\right)}{\sqrt[4]{b}\,c+\sqrt[4]{-a}\,d}\right)\log(c+dx)}{4\sqrt{-a}\,\sqrt{b}}-\frac{\log\left(-\frac{d\left(\sqrt{-\sqrt{-a}}+\sqrt[4]{}\right.}{\sqrt[4]{b}\,c-\sqrt{-\sqrt{-}}}\right.}{4\sqrt{-a}}$$

```
[Out] 1/4*ln(d*((-a)^(1/4)-b^(1/4)*x)/(b^(1/4)*c+(-a)^(1/4)*d))*ln(d*x+c)/(-a)^(1
/2)/b^(1/2)+1/4*ln(-d*((-a)^(1/4)+b^(1/4)*x)/(b^(1/4)*c-(-a)^(1/4)*d))*ln(d
*x+c)/(-a)^(1/2)/b^(1/2)-1/4*ln(d*x+c)*ln(-d*(b^(1/4)*x+(-(-a)^(1/2))^(1/2)
)/(b^(1/4)*c-d*(-(-a)^(1/2))^(1/2)))/(-a)^(1/2)/b^(1/2)-1/4*ln(d*x+c)*ln(d*
(-b^(1/4)*x+(-(-a)^(1/2))^(1/2))/(b^(1/4)*c+d*(-(-a)^(1/2))^(1/2)))/(-a)^(1
/2)/b^(1/2)+1/4*polylog(2,b^(1/4)*(d*x+c)/(b^(1/4)*c-(-a)^(1/4)*d))/(-a)^(1
/2)/b^(1/2)+1/4*polylog(2,b^(1/4)*(d*x+c)/(b^(1/4)*c+(-a)^(1/4)*d))/(-a)^(1
/2)/b^(1/2)-1/4*polylog(2,b^(1/4)*(d*x+c)/(b^(1/4)*c-d*(-(-a)^(1/2))^(1/2))
)/(-a)^(1/2)/b^(1/2)-1/4*polylog(2,b^(1/4)*(d*x+c)/(b^(1/4)*c+d*(-(-a)^(1/2
))^(1/2)))/(-a)^(1/2)/b^(1/2)
```

Rubi [A]
time = 0.39, antiderivative size = 473, normalized size of antiderivative = 1.00, number of steps used = 18, number of rules used = 7, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}} = 0.412$, Rules used = {281, 211, 2463, 266, 2441, 2440, 2438}

$$-\frac{\text{PolyLog}\left(2,\frac{\sqrt[4]{b}\,(c+dx)}{\sqrt[4]{b}\,c-\sqrt{-\sqrt{-a}}\,d}\right)}{4\sqrt{-a}\,\sqrt{b}}-\frac{\text{PolyLog}\left(2,\frac{\sqrt[4]{b}\,(c+dx)}{\sqrt{-\sqrt{-a}}\,d+\sqrt[4]{b}\,c}\right)}{4\sqrt{-a}\,\sqrt{b}}+\frac{\text{PolyLog}\left(2,\frac{\sqrt[4]{b}\,(c+dx)}{\sqrt[4]{b}\,c-\sqrt[4]{-a}\,d}\right)}{4\sqrt{-a}\,\sqrt{b}}+\frac{\text{PolyLog}\left(2,\frac{\sqrt[4]{b}\,(c+dx)}{\sqrt[4]{-a}\,d+\sqrt[4]{b}\,c}\right)}{4\sqrt{-a}\,\sqrt{b}}-\frac{\log(c+dx)\log\left(\frac{d\left(\sqrt{-\sqrt{-a}}-\sqrt[4]{b}\,x\right)}{\sqrt{-\sqrt{-a}}\,d+\sqrt[4]{b}\,c}\right)}{4\sqrt{-a}\,\sqrt{b}}+\frac{\log(c+dx)\log\left(\frac{d\left(\sqrt[4]{-a}-\sqrt[4]{b}\,x\right)}{\sqrt[4]{-a}\,d+\sqrt[4]{b}\,c}\right)}{4\sqrt{-a}\,\sqrt{b}}-\frac{\log(c+dx)\log\left(-\frac{d\left(\sqrt{-\sqrt{-a}}+\sqrt[4]{b}\,x\right)}{\sqrt[4]{b}\,c-\sqrt{-\sqrt{-a}}\,d}\right)}{4\sqrt{-a}\,\sqrt{b}}+\frac{\log(c+dx)\log\left(-\frac{d\left(\sqrt[4]{-a}+\sqrt[4]{b}\,x\right)}{\sqrt[4]{b}\,c-\sqrt[4]{-a}\,d}\right)}{4\sqrt{-a}\,\sqrt{b}}$$

Antiderivative was successfully verified.

```
[In] Int[(x*Log[c + d*x])/(a + b*x^4),x]
```

```
[Out] -1/4*(Log[(d*(Sqrt[-Sqrt[-a]] - b^(1/4)*x))/(b^(1/4)*c + Sqrt[-Sqrt[-a]]*d)
]*Log[c + d*x])/(Sqrt[-a]*Sqrt[b]) + (Log[(d*((-a)^(1/4) - b^(1/4)*x))/(b^(
1/4)*c + (-a)^(1/4)*d)]*Log[c + d*x])/(4*Sqrt[-a]*Sqrt[b]) - (Log[-((d*(Sqr
t[-Sqrt[-a]] + b^(1/4)*x))/(b^(1/4)*c - Sqrt[-Sqrt[-a]]*d))]*Log[c + d*x])/
(4*Sqrt[-a]*Sqrt[b]) + (Log[-((d*((-a)^(1/4) + b^(1/4)*x))/(b^(1/4)*c - (-a
)^(1/4)*d))]*Log[c + d*x])/(4*Sqrt[-a]*Sqrt[b]) - PolyLog[2, (b^(1/4)*(c +
d*x))/(b^(1/4)*c - Sqrt[-Sqrt[-a]]*d)]/(4*Sqrt[-a]*Sqrt[b]) - PolyLog[2, (b
^(1/4)*(c + d*x))/(b^(1/4)*c + Sqrt[-Sqrt[-a]]*d)]/(4*Sqrt[-a]*Sqrt[b]) + P
olyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c - (-a)^(1/4)*d)]/(4*Sqrt[-a]*Sqrt[
b]) + PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c + (-a)^(1/4)*d)]/(4*Sqrt[-a
]*Sqrt[b])
```

Rule 211

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]/a)*ArcTan[x/R
t[a/b, 2]], x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 266

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 281

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> With[{k = GCD[m
+ 1, n]}, Dist[1/k, Subst[Int[x^((m + 1)/k - 1)*(a + b*x^(n/k))^p, x], x, x
^k], x] /; k != 1] /; FreeQ[{a, b, p}, x] && IGtQ[n, 0] && IntegerQ[m]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + c*e*(x/g)])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2441

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d + e*x
)^n])/g), x] - Dist[b*e*(n/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2463

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rubi steps

$$\int \frac{x\log(c+dx)}{a+bx^4}\,dx = \int \left(-\frac{\sqrt{b}\,x\log(c+dx)}{2\sqrt{-a}\left(\sqrt{-a}\sqrt{b}-bx^2\right)}-\frac{\sqrt{b}\,x\log(c+dx)}{2\sqrt{-a}\left(\sqrt{-a}\sqrt{b}+bx^2\right)}\right)dx$$

$$= -\frac{\sqrt{b}\int \frac{x\log(c+dx)}{\sqrt{-a}\sqrt{b}-bx^2}\,dx}{2\sqrt{-a}}-\frac{\sqrt{b}\int \frac{x\log(c+dx)}{\sqrt{-a}\sqrt{b}+bx^2}\,dx}{2\sqrt{-a}}$$

$$= -\frac{\sqrt{b}\int \left(-\frac{\log(c+dx)}{2b^{3/4}\left(\sqrt{-\sqrt{-a}}-\sqrt[4]{b}\,x\right)}+\frac{\log(c+dx)}{2b^{3/4}\left(\sqrt{-\sqrt{-a}}+\sqrt[4]{b}\,x\right)}\right)dx}{2\sqrt{-a}} - \frac{\sqrt{b}\int \left(-\frac{}{2b^{3}} \right.}{}$$

$$= \frac{\int \frac{\log(c+dx)}{\sqrt{-\sqrt{-a}}-\sqrt[4]{b}\,x}\,dx}{4\sqrt{-a}\sqrt[4]{b}}-\frac{\int \frac{\log(c+dx)}{\sqrt[4]{-a}-\sqrt[4]{b}\,x}\,dx}{4\sqrt{-a}\sqrt[4]{b}}-\frac{\int \frac{\log(c+dx)}{\sqrt{-\sqrt{-a}}+\sqrt[4]{b}\,x}\,dx}{4\sqrt{-a}\sqrt[4]{b}}+\frac{\int \frac{\log(c+dx}{\sqrt[4]{-a}+\sqrt[4]{}}}{4\sqrt{-a}}$$

$$= -\frac{\log\left(\frac{d\left(\sqrt{-\sqrt{-a}}-\sqrt[4]{b}\,x\right)}{\sqrt[4]{b}\,c+\sqrt{-\sqrt{-a}}\,d}\right)\log(c+dx)}{4\sqrt{-a}\sqrt{b}}+\frac{\log\left(\frac{d\left(\sqrt[4]{-a}-\sqrt[4]{b}\,x\right)}{\sqrt[4]{b}\,c+\sqrt[4]{-a}\,d}\right)\log(c+dx)}{4\sqrt{-a}\sqrt{b}}-$$

$$= -\frac{\log\left(\frac{d\left(\sqrt{-\sqrt{-a}}-\sqrt[4]{b}\,x\right)}{\sqrt[4]{b}\,c+\sqrt{-\sqrt{-a}}\,d}\right)\log(c+dx)}{4\sqrt{-a}\sqrt{b}}+\frac{\log\left(\frac{d\left(\sqrt[4]{-a}-\sqrt[4]{b}\,x\right)}{\sqrt[4]{b}\,c+\sqrt[4]{-a}\,d}\right)\log(c+dx)}{4\sqrt{-a}\sqrt{b}}-$$

$$= -\frac{\log\left(\frac{d\left(\sqrt{-\sqrt{-a}}-\sqrt[4]{b}\,x\right)}{\sqrt[4]{b}\,c+\sqrt{-\sqrt{-a}}\,d}\right)\log(c+dx)}{4\sqrt{-a}\sqrt{b}}+\frac{\log\left(\frac{d\left(\sqrt[4]{-a}-\sqrt[4]{b}\,x\right)}{\sqrt[4]{b}\,c+\sqrt[4]{-a}\,d}\right)\log(c+dx)}{4\sqrt{-a}\sqrt{b}}-$$

Mathematica [C] Result contains complex when optimal does not.
time = 0.09, size = 348, normalized size = 0.74

$$\frac{\log\left(\frac{d\left(\sqrt[4]{-a}-\sqrt[4]{b}\,x\right)}{\sqrt[4]{b}\,c+\sqrt[4]{-a}\,d}\right)\log(c+dx)-\log\left(\frac{d\left(\sqrt[4]{-a}-i\sqrt[4]{b}\,x\right)}{i\sqrt[4]{b}\,c+\sqrt[4]{-a}\,d}\right)\log(c+dx)-\log\left(\frac{d\left(\sqrt[4]{-a}+i\sqrt[4]{b}\,x\right)}{-i\sqrt[4]{b}\,c+\sqrt[4]{-a}\,d}\right)\log(c+dx)+\log\left(\frac{d\left(\sqrt[4]{-a}+\sqrt[4]{b}\,x\right)}{-\sqrt[4]{b}\,c+\sqrt[4]{-a}\,d}\right)\log(c+dx)+\mathrm{Li}_2\left(\frac{\sqrt[4]{b}\,(c+dx)}{\sqrt[4]{b}\,c-\sqrt[4]{-a}\,d}\right)-\mathrm{Li}_2\left(\frac{\sqrt[4]{b}\,(c+dx)}{\sqrt[4]{b}\,c-i\sqrt[4]{-a}\,d}\right)-\mathrm{Li}_2\left(\frac{\sqrt[4]{b}\,(c+dx)}{\sqrt[4]{b}\,c+i\sqrt[4]{-a}\,d}\right)+\mathrm{Li}_2\left(\frac{\sqrt[4]{b}\,(c+dx)}{\sqrt[4]{b}\,c+\sqrt[4]{-a}\,d}\right)}{4\sqrt{-a}\sqrt{b}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x*Log[c + d*x])/(a + b*x^4),x]
```

```
[Out] (Log[(d*((-a)^(1/4) - b^(1/4)*x))/(b^(1/4)*c + (-a)^(1/4)*d)]*Log[c + d*x]
- Log[(d*((-a)^(1/4) - I*b^(1/4)*x))/(I*b^(1/4)*c + (-a)^(1/4)*d)]*Log[c +
d*x] - Log[(d*((-a)^(1/4) + I*b^(1/4)*x))/((-I)*b^(1/4)*c + (-a)^(1/4)*d)]*
Log[c + d*x] + Log[(d*((-a)^(1/4) + b^(1/4)*x))/(-(b^(1/4)*c) + (-a)^(1/4)*
d)]*Log[c + d*x] + PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c - (-a)^(1/4)*d
)] - PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c - I*(-a)^(1/4)*d)] - PolyLog
[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c + I*(-a)^(1/4)*d)] + PolyLog[2, (b^(1/4)
*(c + d*x))/(b^(1/4)*c + (-a)^(1/4)*d)])/(4*Sqrt[-a]*Sqrt[b])
```

Maple [C] Result contains higher order function than in optimal. Order 9 vs. order 4.
time = 0.47, size = 102, normalized size = 0.22

method	result
derivativedivides	$\frac{d^{2}\left(\sum_{\_R1=\mathrm{RootOf}\left(b\_Z^{4}-4cb\_Z^{3}+6b\,c^{2}\_Z^{2}-4b\,c^{3}\_Z+a\,d^{4}+b\,c^{4}\right)}\frac{\ln\left(dx+c\right)\ln\left(\frac{-dx+\_R1-c}{\_R1}\right)+\mathrm{dilog}\left(\frac{-dx+\_R1-c}{\_R1}\right)}{\_R1^{2}-2\_R1c+c^{2}}\right)}{4b}$
default	$\frac{d^{2}\left(\sum_{\_R1=\mathrm{RootOf}\left(b\_Z^{4}-4cb\_Z^{3}+6b\,c^{2}\_Z^{2}-4b\,c^{3}\_Z+a\,d^{4}+b\,c^{4}\right)}\frac{\ln\left(dx+c\right)\ln\left(\frac{-dx+\_R1-c}{\_R1}\right)+\mathrm{dilog}\left(\frac{-dx+\_R1-c}{\_R1}\right)}{\_R1^{2}-2\_R1c+c^{2}}\right)}{4b}$
risch	$\frac{d^{2}\left(\sum_{\_R1=\mathrm{RootOf}\left(b\_Z^{4}-4cb\_Z^{3}+6b\,c^{2}\_Z^{2}-4b\,c^{3}\_Z+a\,d^{4}+b\,c^{4}\right)}\frac{\ln\left(dx+c\right)\ln\left(\frac{-dx+\_R1-c}{\_R1}\right)+\mathrm{dilog}\left(\frac{-dx+\_R1-c}{\_R1}\right)}{\_R1^{2}-2\_R1c+c^{2}}\right)}{4b}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*ln(d*x+c)/(b*x^4+a),x,method=_RETURNVERBOSE)
```

```
[Out] 1/4*d^2/b*sum(1/(_R1^2-2*_R1*c+c^2)*(ln(d*x+c)*ln((-d*x+_R1-c)/_R1)+dilog((
-d*x+_R1-c)/_R1)),_R1=RootOf(_Z^4*b-4*_Z^3*b*c+6*_Z^2*b*c^2-4*_Z*b*c^3+a*d^
4+b*c^4))
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*log(d*x+c)/(b*x^4+a),x, algorithm="maxima")
```

```
[Out] integrate(x*log(d*x + c)/(b*x^4 + a), x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*log(d*x+c)/(b*x^4+a),x, algorithm="fricas")
```

```
[Out] integral(x*log(d*x + c)/(b*x^4 + a), x)
```

Sympy [**F(-1)**] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*ln(d*x+c)/(b*x**4+a),x)
```

```
[Out] Timed out
```

Giac [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*log(d*x+c)/(b*x^4+a),x, algorithm="giac")
```

```
[Out] integrate(x*log(d*x + c)/(b*x^4 + a), x)
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x\,\ln\left(c+d\,x\right)}{b\,x^4+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x*log(c + d*x))/(a + b*x^4),x)
```

```
[Out] int((x*log(c + d*x))/(a + b*x^4), x)
```

3.298 $\int \frac{\log(c+dx)}{x^3\left(a+bx^4\right)}\,dx$

Optimal. Leaf size=537

$$-\frac{d}{2acx}-\frac{d^2\log(x)}{2ac^2}+\frac{d^2\log(c+dx)}{2ac^2}-\frac{\log(c+dx)}{2ax^2}-\frac{\sqrt{b}\,\log\left(\frac{d\left(\sqrt{-\sqrt{-a}}-\sqrt[4]{b}\,x\right)}{\sqrt[4]{b}\,c+\sqrt{-\sqrt{-a}}\,d}\right)\log(c+dx)}{4(-a)^{3/2}}+\frac{\sqrt{b}\,\log\Bigg(}{}$$

```
[Out] -1/2*d/a/c/x-1/2*d^2*ln(x)/a/c^2+1/2*d^2*ln(d*x+c)/a/c^2-1/2*ln(d*x+c)/a/x^
2+1/4*ln(d*((-a)^(1/4)-b^(1/4)*x)/(b^(1/4)*c+(-a)^(1/4)*d))*ln(d*x+c)*b^(1/
2)/(-a)^(3/2)+1/4*ln(-d*((-a)^(1/4)+b^(1/4)*x)/(b^(1/4)*c-(-a)^(1/4)*d))*ln
(d*x+c)*b^(1/2)/(-a)^(3/2)-1/4*ln(d*x+c)*ln(-d*(b^(1/4)*x+(-(-a)^(1/2))^(1/
2))/(b^(1/4)*c-d*(-(-a)^(1/2))^(1/2)))*b^(1/2)/(-a)^(3/2)-1/4*ln(d*x+c)*ln(
d*(-b^(1/4)*x+(-(-a)^(1/2))^(1/2))/(b^(1/4)*c+d*(-(-a)^(1/2))^(1/2)))*b^(1/
2)/(-a)^(3/2)+1/4*polylog(2,b^(1/4)*(d*x+c)/(b^(1/4)*c-(-a)^(1/4)*d))*b^(1/
2)/(-a)^(3/2)+1/4*polylog(2,b^(1/4)*(d*x+c)/(b^(1/4)*c+(-a)^(1/4)*d))*b^(1/
2)/(-a)^(3/2)-1/4*polylog(2,b^(1/4)*(d*x+c)/(b^(1/4)*c-d*(-(-a)^(1/2))^(1/2
)))*b^(1/2)/(-a)^(3/2)-1/4*polylog(2,b^(1/4)*(d*x+c)/(b^(1/4)*c+d*(-(-a)^(1
/2))^(1/2)))*b^(1/2)/(-a)^(3/2)
```

Rubi [A]
time = 0.53, antiderivative size = 537, normalized size of antiderivative = 1.00, number of steps used = 23, number of rules used = 10, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.526$, Rules used = {281, 331, 211, 2463, 2442, 46, 266, 2441, 2440, 2438}

$$-\frac{\sqrt{b}\,\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}\,c-\sqrt{-\sqrt{-a}}\,d}\right)}{4(-a)^{3/2}}-\frac{\sqrt{b}\,\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt{-\sqrt{-a}}\,d+\sqrt[4]{b}\,c}\right)}{4(-a)^{3/2}}+\frac{\sqrt{b}\,\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}\,c-\sqrt[4]{-a}\,d}\right)}{4(-a)^{3/2}}+\frac{\sqrt{b}\,\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{-a}\,d+\sqrt[4]{b}\,c}\right)}{4(-a)^{3/2}}-\frac{\sqrt{b}\log(c+dx)\log\left(\frac{d\left(\sqrt{-\sqrt{-a}}-\sqrt[4]{b}\,x\right)}{\sqrt{-\sqrt{-a}}\,d+\sqrt[4]{b}\,c}\right)}{4(-a)^{3/2}}+\frac{\sqrt{b}\log(c+dx)\log\left(\frac{d\left(\sqrt[4]{-a}-\sqrt[4]{b}\,x\right)}{\sqrt[4]{-a}\,d+\sqrt[4]{b}\,c}\right)}{4(-a)^{3/2}}-\frac{\sqrt{b}\log(c+dx)\log\left(-\frac{d\left(\sqrt{-\sqrt{-a}}+\sqrt[4]{b}\,x\right)}{\sqrt[4]{b}\,c-\sqrt{-\sqrt{-a}}\,d}\right)}{4(-a)^{3/2}}+\frac{\sqrt{b}\log(c+dx)\log\left(-\frac{d\left(\sqrt[4]{-a}+\sqrt[4]{b}\,x\right)}{\sqrt[4]{b}\,c-\sqrt[4]{-a}\,d}\right)}{4(-a)^{3/2}}-\frac{d^2\log(x)}{2ac^2}+\frac{d^2\log(c+dx)}{2ac^2}-\frac{\log(c+dx)}{2ax^2}-\frac{d}{2acx}$$

Antiderivative was successfully verified.

```
[In] Int[Log[c + d*x]/(x^3*(a + b*x^4)),x]
```

```
[Out] -1/2*d/(a*c*x) - (d^2*Log[x])/(2*a*c^2) + (d^2*Log[c + d*x])/(2*a*c^2) - Lo
g[c + d*x]/(2*a*x^2) - (Sqrt[b]*Log[(d*(Sqrt[-Sqrt[-a]] - b^(1/4)*x))/(b^(1
/4)*c + Sqrt[-Sqrt[-a]]*d)]*Log[c + d*x])/(4*(-a)^(3/2)) + (Sqrt[b]*Log[(d*
((-a)^(1/4) - b^(1/4)*x))/(b^(1/4)*c + (-a)^(1/4)*d)]*Log[c + d*x])/(4*(-a)
^(3/2)) - (Sqrt[b]*Log[-((d*(Sqrt[-Sqrt[-a]] + b^(1/4)*x))/(b^(1/4)*c - Sqr
t[-Sqrt[-a]]*d))]*Log[c + d*x])/(4*(-a)^(3/2)) + (Sqrt[b]*Log[-((d*((-a)^(1
/4) + b^(1/4)*x))/(b^(1/4)*c - (-a)^(1/4)*d))]*Log[c + d*x])/(4*(-a)^(3/2))
 - (Sqrt[b]*PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c - Sqrt[-Sqrt[-a]]*d)]
)/(4*(-a)^(3/2)) - (Sqrt[b]*PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c + Sqr
t[-Sqrt[-a]]*d)])/(4*(-a)^(3/2)) + (Sqrt[b]*PolyLog[2, (b^(1/4)*(c + d*x))/
(b^(1/4)*c - (-a)^(1/4)*d)])/(4*(-a)^(3/2)) + (Sqrt[b]*PolyLog[2, (b^(1/4)*
(c + d*x))/(b^(1/4)*c + (-a)^(1/4)*d)])/(4*(-a)^(3/2))
```

Rule 46

```
Int[((a_) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[E
xpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m +
 n + 2, 0])
```

Rule 211

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]/a)*ArcTan[x/R
t[a/b, 2]], x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 266

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 281

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> With[{k = GCD[m
+ 1, n]}, Dist[1/k, Subst[Int[x^((m + 1)/k - 1)*(a + b*x^(n/k))^p, x], x, x
^k], x] /; k != 1] /; FreeQ[{a, b, p}, x] && IGtQ[n, 0] && IntegerQ[m]
```

Rule 331

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(c*x
)^(m + 1)*((a + b*x^n)^(p + 1)/(a*c*(m + 1))), x] - Dist[b*((m + n*(p + 1)
+ 1)/(a*c^n*(m + 1))), Int[(c*x)^(m + n)*(a + b*x^n)^p, x], x] /; FreeQ[{a,
 b, c, p}, x] && IGtQ[n, 0] && LtQ[m, -1] && IntBinomialQ[a, b, c, n, m, p,
 x]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + c*e*(x/g)])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2441

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d + e*x
```

```
)^n])/g), x] - Dist[b*e*(n/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2442

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[(f + g*x)^(q + 1)*((a + b*Log[c*(d + e*x)^n])/(
g*(q + 1))), x] - Dist[b*e*(n/(g*(q + 1))), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 2463

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rubi steps

$$\int \frac{\log(c+dx)}{x^3\left(a+bx^4\right)}\,dx = \int \left(\frac{\log(c+dx)}{ax^3} - \frac{bx\log(c+dx)}{a\left(a+bx^4\right)}\right)\,dx$$

$$= \frac{\int \frac{\log(c+dx)}{x^3}\,dx}{a} - \frac{b\int \frac{x\log(c+dx)}{a+bx^4}\,dx}{a}$$

$$= -\frac{\log(c+dx)}{2ax^2} - \frac{b\int \left(-\frac{\sqrt{b}\,x\log(c+dx)}{2\sqrt{-a}\left(\sqrt{-a}\sqrt{b}-bx^2\right)} - \frac{\sqrt{b}\,x\log(c+dx)}{2\sqrt{-a}\left(\sqrt{-a}\sqrt{b}+bx^2\right)}\right)dx}{a} + \frac{d\int}{}$$

$$= -\frac{\log(c+dx)}{2ax^2} - \frac{b^{3/2}\int \frac{x\log(c+dx)}{\sqrt{-a}\sqrt{b}-bx^2}\,dx}{2(-a)^{3/2}} - \frac{b^{3/2}\int \frac{x\log(c+dx)}{\sqrt{-a}\sqrt{b}+bx^2}\,dx}{2(-a)^{3/2}} + \frac{d\int\left(\frac{1}{cx^2} - \frac{d}{c^2x} + \right.}{2a}$$

$$= -\frac{d}{2acx} - \frac{d^2\log(x)}{2ac^2} + \frac{d^2\log(c+dx)}{2ac^2} - \frac{\log(c+dx)}{2ax^2} - \frac{b^{3/2}\int\left(-\frac{\log(c+dx)}{2b^{3/4}\left(\sqrt{-\sqrt{-a}}-\sqrt[4]{b}\right.}\right.}{2(}$$

$$= -\frac{d}{2acx} - \frac{d^2\log(x)}{2ac^2} + \frac{d^2\log(c+dx)}{2ac^2} - \frac{\log(c+dx)}{2ax^2} + \frac{b^{3/4}\int \frac{\log(c+dx)}{\sqrt{-\sqrt{-a}}-\sqrt[4]{b}\,x}\,dx}{4(-a)^{3/2}} - \frac{b}{}$$

$$= -\frac{d}{2acx} - \frac{d^2\log(x)}{2ac^2} + \frac{d^2\log(c+dx)}{2ac^2} - \frac{\log(c+dx)}{2ax^2} - \frac{\sqrt{b}\log\left(\frac{d\left(\sqrt{-\sqrt{-a}}-\sqrt[4]{b}\,x\right)}{\sqrt[4]{b}\,c+\sqrt{-\sqrt{-a}}\,d}\right.}{4(-a)^{3/2}}$$

$$= -\frac{d}{2acx} - \frac{d^2\log(x)}{2ac^2} + \frac{d^2\log(c+dx)}{2ac^2} - \frac{\log(c+dx)}{2ax^2} - \frac{\sqrt{b}\log\left(\frac{d\left(\sqrt{-\sqrt{-a}}-\sqrt[4]{b}\,x\right)}{\sqrt[4]{b}\,c+\sqrt{-\sqrt{-a}}\,d}\right.}{4(-a)^{3/2}}$$

$$= -\frac{d}{2acx} - \frac{d^2\log(x)}{2ac^2} + \frac{d^2\log(c+dx)}{2ac^2} - \frac{\log(c+dx)}{2ax^2} - \frac{\sqrt{b}\log\left(\frac{d\left(\sqrt{-\sqrt{-a}}-\sqrt[4]{b}\,x\right)}{\sqrt[4]{b}\,c+\sqrt{-\sqrt{-a}}\,d}\right.}{4(-a)^{3/2}}$$

Mathematica [C] Result contains complex when optimal does not.

time = 0.16, size = 506, normalized size = 0.94

$$-\frac{\log(c+dx)}{2ax^2}-\frac{\sqrt{b}\log\left(\frac{d\left(i\sqrt[4]{-a}-\sqrt[4]{b}x\right)}{\sqrt[4]{b}c+i\sqrt[4]{-a}d}\right)\log(c+dx)}{4(-a)^{3/2}}+\frac{\sqrt{b}\log\left(\frac{d\left(\sqrt[4]{-a}-\sqrt[4]{b}x\right)}{\sqrt[4]{b}c+\sqrt[4]{-a}d}\right)\log(c+dx)}{4(-a)^{3/2}}-\frac{\sqrt{b}\log\left(-\frac{d\left(i\sqrt[4]{-a}+\sqrt[4]{b}x\right)}{\sqrt[4]{b}c-i\sqrt[4]{-a}d}\right)\log(c+dx)}{4(-a)^{3/2}}+\frac{\sqrt{b}\log\left(-\frac{d\left(\sqrt[4]{-a}+\sqrt[4]{b}x\right)}{\sqrt[4]{b}c-\sqrt[4]{-a}d}\right)\log(c+dx)}{4(-a)^{3/2}}-\frac{d\left(\frac{1}{cx}+\frac{d\log(x)}{c^2}-\frac{d\log(c+dx)}{c^2}\right)}{2a}+\frac{\sqrt{b}\,\mathrm{Li}_2\left(\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c-\sqrt[4]{-a}d}\right)}{4(-a)^{3/2}}-\frac{\sqrt{b}\,\mathrm{Li}_2\left(\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c-i\sqrt[4]{-a}d}\right)}{4(-a)^{3/2}}-\frac{\sqrt{b}\,\mathrm{Li}_2\left(\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c+i\sqrt[4]{-a}d}\right)}{4(-a)^{3/2}}+\frac{\sqrt{b}\,\mathrm{Li}_2\left(\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c+\sqrt[4]{-a}d}\right)}{4(-a)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[c + d*x]/(x^3*(a + b*x^4)),x]
```

```
[Out] -1/2*Log[c + d*x]/(a*x^2) - (Sqrt[b]*Log[(d*(I*(-a)^(1/4) - b^(1/4)*x))/(b^
(1/4)*c + I*(-a)^(1/4)*d)]*Log[c + d*x])/(4*(-a)^(3/2)) + (Sqrt[b]*Log[(d*(
(-a)^(1/4) - b^(1/4)*x))/(b^(1/4)*c + (-a)^(1/4)*d)]*Log[c + d*x])/(4*(-a)^
(3/2)) - (Sqrt[b]*Log[-((d*(I*(-a)^(1/4) + b^(1/4)*x))/(b^(1/4)*c - I*(-a)^
(1/4)*d))]*Log[c + d*x])/(4*(-a)^(3/2)) + (Sqrt[b]*Log[-((d*((-a)^(1/4) + b
^(1/4)*x))/(b^(1/4)*c - (-a)^(1/4)*d))]*Log[c + d*x])/(4*(-a)^(3/2)) - (d*(
1/(c*x) + (d*Log[x])/c^2 - (d*Log[c + d*x])/c^2))/(2*a) + (Sqrt[b]*PolyLog[
2, (b^(1/4)*(c + d*x))/(b^(1/4)*c - (-a)^(1/4)*d)])/(4*(-a)^(3/2)) - (Sqrt[
b]*PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c - I*(-a)^(1/4)*d)])/(4*(-a)^(3
/2)) - (Sqrt[b]*PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c + I*(-a)^(1/4)*d)
])/(4*(-a)^(3/2)) + (Sqrt[b]*PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c + (-
a)^(1/4)*d)])/(4*(-a)^(3/2))
```

Maple [C] Result contains higher order function than in optimal. Order 9 vs. order 4.
time = 0.50, size = 158, normalized size = 0.29

method	result
derivativedivides	$d^2\left(-\frac{\sum_{\_R1=\mathrm{RootOf}\left(b\_Z^4-4cb\_Z^3+6b\,c^2\_Z^2-4b\,c^3\_Z+a\,d^4+b\,c^4\right)}\frac{\ln(dx+c)\ln\left(\frac{-dx+\_R1-c}{\_R1}\right)+\mathrm{dilog}\left(\frac{-dx+\_R1-c}{\_R1}\right)}{\_R1^2-2\_R1c+c^2}}{4a}\right.$
default	$d^2\left(-\frac{\sum_{\_R1=\mathrm{RootOf}\left(b\_Z^4-4cb\_Z^3+6b\,c^2\_Z^2-4b\,c^3\_Z+a\,d^4+b\,c^4\right)}\frac{\ln(dx+c)\ln\left(\frac{-dx+\_R1-c}{\_R1}\right)+\mathrm{dilog}\left(\frac{-dx+\_R1-c}{\_R1}\right)}{\_R1^2-2\_R1c+c^2}}{4a}\right.$
risch	$-\frac{d^2\left(\sum_{\_R1=\mathrm{RootOf}\left(b\_Z^4-4cb\_Z^3+6b\,c^2\_Z^2-4b\,c^3\_Z+a\,d^4+b\,c^4\right)}\frac{\ln(dx+c)\ln\left(\frac{-dx+\_R1-c}{\_R1}\right)+\mathrm{dilog}\left(\frac{-dx+\_R1-c}{\_R1}\right)}{\_R1^2-2\_R1c+c^2}\right.}{4a}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(d*x+c)/x^3/(b*x^4+a),x,method=_RETURNVERBOSE)
```

```
[Out] d^2*(-1/4*sum(1/(_R1^2-2*_R1*c+c^2)*(ln(d*x+c)*ln((-d*x+_R1-c)/_R1)+dilog((
-d*x+_R1-c)/_R1)),_R1=RootOf(_Z^4*b-4*_Z^3*b*c+6*_Z^2*b*c^2-4*_Z*b*c^3+a*d^
```

```
4+b*c^4))/a+(-1/2/c/d/x-1/2/c^2*ln(-d*x)-1/2*ln(d*x+c)*(d*x+c)*(-d*x+c)/c^2
/d^2/x^2)/a)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(d*x+c)/x^3/(b*x^4+a),x, algorithm="maxima")
[Out] integrate(log(d*x + c)/((b*x^4 + a)*x^3), x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(d*x+c)/x^3/(b*x^4+a),x, algorithm="fricas")
[Out] integral(log(d*x + c)/(b*x^7 + a*x^3), x)
```

Sympy [F(-1)] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(d*x+c)/x**3/(b*x**4+a),x)
[Out] Timed out
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(d*x+c)/x^3/(b*x^4+a),x, algorithm="giac")
[Out] integrate(log(d*x + c)/((b*x^4 + a)*x^3), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\ln\left(c+d\,x\right)}{x^3\,\left(b\,x^4+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(log(c + d*x)/(x^3*(a + b*x^4)),x)
[Out] int(log(c + d*x)/(x^3*(a + b*x^4)), x)
```

3.299 $\int \frac{x^4 \log(c+dx)}{a+bx^4}\,dx$

Optimal. Leaf size=521

$$-\frac{x}{b}+\frac{(c+dx)\log(c+dx)}{bd}+\frac{\sqrt{-\sqrt{-a}}\,\log\left(\frac{d\left(\sqrt{-\sqrt{-a}}-\sqrt[4]{b}\,x\right)}{\sqrt[4]{b}\,c+\sqrt{-\sqrt{-a}}\,d}\right)\log(c+dx)}{4b^{5/4}}+\frac{\sqrt[4]{-a}\,\log\left(\frac{d\left(\sqrt[4]{-a}-\sqrt[4]{b}\right.}{\sqrt[4]{b}\,c+\sqrt[4]{-a}}\right.}{4b^{5/4}}$$

```
[Out] -x/b+(d*x+c)*ln(d*x+c)/b/d+1/4*(-a)^(1/4)*ln(d*((-a)^(1/4)-b^(1/4)*x)/(b^(1
/4)*c+(-a)^(1/4)*d))*ln(d*x+c)/b^(5/4)-1/4*(-a)^(1/4)*ln(-d*((-a)^(1/4)+b^(
1/4)*x)/(b^(1/4)*c-(-a)^(1/4)*d))*ln(d*x+c)/b^(5/4)-1/4*(-a)^(1/4)*polylog(
2,b^(1/4)*(d*x+c)/(b^(1/4)*c-(-a)^(1/4)*d))/b^(5/4)+1/4*(-a)^(1/4)*polylog(
2,b^(1/4)*(d*x+c)/(b^(1/4)*c+(-a)^(1/4)*d))/b^(5/4)-1/4*ln(d*x+c)*ln(-d*(b^
(1/4)*x+(-(-a)^(1/2))^(1/2))/(b^(1/4)*c-d*(-(-a)^(1/2))^(1/2)))*(-(-a)^(1/2
))^(1/2)/b^(5/4)+1/4*ln(d*x+c)*ln(d*(-b^(1/4)*x+(-(-a)^(1/2))^(1/2))/(b^(1/
4)*c+d*(-(-a)^(1/2))^(1/2)))*(-(-a)^(1/2))^(1/2)/b^(5/4)-1/4*polylog(2,b^(1
/4)*(d*x+c)/(b^(1/4)*c-d*(-(-a)^(1/2))^(1/2)))*(-(-a)^(1/2))^(1/2)/b^(5/4)+
1/4*polylog(2,b^(1/4)*(d*x+c)/(b^(1/4)*c+d*(-(-a)^(1/2))^(1/2)))*(-(-a)^(1/
2))^(1/2)/b^(5/4)
```

Rubi [A]
time = 0.67, antiderivative size = 521, normalized size of antiderivative = 1.00, number of steps used = 22, number of rules used = 14, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.737$, Rules used = {327, 217, 1179, 642, 1176, 631, 210, 2463, 2436, 2332, 2456, 2441, 2440, 2438}

$$-\frac{\sqrt{-\sqrt{-a}}\,\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}\,c-\sqrt{-\sqrt{-a}}\,d}\right)}{4b^{5/4}}+\frac{\sqrt{-\sqrt{-a}}\,\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt{-\sqrt{-a}}\,d+\sqrt[4]{b}\,c}\right)}{4b^{5/4}}-\frac{\sqrt[4]{-a}\,\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}\,c-\sqrt[4]{-a}\,d}\right)}{4b^{5/4}}+\frac{\sqrt[4]{-a}\,\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{-a}\,d+\sqrt[4]{b}\,c}\right)}{4b^{5/4}}+\frac{\sqrt{-\sqrt{-a}}\,\log(c+dx)\log\left(\frac{d\left(\sqrt{-\sqrt{-a}}-\sqrt[4]{b}\,x\right)}{\sqrt{-\sqrt{-a}}\,d+\sqrt[4]{b}\,c}\right)}{4b^{5/4}}+\frac{\sqrt[4]{-a}\,\log(c+dx)\log\left(\frac{d\left(\sqrt[4]{-a}-\sqrt[4]{b}\,x\right)}{\sqrt[4]{-a}\,d+\sqrt[4]{b}\,c}\right)}{4b^{5/4}}-\frac{\sqrt{-\sqrt{-a}}\,\log(c+dx)\log\left(-\frac{d\left(\sqrt{-\sqrt{-a}}+\sqrt[4]{b}\,x\right)}{\sqrt[4]{b}\,c-\sqrt{-\sqrt{-a}}\,d}\right)}{4b^{5/4}}-\frac{\sqrt[4]{-a}\,\log(c+dx)\log\left(-\frac{d\left(\sqrt[4]{-a}+\sqrt[4]{b}\,x\right)}{\sqrt[4]{b}\,c-\sqrt[4]{-a}\,d}\right)}{4b^{5/4}}+\frac{(c+dx)\log(c+dx)}{bd}-\frac{x}{b}$$

Antiderivative was successfully verified.

```
[In] Int[(x^4*Log[c + d*x])/(a + b*x^4),x]
```

```
[Out] -(x/b) + ((c + d*x)*Log[c + d*x])/(b*d) + (Sqrt[-Sqrt[-a]]*Log[(d*(Sqrt[-Sq
rt[-a]] - b^(1/4)*x))/(b^(1/4)*c + Sqrt[-Sqrt[-a]]*d)]*Log[c + d*x])/(4*b^(
5/4)) + ((-a)^(1/4)*Log[(d*((-a)^(1/4) - b^(1/4)*x))/(b^(1/4)*c + (-a)^(1/4
)*d)]*Log[c + d*x])/(4*b^(5/4)) - (Sqrt[-Sqrt[-a]]*Log[-((d*(Sqrt[-Sqrt[-a]
] + b^(1/4)*x))/(b^(1/4)*c - Sqrt[-Sqrt[-a]]*d))]*Log[c + d*x])/(4*b^(5/4))
 - ((-a)^(1/4)*Log[-((d*((-a)^(1/4) + b^(1/4)*x))/(b^(1/4)*c - (-a)^(1/4)*d
))]*Log[c + d*x])/(4*b^(5/4)) - (Sqrt[-Sqrt[-a]]*PolyLog[2, (b^(1/4)*(c + d
*x))/(b^(1/4)*c - Sqrt[-Sqrt[-a]]*d)])/(4*b^(5/4)) + (Sqrt[-Sqrt[-a]]*PolyL
og[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c + Sqrt[-Sqrt[-a]]*d)])/(4*b^(5/4)) - (
(-a)^(1/4)*PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c - (-a)^(1/4)*d)])/(4*b
^(5/4)) + ((-a)^(1/4)*PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c + (-a)^(1/4
)*d)])/(4*b^(5/4))
```

Rule 210

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(-(Rt[-a, 2]*Rt[-b, 2])^(
-1))*ArcTan[Rt[-b, 2]*(x/Rt[-a, 2])], x] /; FreeQ[{a, b}, x] && PosQ[a/b] &
& (LtQ[a, 0] || LtQ[b, 0])
```

Rule 217

```
Int[((a_) + (b_.)*(x_)^4)^(-1), x_Symbol] :> With[{r = Numerator[Rt[a/b, 2]
], s = Denominator[Rt[a/b, 2]]}, Dist[1/(2*r), Int[(r - s*x^2)/(a + b*x^4),
 x], x] + Dist[1/(2*r), Int[(r + s*x^2)/(a + b*x^4), x], x]] /; FreeQ[{a, b
}, x] && (GtQ[a/b, 0] || (PosQ[a/b] && AtomQ[SplitProduct[SumBaseQ, a]] &&
AtomQ[SplitProduct[SumBaseQ, b]]))
```

Rule 327

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[c^(n
 - 1)*(c*x)^(m - n + 1)*((a + b*x^n)^(p + 1)/(b*(m + n*p + 1))), x] - Dist[
a*c^n*((m - n + 1)/(b*(m + n*p + 1))), Int[(c*x)^(m - n)*(a + b*x^n)^p, x],
 x] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && GtQ[m, n - 1] && NeQ[m + n*p
 + 1, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 631

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[a*(c/b^2)]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + 2*c*(x/b)
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 642

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[d*(Log[RemoveContent[a + b*x + c*x^2, x]]/b), x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 1176

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
2*(d/e), 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 1179

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
-2*(d/e), 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
```

```
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 2332

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2436

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + c*e*(x/g)])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2441

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d + e*x
)^n])/g), x] - Dist[b*e*(n/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2456

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_)^(r_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a + b*Log[c*(d + e*x)
^n])^p, (f + g*x^r)^q, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, r}, x] && I
GtQ[p, 0] && IntegerQ[q] && (GtQ[q, 0] || (IntegerQ[r] && NeQ[r, 1]))
```

Rule 2463

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rubi steps

$$\int \frac{x^4 \log(c+dx)}{a+bx^4} dx = \int \left(\frac{\log(c+dx)}{b} - \frac{a\log(c+dx)}{b(a+bx^4)}\right) dx$$

$$= \frac{\int \log(c+dx)\,dx}{b} - \frac{a\int \frac{\log(c+dx)}{a+bx^4}\,dx}{b}$$

$$= -\frac{a\int \left(\frac{\sqrt{-a}\log(c+dx)}{2a\left(\sqrt{-a}-\sqrt{b}x^2\right)} + \frac{\sqrt{-a}\log(c+dx)}{2a\left(\sqrt{-a}+\sqrt{b}x^2\right)}\right) dx}{b} + \frac{\text{Subst}(\int \log(x)\,dx, x, c+dx)}{bd}$$

$$= -\frac{x}{b} + \frac{(c+dx)\log(c+dx)}{bd} - \frac{\sqrt{-a}\int \frac{\log(c+dx)}{\sqrt{-a}-\sqrt{b}x^2}\,dx}{2b} - \frac{\sqrt{-a}\int \frac{\log(c+dx)}{\sqrt{-a}+\sqrt{b}x^2}\,dx}{2b}$$

$$= -\frac{x}{b} + \frac{(c+dx)\log(c+dx)}{bd} - \frac{\sqrt{-a}\int \left(\frac{\sqrt{-\sqrt{-a}}\log(c+dx)}{2\sqrt{-a}\left(\sqrt{-\sqrt{-a}}-\sqrt[4]{b}x\right)} + \frac{\sqrt{-\sqrt{-}}}{2\sqrt{-a}\left(\sqrt{-}\right.}\right.}{2b}$$

$$= -\frac{x}{b} + \frac{(c+dx)\log(c+dx)}{bd} - \frac{\sqrt{-\sqrt{-a}}\int \frac{\log(c+dx)}{\sqrt{-\sqrt{-a}}-\sqrt[4]{b}x}\,dx}{4b} - \frac{\sqrt{-\sqrt{-a}}\int -}{\sqrt{}}$$

$$= -\frac{x}{b} + \frac{(c+dx)\log(c+dx)}{bd} + \frac{\sqrt{-\sqrt{-a}}\log\left(\frac{d\left(\sqrt{-\sqrt{-a}}-\sqrt[4]{b}x\right)}{\sqrt[4]{b}c+\sqrt{-\sqrt{-a}}d}\right)\log(c+dx)}{4b^{5/4}}$$

$$= -\frac{x}{b} + \frac{(c+dx)\log(c+dx)}{bd} + \frac{\sqrt{-\sqrt{-a}}\log\left(\frac{d\left(\sqrt{-\sqrt{-a}}-\sqrt[4]{b}x\right)}{\sqrt[4]{b}c+\sqrt{-\sqrt{-a}}d}\right)\log(c+dx)}{4b^{5/4}}$$

$$= -\frac{x}{b} + \frac{(c+dx)\log(c+dx)}{bd} + \frac{\sqrt{-\sqrt{-a}}\log\left(\frac{d\left(\sqrt{-\sqrt{-a}}-\sqrt[4]{b}x\right)}{\sqrt[4]{b}c+\sqrt{-\sqrt{-a}}d}\right)\log(c+dx)}{4b^{5/4}}$$

Mathematica [C] Result contains complex when optimal does not.

time = 0.18, size = 458, normalized size = 0.88

$$\frac{-4\sqrt[4]{b}\,dx+4\sqrt[4]{b}\,c\log(c+dx)+4\sqrt[4]{b}\,dx\log(c+dx)+\sqrt[4]{-a}\,d\log\left(\frac{d\left(\sqrt[4]{-a}-\sqrt[4]{b}\,x\right)}{\sqrt[4]{b}\,c+\sqrt[4]{-a}\,d}\right)\log(c+dx)-i\sqrt[4]{-a}\,d\log\left(\frac{d\left(\sqrt[4]{-a}-i\sqrt[4]{b}\,x\right)}{i\sqrt[4]{b}\,c+\sqrt[4]{-a}\,d}\right)\log(c+dx)+i\sqrt[4]{-a}\,d\log\left(\frac{d\left(\sqrt[4]{-a}+i\sqrt[4]{b}\,x\right)}{-i\sqrt[4]{b}\,c+\sqrt[4]{-a}\,d}\right)\log(c+dx)-\sqrt[4]{-a}\,d\log\left(\frac{d\left(\sqrt[4]{-a}+\sqrt[4]{b}\,x\right)}{-\sqrt[4]{b}\,c+\sqrt[4]{-a}\,d}\right)\log(c+dx)-\sqrt[4]{-a}\,d\mathrm{Li}_2\left(\frac{\sqrt[4]{b}\,(c+dx)}{\sqrt[4]{b}\,c-\sqrt[4]{-a}\,d}\right)-i\sqrt[4]{-a}\,d\mathrm{Li}_2\left(\frac{\sqrt[4]{b}\,(c+dx)}{\sqrt[4]{b}\,c-i\sqrt[4]{-a}\,d}\right)+i\sqrt[4]{-a}\,d\mathrm{Li}_2\left(\frac{\sqrt[4]{b}\,(c+dx)}{\sqrt[4]{b}\,c+i\sqrt[4]{-a}\,d}\right)+\sqrt[4]{-a}\,d\mathrm{Li}_2\left(\frac{\sqrt[4]{b}\,(c+dx)}{\sqrt[4]{b}\,c+\sqrt[4]{-a}\,d}\right)}{4b^{5/4}d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^4*Log[c + d*x])/(a + b*x^4),x]
```

```
[Out] (-4*b^(1/4)*d*x + 4*b^(1/4)*c*Log[c + d*x] + 4*b^(1/4)*d*x*Log[c + d*x] + (
-a)^(1/4)*d*Log[(d*((-a)^(1/4) - b^(1/4)*x))/(b^(1/4)*c + (-a)^(1/4)*d)]*Lo
g[c + d*x] - I*(-a)^(1/4)*d*Log[(d*((-a)^(1/4) - I*b^(1/4)*x))/(I*b^(1/4)*c
 + (-a)^(1/4)*d)]*Log[c + d*x] + I*(-a)^(1/4)*d*Log[(d*((-a)^(1/4) + I*b^(1
/4)*x))/((-I)*b^(1/4)*c + (-a)^(1/4)*d)]*Log[c + d*x] - (-a)^(1/4)*d*Log[(d
*((-a)^(1/4) + b^(1/4)*x))/(-(b^(1/4)*c) + (-a)^(1/4)*d)]*Log[c + d*x] - (-
a)^(1/4)*d*PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c - (-a)^(1/4)*d)] - I*(
-a)^(1/4)*d*PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c - I*(-a)^(1/4)*d)] +
I*(-a)^(1/4)*d*PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c + I*(-a)^(1/4)*d)]
 + (-a)^(1/4)*d*PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c + (-a)^(1/4)*d)])
/(4*b^(5/4)*d)
```

Maple [C] Result contains higher order function than in optimal. Order 9 vs. order 4.
time = 0.54, size = 145, normalized size = 0.28

method	result
derivativedivides	$\frac{\frac{((dx+c)\ln(dx+c)-dx-c)d^4}{b}+\frac{\left(\sum_{\_R1=\mathrm{RootOf}\left(b\_Z^4-4cb\_Z^3+6b\,c^2\_Z^2-4b\,c^3\_Z+a\,d^4+b\,c^4\right)}\frac{\ln(dx+c)\ln\left(\frac{-dx+\_R1-c}{\_R1}\right)+\mathrm{d}}{-\_R1^3+3\_R1^2c-3}\right.}{4b^2}}{d^5}$
default	$\frac{\frac{((dx+c)\ln(dx+c)-dx-c)d^4}{b}+\frac{\left(\sum_{\_R1=\mathrm{RootOf}\left(b\_Z^4-4cb\_Z^3+6b\,c^2\_Z^2-4b\,c^3\_Z+a\,d^4+b\,c^4\right)}\frac{\ln(dx+c)\ln\left(\frac{-dx+\_R1-c}{\_R1}\right)+\mathrm{d}}{-\_R1^3+3\_R1^2c-3}\right.}{4b^2}}{d^5}$
risch	$\frac{\ln(dx+c)x}{b}+\frac{\ln(dx+c)c}{db}-\frac{x}{b}-\frac{c}{bd}+\frac{d^3\left(\sum_{\_R1=\mathrm{RootOf}\left(b\_Z^4-4cb\_Z^3+6b\,c^2\_Z^2-4b\,c^3\_Z+a\,d^4+b\,c^4\right)}\frac{\ln(dx+c)\ln\left(\right.}{-\_}\right.}{4b^2}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*ln(d*x+c)/(b*x^4+a),x,method=_RETURNVERBOSE)
```

```
[Out] 1/d^5*(((d*x+c)*ln(d*x+c)-d*x-c)*d^4/b+1/4/b^2*sum(1/(-_R1^3+3*_R1^2*c-3*_R
1*c^2+c^3)*(ln(d*x+c)*ln((-d*x+_R1-c)/_R1)+dilog((-d*x+_R1-c)/_R1)),_R1=Roo
tOf(_Z^4*b-4*_Z^3*b*c+6*_Z^2*b*c^2-4*_Z*b*c^3+a*d^4+b*c^4))*a*d^8)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*log(d*x+c)/(b*x^4+a),x, algorithm="maxima")
```

```
[Out] integrate(x^4*log(d*x + c)/(b*x^4 + a), x)
```

Fricas [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*log(d*x+c)/(b*x^4+a),x, algorithm="fricas")
```

```
[Out] integral(x^4*log(d*x + c)/(b*x^4 + a), x)
```

Sympy [**F(-1)**] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**4*ln(d*x+c)/(b*x**4+a),x)
```

```
[Out] Timed out
```

Giac [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*log(d*x+c)/(b*x^4+a),x, algorithm="giac")
```

```
[Out] integrate(x^4*log(d*x + c)/(b*x^4 + a), x)
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x^4\,\ln\left(c+d\,x\right)}{b\,x^4+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^4*log(c + d*x))/(a + b*x^4),x)
```

```
[Out] int((x^4*log(c + d*x))/(a + b*x^4), x)
```

3.300 $\int \frac{x^2 \log(c+dx)}{a+bx^4} \, dx$

Optimal. Leaf size=497

$$\frac{\log\left(\frac{d\left(\sqrt{-\sqrt{-a}}-\sqrt[4]{b}\,x\right)}{\sqrt[4]{b}\,c+\sqrt{-\sqrt{-a}}\,d}\right)\log(c+dx)}{4\sqrt{-\sqrt{-a}}\,b^{3/4}}+\frac{\log\left(\frac{d\left(\sqrt[4]{-a}-\sqrt[4]{b}\,x\right)}{\sqrt[4]{b}\,c+\sqrt[4]{-a}\,d}\right)\log(c+dx)}{4\sqrt[4]{-a}\,b^{3/4}}-\frac{\log\left(-\frac{d\left(\sqrt{-\sqrt{-a}}+\sqrt[4]{b}\,x\right)}{\sqrt[4]{b}\,c-\sqrt{-\sqrt{-a}}\,d}\right.}{4\sqrt{-\sqrt{-a}}\,b^{3}}$$

[Out] 1/4*ln(d*((-a)^(1/4)-b^(1/4)*x)/(b^(1/4)*c+(-a)^(1/4)*d))*ln(d*x+c)/(-a)^(1/4)/b^(3/4)-1/4*ln(-d*((-a)^(1/4)+b^(1/4)*x)/(b^(1/4)*c-(-a)^(1/4)*d))*ln(d*x+c)/(-a)^(1/4)/b^(3/4)-1/4*polylog(2,b^(1/4)*(d*x+c)/(b^(1/4)*c-(-a)^(1/4)*d))/(-a)^(1/4)/b^(3/4)+1/4*polylog(2,b^(1/4)*(d*x+c)/(b^(1/4)*c+(-a)^(1/4)*d))/(-a)^(1/4)/b^(3/4)-1/4*ln(d*x+c)*ln(-d*(b^(1/4)*x+(-(-a)^(1/2))^(1/2))/(b^(1/4)*c-d*(-(-a)^(1/2))^(1/2)))/b^(3/4)/(-(-a)^(1/2))^(1/2)+1/4*ln(d*x+c)*ln(d*(-b^(1/4)*x+(-(-a)^(1/2))^(1/2))/(b^(1/4)*c+d*(-(-a)^(1/2))^(1/2)))/b^(3/4)/(-(-a)^(1/2))^(1/2)-1/4*polylog(2,b^(1/4)*(d*x+c)/(b^(1/4)*c-d*(-(-a)^(1/2))^(1/2)))/b^(3/4)/(-(-a)^(1/2))^(1/2)+1/4*polylog(2,b^(1/4)*(d*x+c)/(b^(1/4)*c+d*(-(-a)^(1/2))^(1/2)))/b^(3/4)/(-(-a)^(1/2))^(1/2)

Rubi [A]
time = 0.49, antiderivative size = 497, normalized size of antiderivative = 1.00, number of steps used = 18, number of rules used = 11, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.579$, Rules used = {303, 1176, 631, 210, 1179, 642, 2463, 2456, 2441, 2440, 2438}

$$-\frac{\text{PolyLog}\left(2,\frac{\sqrt[4]{b}\,(c+dx)}{\sqrt[4]{b}\,c-\sqrt{-\sqrt{-a}}\,d}\right)}{4\sqrt{-\sqrt{-a}}\,b^{3/4}}+\frac{\text{PolyLog}\left(2,\frac{\sqrt[4]{b}\,(c+dx)}{\sqrt{-\sqrt{-a}}\,d+\sqrt[4]{b}\,c}\right)}{4\sqrt{-\sqrt{-a}}\,b^{3/4}}-\frac{\text{PolyLog}\left(2,\frac{\sqrt[4]{b}\,(c+dx)}{\sqrt[4]{b}\,c-\sqrt[4]{-a}\,d}\right)}{4\sqrt[4]{-a}\,b^{3/4}}+\frac{\text{PolyLog}\left(2,\frac{\sqrt[4]{b}\,(c+dx)}{\sqrt[4]{-a}\,d+\sqrt[4]{b}\,c}\right)}{4\sqrt[4]{-a}\,b^{3/4}}+\frac{\log(c+dx)\log\left(\frac{d\left(\sqrt{-\sqrt{-a}}-\sqrt[4]{b}\,x\right)}{\sqrt{-\sqrt{-a}}\,d+\sqrt[4]{b}\,c}\right)}{4\sqrt{-\sqrt{-a}}\,b^{3/4}}+\frac{\log(c+dx)\log\left(\frac{d\left(\sqrt[4]{-a}-\sqrt[4]{b}\,x\right)}{\sqrt[4]{-a}\,d+\sqrt[4]{b}\,c}\right)}{4\sqrt[4]{-a}\,b^{3/4}}-\frac{\log(c+dx)\log\left(-\frac{d\left(\sqrt{-\sqrt{-a}}+\sqrt[4]{b}\,x\right)}{\sqrt[4]{b}\,c-\sqrt{-\sqrt{-a}}\,d}\right)}{4\sqrt{-\sqrt{-a}}\,b^{3/4}}-\frac{\log(c+dx)\log\left(-\frac{d\left(\sqrt[4]{-a}+\sqrt[4]{b}\,x\right)}{\sqrt[4]{b}\,c-\sqrt[4]{-a}\,d}\right)}{4\sqrt[4]{-a}\,b^{3/4}}$$

Antiderivative was successfully verified.

[In] Int[(x^2*Log[c + d*x])/(a + b*x^4),x]

[Out] (Log[(d*(Sqrt[-Sqrt[-a]] - b^(1/4)*x))/(b^(1/4)*c + Sqrt[-Sqrt[-a]]*d)]*Log[c + d*x])/(4*Sqrt[-Sqrt[-a]]*b^(3/4)) + (Log[(d*((-a)^(1/4) - b^(1/4)*x))/(b^(1/4)*c + (-a)^(1/4)*d)]*Log[c + d*x])/(4*(-a)^(1/4)*b^(3/4)) - (Log[-((d*(Sqrt[-Sqrt[-a]] + b^(1/4)*x))/(b^(1/4)*c - Sqrt[-Sqrt[-a]]*d))]*Log[c + d*x])/(4*Sqrt[-Sqrt[-a]]*b^(3/4)) - (Log[-((d*((-a)^(1/4) + b^(1/4)*x))/(b^(1/4)*c - (-a)^(1/4)*d))]*Log[c + d*x])/(4*(-a)^(1/4)*b^(3/4)) - PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c - Sqrt[-Sqrt[-a]]*d)]/(4*Sqrt[-Sqrt[-a]]*b^(3/4)) + PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c + Sqrt[-Sqrt[-a]]*d)]/(4*Sqrt[-Sqrt[-a]]*b^(3/4)) - PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c - (-a)^(1/4)*d)]/(4*(-a)^(1/4)*b^(3/4)) + PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c + (-a)^(1/4)*d)]/(4*(-a)^(1/4)*b^(3/4))

Rule 210

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(-(Rt[-a, 2]*Rt[-b, 2])^(
-1))*ArcTan[Rt[-b, 2]*(x/Rt[-a, 2])], x] /; FreeQ[{a, b}, x] && PosQ[a/b] &
& (LtQ[a, 0] || LtQ[b, 0])
```

Rule 303

```
Int[(x_)^2/((a_) + (b_.)*(x_)^4), x_Symbol] :> With[{r = Numerator[Rt[a/b,
2]], s = Denominator[Rt[a/b, 2]]}, Dist[1/(2*s), Int[(r + s*x^2)/(a + b*x^4
), x], x] - Dist[1/(2*s), Int[(r - s*x^2)/(a + b*x^4), x], x]] /; FreeQ[{a,
 b}, x] && (GtQ[a/b, 0] || (PosQ[a/b] && AtomQ[SplitProduct[SumBaseQ, a]] &
& AtomQ[SplitProduct[SumBaseQ, b]]))
```

Rule 631

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[a*(c/b^2)]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + 2*c*(x/b)
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 642

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[d*(Log[RemoveContent[a + b*x + c*x^2, x]]/b), x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 1176

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
2*(d/e), 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 1179

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
-2*(d/e), 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + c*e*(x/g)])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2441

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d + e*x
)^n])/g), x] - Dist[b*e*(n/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2456

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_)^(r_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a + b*Log[c*(d + e*x)
^n])^p, (f + g*x^r)^q, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, r}, x] && I
GtQ[p, 0] && IntegerQ[q] && (GtQ[q, 0] || (IntegerQ[r] && NeQ[r, 1]))
```

Rule 2463

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rubi steps

$$
\begin{aligned}
\int \frac{x^2 \log(c+dx)}{a+bx^4}\,dx &= \int \left(-\frac{\log(c+dx)}{2\sqrt{b}\left(\sqrt{-a}-\sqrt{b}\,x^2\right)}+\frac{\log(c+dx)}{2\sqrt{b}\left(\sqrt{-a}+\sqrt{b}\,x^2\right)}\right) dx \\
&= -\frac{\int \frac{\log(c+dx)}{\sqrt{-a}-\sqrt{b}\,x^2}\,dx}{2\sqrt{b}}+\frac{\int \frac{\log(c+dx)}{\sqrt{-a}+\sqrt{b}\,x^2}\,dx}{2\sqrt{b}} \\
&= \frac{\int \left(\frac{\sqrt{-\sqrt{-a}}\,\log(c+dx)}{2\sqrt{-a}\left(\sqrt{-\sqrt{-a}}-\sqrt[4]{b}\,x\right)}+\frac{\sqrt{-\sqrt{-a}}\,\log(c+dx)}{2\sqrt{-a}\left(\sqrt{-\sqrt{-a}}+\sqrt[4]{b}\,x\right)}\right) dx}{2\sqrt{b}} - \cdots \\
&= -\frac{\int \frac{\log(c+dx)}{\sqrt{-\sqrt{-a}}-\sqrt[4]{b}\,x}\,dx}{4\sqrt{-\sqrt{-a}}\,\sqrt{b}} - \frac{\int \frac{\log(c+dx)}{\sqrt{-\sqrt{-a}}+\sqrt[4]{b}\,x}\,dx}{4\sqrt{-\sqrt{-a}}\,\sqrt{b}} - \frac{\int \frac{\log(c+dx)}{\sqrt[4]{-a}-\sqrt[4]{b}\,x}\,dx}{4\sqrt[4]{-a}\,\sqrt{b}} - \cdots \\
&= \frac{\log\left(\frac{d\left(\sqrt{-\sqrt{-a}}-\sqrt[4]{b}\,x\right)}{\sqrt[4]{b}\,c+\sqrt{-\sqrt{-a}}\,d}\right)\log(c+dx)}{4\sqrt{-\sqrt{-a}}\,b^{3/4}} + \frac{\log\left(\frac{d\left(\sqrt[4]{-a}-\sqrt[4]{b}\,x\right)}{\sqrt[4]{b}\,c+\sqrt[4]{-a}\,d}\right)\log(c+dx)}{4\sqrt[4]{-a}\,b^{3/4}} - \cdots \\
&= \frac{\log\left(\frac{d\left(\sqrt{-\sqrt{-a}}-\sqrt[4]{b}\,x\right)}{\sqrt[4]{b}\,c+\sqrt{-\sqrt{-a}}\,d}\right)\log(c+dx)}{4\sqrt{-\sqrt{-a}}\,b^{3/4}} + \frac{\log\left(\frac{d\left(\sqrt[4]{-a}-\sqrt[4]{b}\,x\right)}{\sqrt[4]{b}\,c+\sqrt[4]{-a}\,d}\right)\log(c+dx)}{4\sqrt[4]{-a}\,b^{3/4}} - \cdots \\
&= \frac{\log\left(\frac{d\left(\sqrt{-\sqrt{-a}}-\sqrt[4]{b}\,x\right)}{\sqrt[4]{b}\,c+\sqrt{-\sqrt{-a}}\,d}\right)\log(c+dx)}{4\sqrt{-\sqrt{-a}}\,b^{3/4}} + \frac{\log\left(\frac{d\left(\sqrt[4]{-a}-\sqrt[4]{b}\,x\right)}{\sqrt[4]{b}\,c+\sqrt[4]{-a}\,d}\right)\log(c+dx)}{4\sqrt[4]{-a}\,b^{3/4}} - \cdots
\end{aligned}
$$

<u>Mathematica</u> [A]

time = 0.21, size = 464, normalized size = 0.93

$$
\frac{\sqrt[4]{-a}\log\left(\frac{d\left(\sqrt{-\sqrt{-a}}-\sqrt[4]{b}\,x\right)}{\sqrt[4]{b}\,c+\sqrt{-\sqrt{-a}}\,d}\right)\log(c+dx)+\sqrt{-\sqrt{-a}}\log\left(\frac{d\left(\sqrt[4]{-a}-\sqrt[4]{b}\,x\right)}{\sqrt[4]{b}\,c+\sqrt[4]{-a}\,d}\right)\log(c+dx)-\sqrt[4]{-a}\log\left(\frac{d\left(\sqrt{-\sqrt{-a}}+\sqrt[4]{b}\,x\right)}{-\sqrt[4]{b}\,c+\sqrt{-\sqrt{-a}}\,d}\right)\log(c+dx)-\sqrt{-\sqrt{-a}}\log\left(\frac{d\left(\sqrt[4]{-a}+\sqrt[4]{b}\,x\right)}{-\sqrt[4]{b}\,c+\sqrt[4]{-a}\,d}\right)\log(c+dx)-\sqrt[4]{-a}\,\mathrm{Li}_2\left(\frac{\sqrt[4]{b}\,(c+dx)}{\sqrt[4]{b}\,c-\sqrt{-\sqrt{-a}}\,d}\right)+\sqrt[4]{-a}\,\mathrm{Li}_2\left(\frac{\sqrt[4]{b}\,(c+dx)}{\sqrt[4]{b}\,c+\sqrt{-\sqrt{-a}}\,d}\right)-\sqrt{-\sqrt{-a}}\,\mathrm{Li}_2\left(\frac{\sqrt[4]{b}\,(c+dx)}{\sqrt[4]{b}\,c-\sqrt[4]{-a}\,d}\right)+\sqrt{-\sqrt{-a}}\,\mathrm{Li}_2\left(\frac{\sqrt[4]{b}\,(c+dx)}{\sqrt[4]{b}\,c+\sqrt[4]{-a}\,d}\right)}{4\sqrt{-\sqrt{-a}}\,\sqrt[4]{-a}\,b^{3/4}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^2*Log[c + d*x])/(a + b*x^4),x]
```

```
[Out] ((-a)^(1/4)*Log[(d*(Sqrt[-Sqrt[-a]] - b^(1/4)*x))/(b^(1/4)*c + Sqrt[-Sqrt[-
a]]*d)]*Log[c + d*x] + Sqrt[-Sqrt[-a]]*Log[(d*((-a)^(1/4) - b^(1/4)*x))/(b^
(1/4)*c + (-a)^(1/4)*d)]*Log[c + d*x] - (-a)^(1/4)*Log[(d*(Sqrt[-Sqrt[-a]]
+ b^(1/4)*x))/(-(b^(1/4)*c) + Sqrt[-Sqrt[-a]]*d)]*Log[c + d*x] - Sqrt[-Sqrt
[-a]]*Log[(d*((-a)^(1/4) + b^(1/4)*x))/(-(b^(1/4)*c) + (-a)^(1/4)*d)]*Log[c
 + d*x] - (-a)^(1/4)*PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c - Sqrt[-Sqrt
[-a]]*d)] + (-a)^(1/4)*PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c + Sqrt[-Sq
rt[-a]]*d)] - Sqrt[-Sqrt[-a]]*PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c - (
-a)^(1/4)*d)] + Sqrt[-Sqrt[-a]]*PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c +
 (-a)^(1/4)*d)])/(4*Sqrt[-Sqrt[-a]]*(-a)^(1/4)*b^(3/4))
```

Maple [C] Result contains higher order function than in optimal. Order 9 vs. order 4.
time = 0.46, size = 94, normalized size = 0.19

method	result
derivativedivides	$-\frac{d\left(\sum_{\_R1=\mathrm{RootOf}\left(b\_Z^4-4cb\_Z^3+6b\,c^2\_Z^2-4b\,c^3\_Z+a\,d^4+b\,c^4\right)}\frac{\ln(dx+c)\ln\left(\frac{-dx+\_R1-c}{\_R1}\right)+\mathrm{dilog}\left(\frac{-dx+\_R1-c}{\_R1}\right)}{-\_R1+c}\right)}{4b}$
default	$-\frac{d\left(\sum_{\_R1=\mathrm{RootOf}\left(b\_Z^4-4cb\_Z^3+6b\,c^2\_Z^2-4b\,c^3\_Z+a\,d^4+b\,c^4\right)}\frac{\ln(dx+c)\ln\left(\frac{-dx+\_R1-c}{\_R1}\right)+\mathrm{dilog}\left(\frac{-dx+\_R1-c}{\_R1}\right)}{-\_R1+c}\right)}{4b}$
risch	$-\frac{d\left(\sum_{\_R1=\mathrm{RootOf}\left(b\_Z^4-4cb\_Z^3+6b\,c^2\_Z^2-4b\,c^3\_Z+a\,d^4+b\,c^4\right)}\frac{\ln(dx+c)\ln\left(\frac{-dx+\_R1-c}{\_R1}\right)+\mathrm{dilog}\left(\frac{-dx+\_R1-c}{\_R1}\right)}{-\_R1+c}\right)}{4b}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*ln(d*x+c)/(b*x^4+a),x,method=_RETURNVERBOSE)
```

```
[Out] -1/4*d/b*sum(1/(-_R1+c)*(ln(d*x+c)*ln((-d*x+_R1-c)/_R1)+dilog((-d*x+_R1-c)/
_R1)),_R1=RootOf(_Z^4*b-4*_Z^3*b*c+6*_Z^2*b*c^2-4*_Z*b*c^3+a*d^4+b*c^4))
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*log(d*x+c)/(b*x^4+a),x, algorithm="maxima")
```

```
[Out] integrate(x^2*log(d*x + c)/(b*x^4 + a), x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*log(d*x+c)/(b*x^4+a),x, algorithm="fricas")
[Out] integral(x^2*log(d*x + c)/(b*x^4 + a), x)
```

Sympy [**F(-1)**] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*ln(d*x+c)/(b*x**4+a),x)
[Out] Timed out
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*log(d*x+c)/(b*x^4+a),x, algorithm="giac")
[Out] integrate(x^2*log(d*x + c)/(b*x^4 + a), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x^2\,\ln\left(c+d\,x\right)}{b\,x^4+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^2*log(c + d*x))/(a + b*x^4),x)
[Out] int((x^2*log(c + d*x))/(a + b*x^4), x)
```

3.301 $\int \frac{\log(c+dx)}{a+bx^4} \, dx$

Optimal. Leaf size=497

$$\frac{\log\left(\frac{d\left(\sqrt{-\sqrt{-a}}-\sqrt[4]{b}\,x\right)}{\sqrt[4]{b}\,c+\sqrt{-\sqrt{-a}}\,d}\right)\log(c+dx)}{4\left(-\sqrt{-a}\right)^{3/2}\sqrt[4]{b}}+\frac{\log\left(\frac{d\left(\sqrt[4]{-a}-\sqrt[4]{b}\,x\right)}{\sqrt[4]{b}\,c+\sqrt[4]{-a}\,d}\right)\log(c+dx)}{4(-a)^{3/4}\sqrt[4]{b}}-\frac{\log\left(-\frac{d\left(\sqrt{-\sqrt{-a}}+\sqrt[4]{b}\,x\right)}{\sqrt[4]{b}\,c-\sqrt{-\sqrt{-a}}\,d}\right.}{4\left(-\sqrt{-a}\right)^{3/2}}$$

```
[Out] 1/4*ln(d*((-a)^(1/4)-b^(1/4)*x)/(b^(1/4)*c+(-a)^(1/4)*d))*ln(d*x+c)/(-a)^(3
/4)/b^(1/4)-1/4*ln(-d*((-a)^(1/4)+b^(1/4)*x)/(b^(1/4)*c-(-a)^(1/4)*d))*ln(d
*x+c)/(-a)^(3/4)/b^(1/4)-1/4*polylog(2,b^(1/4)*(d*x+c)/(b^(1/4)*c-(-a)^(1/4
)*d))/(-a)^(3/4)/b^(1/4)+1/4*polylog(2,b^(1/4)*(d*x+c)/(b^(1/4)*c+(-a)^(1/4
)*d))/(-a)^(3/4)/b^(1/4)-1/4*ln(d*x+c)*ln(-d*(b^(1/4)*x+(-(-a)^(1/2))^(1/2)
)/(b^(1/4)*c-d*(-(-a)^(1/2))^(1/2)))/b^(1/4)/(-(-a)^(1/2))^(3/2)+1/4*ln(d*x
+c)*ln(d*(-b^(1/4)*x+(-(-a)^(1/2))^(1/2))/(b^(1/4)*c+d*(-(-a)^(1/2))^(1/2))
)/b^(1/4)/(-(-a)^(1/2))^(3/2)-1/4*polylog(2,b^(1/4)*(d*x+c)/(b^(1/4)*c-d*(-
(-a)^(1/2))^(1/2)))/b^(1/4)/(-(-a)^(1/2))^(3/2)+1/4*polylog(2,b^(1/4)*(d*x+
c)/(b^(1/4)*c+d*(-(-a)^(1/2))^(1/2)))/b^(1/4)/(-(-a)^(1/2))^(3/2)
```

Rubi [A]

time = 0.41, antiderivative size = 497, normalized size of antiderivative = 1.00, number of steps used = 18, number of rules used = 4, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}} = 0.250$, Rules used = {2456, 2441, 2440, 2438}

$$-\frac{\text{PolyLog}\left(2,\frac{\sqrt[4]{b}\,(c+dx)}{\sqrt[4]{b}\,c-\sqrt{-\sqrt{-a}}\,d}\right)}{4\left(-\sqrt{-a}\right)^{3/2}\sqrt[4]{b}}+\frac{\text{PolyLog}\left(2,\frac{\sqrt[4]{b}\,(c+dx)}{\sqrt{-\sqrt{-a}}\,d+\sqrt[4]{b}\,c}\right)}{4\left(-\sqrt{-a}\right)^{3/2}\sqrt[4]{b}}-\frac{\text{PolyLog}\left(2,\frac{\sqrt[4]{b}\,(c+dx)}{\sqrt[4]{b}\,c-\sqrt[4]{-a}\,d}\right)}{4(-a)^{3/4}\sqrt[4]{b}}+\frac{\text{PolyLog}\left(2,\frac{\sqrt[4]{b}\,(c+dx)}{\sqrt[4]{-a}\,d+\sqrt[4]{b}\,c}\right)}{4(-a)^{3/4}\sqrt[4]{b}}+\frac{\log(c+dx)\log\left(\frac{d\left(\sqrt{-\sqrt{-a}}-\sqrt[4]{b}\,x\right)}{\sqrt{-\sqrt{-a}}\,d+\sqrt[4]{b}\,c}\right)}{4\left(-\sqrt{-a}\right)^{3/2}\sqrt[4]{b}}+\frac{\log(c+dx)\log\left(\frac{d\left(\sqrt[4]{-a}-\sqrt[4]{b}\,x\right)}{\sqrt[4]{-a}\,d+\sqrt[4]{b}\,c}\right)}{4(-a)^{3/4}\sqrt[4]{b}}-\frac{\log(c+dx)\log\left(-\frac{d\left(\sqrt{-\sqrt{-a}}+\sqrt[4]{b}\,x\right)}{\sqrt[4]{b}\,c-\sqrt{-\sqrt{-a}}\,d}\right)}{4\left(-\sqrt{-a}\right)^{3/2}\sqrt[4]{b}}-\frac{\log(c+dx)\log\left(-\frac{d\left(\sqrt[4]{-a}+\sqrt[4]{b}\,x\right)}{\sqrt[4]{b}\,c-\sqrt[4]{-a}\,d}\right)}{4(-a)^{3/4}\sqrt[4]{b}}$$

Antiderivative was successfully verified.

```
[In] Int[Log[c + d*x]/(a + b*x^4),x]
```

```
[Out] (Log[(d*(Sqrt[-Sqrt[-a]] - b^(1/4)*x))/(b^(1/4)*c + Sqrt[-Sqrt[-a]]*d)]*Log
[c + d*x])/(4*(-Sqrt[-a])^(3/2)*b^(1/4)) + (Log[(d*((-a)^(1/4) - b^(1/4)*x)
)/(b^(1/4)*c + (-a)^(1/4)*d)]*Log[c + d*x])/(4*(-a)^(3/4)*b^(1/4)) - (Log[-
((d*(Sqrt[-Sqrt[-a]] + b^(1/4)*x))/(b^(1/4)*c - Sqrt[-Sqrt[-a]]*d))]*Log[c
+ d*x])/(4*(-Sqrt[-a])^(3/2)*b^(1/4)) - (Log[-((d*((-a)^(1/4) + b^(1/4)*x))
/(b^(1/4)*c - (-a)^(1/4)*d))]*Log[c + d*x])/(4*(-a)^(3/4)*b^(1/4)) - PolyLo
g[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c - Sqrt[-Sqrt[-a]]*d)]/(4*(-Sqrt[-a])^(3
/2)*b^(1/4)) + PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c + Sqrt[-Sqrt[-a]]*
d)]/(4*(-Sqrt[-a])^(3/2)*b^(1/4)) - PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)
*c - (-a)^(1/4)*d)]/(4*(-a)^(3/4)*b^(1/4)) + PolyLog[2, (b^(1/4)*(c + d*x))
/(b^(1/4)*c + (-a)^(1/4)*d)]/(4*(-a)^(3/4)*b^(1/4))
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + c*e*(x/g)])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2441

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d + e*x
)^n])/g), x] - Dist[b*e*(n/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2456

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_)^(r_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a + b*Log[c*(d + e*x)
^n])^p, (f + g*x^r)^q, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, r}, x] && I
GtQ[p, 0] && IntegerQ[q] && (GtQ[q, 0] || (IntegerQ[r] && NeQ[r, 1]))
```

Rubi steps

$$\int \frac{\log(c+dx)}{a+bx^4}\,dx = \int \left(\frac{\sqrt{-a}\,\log(c+dx)}{2a\left(\sqrt{-a}-\sqrt{b}\,x^2\right)}+\frac{\sqrt{-a}\,\log(c+dx)}{2a\left(\sqrt{-a}+\sqrt{b}\,x^2\right)}\right)dx$$

$$= -\frac{\int \frac{\log(c+dx)}{\sqrt{-a}-\sqrt{b}\,x^2}dx}{2\sqrt{-a}} - \frac{\int \frac{\log(c+dx)}{\sqrt{-a}+\sqrt{b}\,x^2}dx}{2\sqrt{-a}}$$

$$= -\frac{\int \left(\frac{\sqrt{-\sqrt{-a}}\,\log(c+dx)}{2\sqrt{-a}\left(\sqrt{-\sqrt{-a}}-\sqrt[4]{b}\,x\right)}+\frac{\sqrt{-\sqrt{-a}}\,\log(c+dx)}{2\sqrt{-a}\left(\sqrt{-\sqrt{-a}}+\sqrt[4]{b}\,x\right)}\right)dx}{2\sqrt{-a}} - \frac{\int \left(\frac{\log(\cdots}{2\sqrt[4]{-a}\left(\sqrt[4]{\cdots}\right.}\right.}{}$$

$$= -\frac{\int \frac{\log(c+dx)}{\sqrt{-\sqrt{-a}}-\sqrt[4]{b}\,x}dx}{4\left(-\sqrt{-a}\right)^{3/2}} - \frac{\int \frac{\log(c+dx)}{\sqrt{-\sqrt{-a}}+\sqrt[4]{b}\,x}dx}{4\left(-\sqrt{-a}\right)^{3/2}} - \frac{\int \frac{\log(c+dx)}{\sqrt[4]{-a}-\sqrt[4]{b}\,x}dx}{4(-a)^{3/4}} - \frac{\int \frac{\log(c+dx)}{\sqrt[4]{-a}+\sqrt[4]{b}\cdots}}{4(-a)^{3/\cdots}}$$

$$= \frac{\log\left(\frac{d\left(\sqrt{-\sqrt{-a}}-\sqrt[4]{b}\,x\right)}{\sqrt[4]{b}\,c+\sqrt{-\sqrt{-a}}\,d}\right)\log(c+dx)}{4\left(-\sqrt{-a}\right)^{3/2}\sqrt[4]{b}} + \frac{\log\left(\frac{d\left(\sqrt[4]{-a}-\sqrt[4]{b}\,x\right)}{\sqrt[4]{b}\,c+\sqrt[4]{-a}\,d}\right)\log(c+dx)}{4(-a)^{3/4}\sqrt[4]{b}} - \frac{\log\left(\cdots\right.}{}$$

$$= \frac{\log\left(\frac{d\left(\sqrt{-\sqrt{-a}}-\sqrt[4]{b}\,x\right)}{\sqrt[4]{b}\,c+\sqrt{-\sqrt{-a}}\,d}\right)\log(c+dx)}{4\left(-\sqrt{-a}\right)^{3/2}\sqrt[4]{b}} + \frac{\log\left(\frac{d\left(\sqrt[4]{-a}-\sqrt[4]{b}\,x\right)}{\sqrt[4]{b}\,c+\sqrt[4]{-a}\,d}\right)\log(c+dx)}{4(-a)^{3/4}\sqrt[4]{b}} - \frac{\log\left(\cdots\right.}{}$$

$$= \frac{\log\left(\frac{d\left(\sqrt{-\sqrt{-a}}-\sqrt[4]{b}\,x\right)}{\sqrt[4]{b}\,c+\sqrt{-\sqrt{-a}}\,d}\right)\log(c+dx)}{4\left(-\sqrt{-a}\right)^{3/2}\sqrt[4]{b}} + \frac{\log\left(\frac{d\left(\sqrt[4]{-a}-\sqrt[4]{b}\,x\right)}{\sqrt[4]{b}\,c+\sqrt[4]{-a}\,d}\right)\log(c+dx)}{4(-a)^{3/4}\sqrt[4]{b}} - \frac{\log\left(\cdots\right.}{}$$

Mathematica [C] Result contains complex when optimal does not.
time = 0.07, size = 359, normalized size = 0.72

$$\frac{\log\left(\frac{d\left(\sqrt[4]{-a}-\sqrt[4]{b}\,x\right)}{\sqrt[4]{b}\,c+\sqrt[4]{-a}\,d}\right)\log(c+dx)-i\log\left(\frac{d\left(\sqrt[4]{-a}-i\sqrt[4]{b}\,x\right)}{i\sqrt[4]{b}\,c+\sqrt[4]{-a}\,d}\right)\log(c+dx)+i\log\left(\frac{d\left(\sqrt[4]{-a}+i\sqrt[4]{b}\,x\right)}{-i\sqrt[4]{b}\,c+\sqrt[4]{-a}\,d}\right)\log(c+dx)-\log\left(\frac{d\left(\sqrt[4]{-a}+\sqrt[4]{b}\,x\right)}{-\sqrt[4]{b}\,c+\sqrt[4]{-a}\,d}\right)\log(c+dx)-\text{Li}_2\left(\frac{\sqrt[4]{b}\,(c+dx)}{\sqrt[4]{b}\,c-\sqrt[4]{-a}\,d}\right)-i\text{Li}_2\left(\frac{\sqrt[4]{b}\,(c+dx)}{\sqrt[4]{b}\,c-i\sqrt[4]{-a}\,d}\right)+i\text{Li}_2\left(\frac{\sqrt[4]{b}\,(c+dx)}{\sqrt[4]{b}\,c+i\sqrt[4]{-a}\,d}\right)+\text{Li}_2\left(\frac{\sqrt[4]{b}\,(c+dx)}{\sqrt[4]{b}\,c+\sqrt[4]{-a}\,d}\right)}{4(-a)^{3/4}\sqrt[4]{b}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[c + d*x]/(a + b*x^4),x]
```

```
[Out] (Log[(d*((-a)^(1/4) - b^(1/4)*x))/(b^(1/4)*c + (-a)^(1/4)*d)]*Log[c + d*x]
- I*Log[(d*((-a)^(1/4) - I*b^(1/4)*x))/(I*b^(1/4)*c + (-a)^(1/4)*d)]*Log[c
+ d*x] + I*Log[(d*((-a)^(1/4) + I*b^(1/4)*x))/((-I)*b^(1/4)*c + (-a)^(1/4)*
d)]*Log[c + d*x] - Log[(d*((-a)^(1/4) + b^(1/4)*x))/(-(b^(1/4)*c) + (-a)^(1
/4)*d)]*Log[c + d*x] - PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c - (-a)^(1/
4)*d)] - I*PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c - I*(-a)^(1/4)*d)] + I
*PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c + I*(-a)^(1/4)*d)] + PolyLog[2,
(b^(1/4)*(c + d*x))/(b^(1/4)*c + (-a)^(1/4)*d)])/(4*(-a)^(3/4)*b^(1/4))
```

Maple [C] Result contains higher order function than in optimal. Order 9 vs. order 4.
time = 0.47, size = 112, normalized size = 0.23

method	result
derivativedivides	$-\frac{d^3\left(\sum_{\_R1=\mathrm{RootOf}\left(b\_Z^4-4cb\_Z^3+6bc^2\_Z^2-4bc^3\_Z+ad^4+bc^4\right)}\frac{\ln(dx+c)\ln\left(\frac{-dx+\_R1-c}{\_R1}\right)+\mathrm{dilog}\left(\frac{-dx+\_R1-c}{\_R1}\right)}{-\_R1^3+3\_R1^2c-3\_R1c^2+c^3}\right)}{4b}$
default	$-\frac{d^3\left(\sum_{\_R1=\mathrm{RootOf}\left(b\_Z^4-4cb\_Z^3+6bc^2\_Z^2-4bc^3\_Z+ad^4+bc^4\right)}\frac{\ln(dx+c)\ln\left(\frac{-dx+\_R1-c}{\_R1}\right)+\mathrm{dilog}\left(\frac{-dx+\_R1-c}{\_R1}\right)}{-\_R1^3+3\_R1^2c-3\_R1c^2+c^3}\right)}{4b}$
risch	$-\frac{d^3\left(\sum_{\_R1=\mathrm{RootOf}\left(b\_Z^4-4cb\_Z^3+6bc^2\_Z^2-4bc^3\_Z+ad^4+bc^4\right)}\frac{\ln(dx+c)\ln\left(\frac{-dx+\_R1-c}{\_R1}\right)+\mathrm{dilog}\left(\frac{-dx+\_R1-c}{\_R1}\right)}{-\_R1^3+3\_R1^2c-3\_R1c^2+c^3}\right)}{4b}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(d*x+c)/(b*x^4+a),x,method=_RETURNVERBOSE)
```

```
[Out] -1/4*d^3/b*sum(1/(-_R1^3+3*_R1^2*c-3*_R1*c^2+c^3)*(ln(d*x+c)*ln((-d*x+_R1-c
)/_R1)+dilog((-d*x+_R1-c)/_R1)),_R1=RootOf(_Z^4*b-4*_Z^3*b*c+6*_Z^2*b*c^2-4
*_Z*b*c^3+a*d^4+b*c^4))
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(d*x+c)/(b*x^4+a),x, algorithm="maxima")
```

```
[Out] integrate(log(d*x + c)/(b*x^4 + a), x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(d*x+c)/(b*x^4+a),x, algorithm="fricas")
```

```
[Out] integral(log(d*x + c)/(b*x^4 + a), x)
```

Sympy [**F(-1)**] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(d*x+c)/(b*x**4+a),x)
```

```
[Out] Timed out
```

Giac [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(d*x+c)/(b*x^4+a),x, algorithm="giac")
```

```
[Out] integrate(log(d*x + c)/(b*x^4 + a), x)
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\ln\left(c+d\,x\right)}{b\,x^4+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(log(c + d*x)/(a + b*x^4),x)
```

```
[Out] int(log(c + d*x)/(a + b*x^4), x)
```

3.302 $\int \frac{\log(c+dx)}{x^2(a+bx^4)}\,dx$

Optimal. Leaf size=536

$$\frac{d\log(x)}{ac}-\frac{d\log(c+dx)}{ac}-\frac{\log(c+dx)}{ax}+\frac{\sqrt[4]{b}\,\log\left(\frac{d\left(\sqrt{-\sqrt{-a}}-\sqrt[4]{b}\,x\right)}{\sqrt[4]{b}\,c+\sqrt{-\sqrt{-a}}\,d}\right)\log(c+dx)}{4\left(-\sqrt{-a}\right)^{5/2}}+\frac{\sqrt[4]{b}\,\log\left(\frac{d\left(\sqrt[4]{-a}-\cdots\right.}{\sqrt[4]{b}\,c+\sqrt[4]{-\cdots}}\right.}{4(-\cdots}$$

```
[Out] d*ln(x)/a/c-d*ln(d*x+c)/a/c-ln(d*x+c)/a/x+1/4*b^(1/4)*ln(d*((-a)^(1/4)-b^(1
/4)*x)/(b^(1/4)*c+(-a)^(1/4)*d))*ln(d*x+c)/(-a)^(5/4)-1/4*b^(1/4)*ln(-d*((-
a)^(1/4)+b^(1/4)*x)/(b^(1/4)*c-(-a)^(1/4)*d))*ln(d*x+c)/(-a)^(5/4)-1/4*b^(1
/4)*polylog(2,b^(1/4)*(d*x+c)/(b^(1/4)*c-(-a)^(1/4)*d))/(-a)^(5/4)+1/4*b^(1
/4)*polylog(2,b^(1/4)*(d*x+c)/(b^(1/4)*c+(-a)^(1/4)*d))/(-a)^(5/4)-1/4*b^(1
/4)*ln(d*x+c)*ln(-d*(b^(1/4)*x+(-(-a)^(1/2))^(1/2))/(b^(1/4)*c-d*(-(-a)^(1/
2))^(1/2)))/(-(-a)^(1/2))^(5/2)+1/4*b^(1/4)*ln(d*x+c)*ln(d*(-b^(1/4)*x+(-(-
a)^(1/2))^(1/2))/(b^(1/4)*c+d*(-(-a)^(1/2))^(1/2)))/(-(-a)^(1/2))^(5/2)-1/4
*b^(1/4)*polylog(2,b^(1/4)*(d*x+c)/(b^(1/4)*c-d*(-(-a)^(1/2))^(1/2)))/(-(-a
)^(1/2))^(5/2)+1/4*b^(1/4)*polylog(2,b^(1/4)*(d*x+c)/(b^(1/4)*c+d*(-(-a)^(1
/2))^(1/2)))/(-(-a)^(1/2))^(5/2)
```

Rubi [A]
time = 0.72, antiderivative size = 536, normalized size of antiderivative = 1.00, number of steps used = 24, number of rules used = 16, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.842$, Rules used = {331, 303, 1176, 631, 210, 1179, 642, 2463, 2442, 36, 29, 31, 2456, 2441, 2440, 2438}

$$-\frac{\sqrt[4]{b}\,\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}\,c-\sqrt{-\sqrt{-a}}\,d}\right)}{4\left(-\sqrt{-a}\right)^{5/2}}+\frac{\sqrt[4]{b}\,\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt{-\sqrt{-a}}\,d+\sqrt[4]{b}\,c}\right)}{4\left(-\sqrt{-a}\right)^{5/2}}-\frac{\sqrt[4]{b}\,\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}\,c-\sqrt[4]{-a}\,d}\right)}{4(-a)^{5/4}}+\frac{\sqrt[4]{b}\,\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{-a}\,d+\sqrt[4]{b}\,c}\right)}{4(-a)^{5/4}}+\frac{\sqrt[4]{b}\,\log(c+dx)\log\left(\frac{d\left(\sqrt{-\sqrt{-a}}-\sqrt[4]{b}\,x\right)}{\sqrt{-\sqrt{-a}}\,d+\sqrt[4]{b}\,c}\right)}{4\left(-\sqrt{-a}\right)^{5/2}}+\frac{\sqrt[4]{b}\,\log(c+dx)\log\left(\frac{d\left(\sqrt[4]{-a}-\sqrt[4]{b}\,x\right)}{\sqrt[4]{-a}\,d+\sqrt[4]{b}\,c}\right)}{4(-a)^{5/4}}-\frac{\sqrt[4]{b}\,\log(c+dx)\log\left(-\frac{d\left(\sqrt{-\sqrt{-a}}+\sqrt[4]{b}\,x\right)}{\sqrt[4]{b}\,c-\sqrt{-\sqrt{-a}}\,d}\right)}{4\left(-\sqrt{-a}\right)^{5/2}}-\frac{\sqrt[4]{b}\,\log(c+dx)\log\left(-\frac{d\left(\sqrt[4]{-a}+\sqrt[4]{b}\,x\right)}{\sqrt[4]{b}\,c-\sqrt[4]{-a}\,d}\right)}{4(-a)^{5/4}}+\frac{d\log(x)}{ac}-\frac{d\log(c+dx)}{ac}-\frac{\log(c+dx)}{ax}$$

Antiderivative was successfully verified.

```
[In] Int[Log[c + d*x]/(x^2*(a + b*x^4)),x]
```

```
[Out] (d*Log[x])/(a*c) - (d*Log[c + d*x])/(a*c) - Log[c + d*x]/(a*x) + (b^(1/4)*L
og[(d*(Sqrt[-Sqrt[-a]] - b^(1/4)*x))/(b^(1/4)*c + Sqrt[-Sqrt[-a]]*d)]*Log[c
 + d*x])/(4*(-Sqrt[-a])^(5/2)) + (b^(1/4)*Log[(d*((-a)^(1/4) - b^(1/4)*x))/
(b^(1/4)*c + (-a)^(1/4)*d)]*Log[c + d*x])/(4*(-a)^(5/4)) - (b^(1/4)*Log[-((
d*(Sqrt[-Sqrt[-a]] + b^(1/4)*x))/(b^(1/4)*c - Sqrt[-Sqrt[-a]]*d))]*Log[c +
d*x])/(4*(-Sqrt[-a])^(5/2)) - (b^(1/4)*Log[-((d*((-a)^(1/4) + b^(1/4)*x))/(
b^(1/4)*c - (-a)^(1/4)*d))]*Log[c + d*x])/(4*(-a)^(5/4)) - (b^(1/4)*PolyLog
[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c - Sqrt[-Sqrt[-a]]*d)])/(4*(-Sqrt[-a])^(5
/2)) + (b^(1/4)*PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c + Sqrt[-Sqrt[-a]]
*d)])/(4*(-Sqrt[-a])^(5/2)) - (b^(1/4)*PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1
```

```
/4)*c - (-a)^(1/4)*d)])/(4*(-a)^(5/4)) + (b^(1/4)*PolyLog[2, (b^(1/4)*(c +
d*x))/(b^(1/4)*c + (-a)^(1/4)*d)])/(4*(-a)^(5/4))
```

Rule 29

```
Int[(x_)^(-1), x_Symbol] :> Simp[Log[x], x]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 36

```
Int[1/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))), x_Symbol] :> Dist[b/(b*c
 - a*d), Int[1/(a + b*x), x], x] - Dist[d/(b*c - a*d), Int[1/(c + d*x), x],
 x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0]
```

Rule 210

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(-(Rt[-a, 2]*Rt[-b, 2])^(
-1))*ArcTan[Rt[-b, 2]*(x/Rt[-a, 2])], x] /; FreeQ[{a, b}, x] && PosQ[a/b] &
& (LtQ[a, 0] || LtQ[b, 0])
```

Rule 303

```
Int[(x_)^2/((a_) + (b_.)*(x_)^4), x_Symbol] :> With[{r = Numerator[Rt[a/b,
2]], s = Denominator[Rt[a/b, 2]]}, Dist[1/(2*s), Int[(r + s*x^2)/(a + b*x^4
), x], x] - Dist[1/(2*s), Int[(r - s*x^2)/(a + b*x^4), x], x]] /; FreeQ[{a,
 b}, x] && (GtQ[a/b, 0] || (PosQ[a/b] && AtomQ[SplitProduct[SumBaseQ, a]] &
& AtomQ[SplitProduct[SumBaseQ, b]]))
```

Rule 331

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(c*x
)^(m + 1)*((a + b*x^n)^(p + 1)/(a*c*(m + 1))), x] - Dist[b*((m + n*(p + 1)
+ 1)/(a*c^n*(m + 1))), Int[(c*x)^(m + n)*(a + b*x^n)^p, x], x] /; FreeQ[{a,
 b, c, p}, x] && IGtQ[n, 0] && LtQ[m, -1] && IntBinomialQ[a, b, c, n, m, p,
 x]
```

Rule 631

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[a*(c/b^2)]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + 2*c*(x/b)
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 642

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[d*(Log[RemoveContent[a + b*x + c*x^2, x]]/b), x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 1176

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
2*(d/e), 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 1179

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
-2*(d/e), 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + c*e*(x/g)])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2441

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d + e*x
)^n])/g), x] - Dist[b*e*(n/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2442

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[(f + g*x)^(q + 1)*((a + b*Log[c*(d + e*x)^n])/(
g*(q + 1))), x] - Dist[b*e*(n/(g*(q + 1))), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 2456

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_)^(r_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a + b*Log[c*(d + e*x)
^n])^p, (f + g*x^r)^q, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, r}, x] && I
GtQ[p, 0] && IntegerQ[q] && (GtQ[q, 0] || (IntegerQ[r] && NeQ[r, 1]))
```

Rule 2463

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rubi steps

$$\int \frac{\log(c+dx)}{x^2(a+bx^4)}\,dx = \int \left(\frac{\log(c+dx)}{ax^2} - \frac{bx^2\log(c+dx)}{a(a+bx^4)}\right)dx$$

$$= \frac{\int \frac{\log(c+dx)}{x^2}\,dx}{a} - \frac{b\int \frac{x^2\log(c+dx)}{a+bx^4}\,dx}{a}$$

$$= -\frac{\log(c+dx)}{ax} - \frac{b\int \left(-\frac{\log(c+dx)}{2\sqrt{b}\left(\sqrt{-a}-\sqrt{b}x^2\right)} + \frac{\log(c+dx)}{2\sqrt{b}\left(\sqrt{-a}+\sqrt{b}x^2\right)}\right)dx}{a} + \frac{d\int \frac{1}{x(c+d}}{a}$$

$$= -\frac{\log(c+dx)}{ax} + \frac{\sqrt{b}\int \frac{\log(c+dx)}{\sqrt{-a}-\sqrt{b}x^2}\,dx}{2a} - \frac{\sqrt{b}\int \frac{\log(c+dx)}{\sqrt{-a}+\sqrt{b}x^2}\,dx}{2a} + \frac{d\int \frac{1}{x}\,dx}{ac} - \frac{d^2\int}{}$$

$$= \frac{d\log(x)}{ac} - \frac{d\log(c+dx)}{ac} - \frac{\log(c+dx)}{ax} - \frac{\sqrt{b}\int \left(\frac{\sqrt{-\sqrt{-a}}\log(c+dx)}{2\sqrt{-a}\left(\sqrt{-\sqrt{-a}}-\sqrt[4]{b}x\right)} + \frac{}{2\sqrt{-}}\right.}{2a}$$

$$= \frac{d\log(x)}{ac} - \frac{d\log(c+dx)}{ac} - \frac{\log(c+dx)}{ax} - \frac{\sqrt{b}\int \frac{\log(c+dx)}{\sqrt{-\sqrt{-a}}-\sqrt[4]{b}x}\,dx}{4\left(-\sqrt{-a}\right)^{5/2}} - \frac{\sqrt{b}\int \frac{\mathrm{lo}}{\sqrt{-\sqrt{}}}}{4(-\sqrt{}}$$

$$= \frac{d\log(x)}{ac} - \frac{d\log(c+dx)}{ac} - \frac{\log(c+dx)}{ax} + \frac{\sqrt[4]{b}\log\left(\frac{d\left(\sqrt{-\sqrt{-a}}-\sqrt[4]{b}x\right)}{\sqrt[4]{b}c+\sqrt{-\sqrt{-a}}d}\right)\log(c+d}{4\left(-\sqrt{-a}\right)^{5/2}}$$

$$= \frac{d\log(x)}{ac} - \frac{d\log(c+dx)}{ac} - \frac{\log(c+dx)}{ax} + \frac{\sqrt[4]{b}\log\left(\frac{d\left(\sqrt{-\sqrt{-a}}-\sqrt[4]{b}x\right)}{\sqrt[4]{b}c+\sqrt{-\sqrt{-a}}d}\right)\log(c+d}{4\left(-\sqrt{-a}\right)^{5/2}}$$

$$= \frac{d\log(x)}{ac} - \frac{d\log(c+dx)}{ac} - \frac{\log(c+dx)}{ax} + \frac{\sqrt[4]{b}\log\left(\frac{d\left(\sqrt{-\sqrt{-a}}-\sqrt[4]{b}x\right)}{\sqrt[4]{b}c+\sqrt{-\sqrt{-a}}d}\right)\log(c+d}{4\left(-\sqrt{-a}\right)^{5/2}}$$

<u>**Mathematica**</u> [A]

time = 0.45, size = 525, normalized size = 0.98

$$\frac{1}{4}\left(\frac{4d(\log(x)-\log(c+dx))}{ac}-\frac{4\log(c+dx)}{ax}-\frac{\sqrt[4]{b}\log\left(\frac{d\left(\sqrt{-\sqrt{-a}}-\sqrt[4]{b}\,x\right)}{\sqrt[4]{b}\,c+\sqrt{-\sqrt{-a}}\,d}\right)\log(c+dx)}{\sqrt{-\sqrt{-a}}\,a}+\frac{\sqrt[4]{b}\log\left(\frac{d\left(\sqrt[4]{-a}-\sqrt[4]{b}\,x\right)}{\sqrt[4]{b}\,c+\sqrt[4]{-a}\,d}\right)\log(c+dx)}{(-a)^{5/4}}+\frac{\sqrt[4]{b}\log\left(\frac{d\left(\sqrt{-\sqrt{-a}}+\sqrt[4]{b}\,x\right)}{-\sqrt[4]{b}\,c+\sqrt{-\sqrt{-a}}\,d}\right)\log(c+dx)}{\sqrt{-\sqrt{-a}}\,a}+\frac{a\sqrt[4]{b}\log\left(\frac{d\left(\sqrt[4]{-a}+\sqrt[4]{b}\,x\right)}{-\sqrt[4]{b}\,c+\sqrt[4]{-a}\,d}\right)\log(c+dx)}{(-a)^{9/4}}+\frac{\sqrt[4]{b}\,\mathrm{Li}_2\left(\frac{\sqrt[4]{b}\,(c+dx)}{\sqrt[4]{b}\,c-\sqrt{-\sqrt{-a}}\,d}\right)}{\sqrt{-\sqrt{-a}}\,a}-\frac{\sqrt[4]{b}\,\mathrm{Li}_2\left(\frac{\sqrt[4]{b}\,(c+dx)}{\sqrt[4]{b}\,c+\sqrt{-\sqrt{-a}}\,d}\right)}{\sqrt{-\sqrt{-a}}\,a}+\frac{a\sqrt[4]{b}\,\mathrm{Li}_2\left(\frac{\sqrt[4]{b}\,(c+dx)}{\sqrt[4]{b}\,c-\sqrt[4]{-a}\,d}\right)}{(-a)^{9/4}}+\frac{\sqrt[4]{b}\,\mathrm{Li}_2\left(\frac{\sqrt[4]{b}\,(c+dx)}{\sqrt[4]{b}\,c+\sqrt[4]{-a}\,d}\right)}{(-a)^{5/4}}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[c + d*x]/(x^2*(a + b*x^4)),x]
```

```
[Out] ((4*d*(Log[x] - Log[c + d*x]))/(a*c) - (4*Log[c + d*x])/(a*x) - (b^(1/4)*Lo
g[(d*(Sqrt[-Sqrt[-a]] - b^(1/4)*x))/(b^(1/4)*c + Sqrt[-Sqrt[-a]]*d)]*Log[c
+ d*x])/(Sqrt[-Sqrt[-a]]*a) + (b^(1/4)*Log[(d*((-a)^(1/4) - b^(1/4)*x))/(b^
(1/4)*c + (-a)^(1/4)*d)]*Log[c + d*x])/(-a)^(5/4) + (b^(1/4)*Log[(d*(Sqrt[-
Sqrt[-a]] + b^(1/4)*x))/(-(b^(1/4)*c) + Sqrt[-Sqrt[-a]]*d)]*Log[c + d*x])/(
Sqrt[-Sqrt[-a]]*a) + (a*b^(1/4)*Log[(d*((-a)^(1/4) + b^(1/4)*x))/(-(b^(1/4)
*c) + (-a)^(1/4)*d)]*Log[c + d*x])/(-a)^(9/4) + (b^(1/4)*PolyLog[2, (b^(1/4
)*(c + d*x))/(b^(1/4)*c - Sqrt[-Sqrt[-a]]*d)])/(Sqrt[-Sqrt[-a]]*a) - (b^(1/
4)*PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c + Sqrt[-Sqrt[-a]]*d)])/(Sqrt[-
Sqrt[-a]]*a) + (a*b^(1/4)*PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c - (-a)^
(1/4)*d)])/(-a)^(9/4) + (b^(1/4)*PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c
+ (-a)^(1/4)*d)])/(-a)^(5/4))/4
```

Maple [C] Result contains higher order function than in optimal. Order 9 vs. order 4.
time = 0.54, size = 132, normalized size = 0.25

method	result
derivativedivides	$d\left(\frac{\frac{\ln(-dx)}{c}-\frac{\ln(dx+c)(dx+c)}{cdx}}{a}+\frac{\sum_{\_R1=\mathrm{RootOf}\left(b\_Z^4-4cb\_Z^3+6b\,c^2\_Z^2-4b\,c^3\_Z+a\,d^4+b\,c^4\right)}\frac{\ln(dx+c)\ln\left(\frac{-dx+\_R1-c}{\_R1}\right)}{-\_R}}{4a}\right.$
default	$d\left(\frac{\frac{\ln(-dx)}{c}-\frac{\ln(dx+c)(dx+c)}{cdx}}{a}+\frac{\sum_{\_R1=\mathrm{RootOf}\left(b\_Z^4-4cb\_Z^3+6b\,c^2\_Z^2-4b\,c^3\_Z+a\,d^4+b\,c^4\right)}\frac{\ln(dx+c)\ln\left(\frac{-dx+\_R1-c}{\_R1}\right)}{-\_R}}{4a}\right.$
risch	$\frac{d\ln(-dx)}{ac}-\frac{d\ln(dx+c)}{ca}-\frac{\ln(dx+c)}{ax}+\frac{d\left(\sum_{\_R1=\mathrm{RootOf}\left(b\_Z^4-4cb\_Z^3+6b\,c^2\_Z^2-4b\,c^3\_Z+a\,d^4+b\,c^4\right)}\frac{\ln(dx+c)\ln\left(\right.}{}\right.}{4a}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(d*x+c)/x^2/(b*x^4+a),x,method=_RETURNVERBOSE)
```

```
[Out] d*((1/c*ln(-d*x)-ln(d*x+c)*(d*x+c)/c/d/x)/a+1/4*sum(1/(-_R1+c)*(ln(d*x+c)*l
n((-d*x+_R1-c)/_R1)+dilog((-d*x+_R1-c)/_R1)),_R1=RootOf(_Z^4*b-4*_Z^3*b*c+6
*_Z^2*b*c^2-4*_Z*b*c^3+a*d^4+b*c^4))/a)
```

Maxima [**F**]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(d*x+c)/x^2/(b*x^4+a),x, algorithm="maxima")
[Out] integrate(log(d*x + c)/((b*x^4 + a)*x^2), x)
```

Fricas [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(d*x+c)/x^2/(b*x^4+a),x, algorithm="fricas")
[Out] integral(log(d*x + c)/(b*x^6 + a*x^2), x)
```

Sympy [**F(-1)**] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(d*x+c)/x**2/(b*x**4+a),x)
[Out] Timed out
```

Giac [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(d*x+c)/x^2/(b*x^4+a),x, algorithm="giac")
[Out] integrate(log(d*x + c)/((b*x^4 + a)*x^2), x)
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\ln\left(c+d\,x\right)}{x^2\,\left(b\,x^4+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(log(c + d*x)/(x^2*(a + b*x^4)),x)
[Out] int(log(c + d*x)/(x^2*(a + b*x^4)), x)
```

3.303 $\int \left(f+\frac{g}{x}\right) x(a+b\log \left(c(d+ex)^n\right)) \, dx$

Optimal. Leaf size=91

$$\frac{b(df-eg)nx}{2e}-\frac{bn(g+fx)^2}{4f}-\frac{b(df-eg)^2n\log(d+ex)}{2e^2f}+\frac{(g+fx)^2\left(a+b\log\left(c(d+ex)^n\right)\right)}{2f}$$

```
[Out] 1/2*b*(d*f-e*g)*n*x/e-1/4*b*n*(f*x+g)^2/f-1/2*b*(d*f-e*g)^2*n*ln(e*x+d)/e^2
/f+1/2*(f*x+g)^2*(a+b*ln(c*(e*x+d)^n))/f
```

Rubi [A]
time = 0.05, antiderivative size = 91, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.130, Rules used = {2459, 2442, 45}

$$\frac{(fx+g)^2\left(a+b\log\left(c(d+ex)^n\right)\right)}{2f}-\frac{bn(df-eg)^2\log(d+ex)}{2e^2f}+\frac{bnx(df-eg)}{2e}-\frac{bn(fx+g)^2}{4f}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g/x)*x*(a + b*Log[c*(d + e*x)^n]),x]
```

```
[Out] (b*(d*f - e*g)*n*x)/(2*e) - (b*n*(g + f*x)^2)/(4*f) - (b*(d*f - e*g)^2*n*Lo
g[d + e*x])/(2*e^2*f) + ((g + f*x)^2*(a + b*Log[c*(d + e*x)^n]))/(2*f)
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2442

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[(f + g*x)^(q + 1)*((a + b*Log[c*(d + e*x)^n])/(
g*(q + 1))), x] - Dist[b*e*(n/(g*(q + 1))), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 2459

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)/(x_))^(q_.)*(x_)^(m_.), x_Symbol] :> Int[(g + f*x)^q*(a + b*Log[c*(d + e*
x)^n])^p, x] /; FreeQ[{a, b, c, d, e, f, g, m, n, p, q}, x] && EqQ[m, q] &&
 IntegerQ[q]
```

Rubi steps

$$\int \left(f+\frac{g}{x}\right) x(a+b\log\left(c(d+ex)^n\right))\,dx = \int (g+fx)\left(a+b\log\left(c(d+ex)^n\right)\right)\,dx$$
$$= \frac{(g+fx)^2\left(a+b\log\left(c(d+ex)^n\right)\right)}{2f} - \frac{(ben)\int \frac{(g+fx)^2}{d+ex}\,dx}{2f}$$
$$= \frac{(g+fx)^2\left(a+b\log\left(c(d+ex)^n\right)\right)}{2f} - \frac{(ben)\int \left(\frac{f(-df+eg)}{e^2} + \frac{(-df+eg)}{e^2(d+ex)}\right.}{2f}$$
$$= \frac{b(df-eg)nx}{2e} - \frac{bn(g+fx)^2}{4f} - \frac{b(df-eg)^2 n\log(d+ex)}{2e^2 f} + \frac{(g+}{}$$

Mathematica [A]
time = 0.05, size = 101, normalized size = 1.11

$$agx+\frac{bdfnx}{2e}-bgnx+\frac{1}{2}afx^2-\frac{1}{4}bfnx^2-\frac{bd^2fn\log(d+ex)}{2e^2}+\frac{1}{2}bfx^2\log\left(c(d+ex)^n\right)+\frac{bg(d+ex)\log\left(c(d+ex)^n\right)}{e}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g/x)*x*(a + b*Log[c*(d + e*x)^n]),x]
```

```
[Out] a*g*x + (b*d*f*n*x)/(2*e) - b*g*n*x + (a*f*x^2)/2 - (b*f*n*x^2)/4 - (b*d^2*
f*n*Log[d + e*x])/(2*e^2) + (b*f*x^2*Log[c*(d + e*x)^n])/2 + (b*g*(d + e*x)
*Log[c*(d + e*x)^n])/e
```

Maple [A]
time = 0.35, size = 101, normalized size = 1.11

method	result
default	$agx+\frac{af\,x^2}{2}+bg\ln\left(c(ex+d)^n\right)x-bgnx+\frac{bgnd\ln(ex+d)}{e}+\frac{bf\,x^2\ln\left(c\,\mathrm{e}^{n\ln(ex+d)}\right)}{2}-\frac{nbf\,x^2}{4}-\frac{nb\,d^2 f\ln(ex+d}{2e^2}$
risch	$\frac{bx(fx+2g)\ln((ex+d)^n)}{2}+\frac{i\pi bgx\,\mathrm{csgn}(ic)\mathrm{csgn}(ic(ex+d)^n)^2}{2}+\frac{i\pi bf\,x^2\mathrm{csgn}(i(ex+d)^n)\mathrm{csgn}(ic(ex+d)^n)^2}{4}-\frac{i\pi bf\,x^2\mathrm{csgn}(ic(ex+d)}{4}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f+g/x)*x*(a+b*ln(c*(e*x+d)^n)),x,method=_RETURNVERBOSE)
```

```
[Out] a*g*x+1/2*a*f*x^2+b*g*ln(c*(e*x+d)^n)*x-b*g*n*x+b*g/e*n*d*ln(e*x+d)+1/2*b*f
*x^2*ln(c*exp(n*ln(e*x+d)))-1/4*n*b*f*x^2-1/2*n*b*d^2*f/e^2*ln(e*x+d)+1/2*b
*d*f*n*x/e
```

Maxima [A]
time = 0.26, size = 104, normalized size = 1.14

$$-\frac{1}{4}\left(2\,d^2e^{(-3)}\log\left(xe+d\right)+\left(x^2e-2\,dx\right)e^{(-2)}\right)bfne+\left(de^{(-2)}\log\left(xe+d\right)-xe^{(-1)}\right)bgne+\frac{1}{2}\,bfx^2\log\left(\left(xe+d\right)^nc\right)+\frac{1}{2}\,afx^2+bgx\log\left(\left(xe+d\right)^nc\right)+agx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f+g/x)*x*(a+b*log(c*(e*x+d)^n)),x, algorithm="maxima")
```

```
[Out] -1/4*(2*d^2*e^(-3)*log(x*e + d) + (x^2*e - 2*d*x)*e^(-2))*b*f*n*e + (d*e^(-
2)*log(x*e + d) - x*e^(-1))*b*g*n*e + 1/2*b*f*x^2*log((x*e + d)^n*c) + 1/2*
a*f*x^2 + b*g*x*log((x*e + d)^n*c) + a*g*x
```

Fricas [**A**]
time = 0.35, size = 105, normalized size = 1.15

$$\frac{1}{4}\left(2\,bdfnxe+2\left(bfx^2+2\,bgx\right)e^2\log\left(c\right)-\left((bfn-2\,af)x^2+4\,(bgn-ag)x\right)e^2-2\left(bd^2fn-2\,bdgne-\left(bfnx^2+2\,bgnx\right)e^2\right)\log\left(xe+d\right)\right)e^{(-2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f+g/x)*x*(a+b*log(c*(e*x+d)^n)),x, algorithm="fricas")
```

```
[Out] 1/4*(2*b*d*f*n*x*e + 2*(b*f*x^2 + 2*b*g*x)*e^2*log(c) - ((b*f*n - 2*a*f)*x^
2 + 4*(b*g*n - a*g)*x)*e^2 - 2*(b*d^2*f*n - 2*b*d*g*n*e - (b*f*n*x^2 + 2*b*
g*n*x)*e^2)*log(x*e + d))*e^(-2)
```

Sympy [**A**]
time = 0.69, size = 134, normalized size = 1.47

$$\begin{cases} \frac{afx^2}{2}+agx-\frac{bd^2f\log\left(c(d+ex)^n\right)}{2e^2}+\frac{bdfnx}{2e}+\frac{bdg\log\left(c(d+ex)^n\right)}{e}-\frac{bfnx^2}{4}+\frac{bfx^2\log\left(c(d+ex)^n\right)}{2}-bgnx+bgx\log\left(c(d+ex)^n\right) & \text{for } e\neq 0 \\ \left(a+b\log\left(cd^n\right)\right)\left(\frac{fx^2}{2}+gx\right) & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f+g/x)*x*(a+b*ln(c*(e*x+d)**n)),x)
```

```
[Out] Piecewise((a*f*x**2/2 + a*g*x - b*d**2*f*log(c*(d + e*x)**n)/(2*e**2) + b*d
*f*n*x/(2*e) + b*d*g*log(c*(d + e*x)**n)/e - b*f*n*x**2/4 + b*f*x**2*log(c*
(d + e*x)**n)/2 - b*g*n*x + b*g*x*log(c*(d + e*x)**n), Ne(e, 0)), ((a + b*l
og(c*d**n))*(f*x**2/2 + g*x), True))
```

Giac [**B**] Leaf count of result is larger than twice the leaf count of optimal. 186 vs. 2(85) = 170.
time = 4.36, size = 186, normalized size = 2.04

$$\frac{1}{2}\,(xe+d)^2bfne^{(-2)}\log\left(xe+d\right)-(xe+d)bdfne^{(-2)}\log\left(xe+d\right)-\frac{1}{4}\,(xe+d)^2bfne^{(-2)}+(xe+d)bdfne^{(-2)}+(xe+d)bgne^{(-1)}\log\left(xe+d\right)+\frac{1}{2}\,(xe+d)^2bfe^{(-2)}\log\left(c\right)-(xe+d)bdfe^{(-2)}\log\left(c\right)-(xe+d)bgne^{(-1)}+\frac{1}{2}\,(xe+d)^2afe^{(-2)}-(xe+d)adfe^{(-2)}+(xe+d)bge^{(-1)}\log\left(c\right)+(xe+d)age^{(-1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f+g/x)*x*(a+b*log(c*(e*x+d)^n)),x, algorithm="giac")
```

```
[Out] 1/2*(x*e + d)^2*b*f*n*e^(-2)*log(x*e + d) - (x*e + d)*b*d*f*n*e^(-2)*log(x*
e + d) - 1/4*(x*e + d)^2*b*f*n*e^(-2) + (x*e + d)*b*d*f*n*e^(-2) + (x*e + d
)*b*g*n*e^(-1)*log(x*e + d) + 1/2*(x*e + d)^2*b*f*e^(-2)*log(c) - (x*e + d)
```

```
*b*d*f*e^(-2)*log(c) - (x*e + d)*b*g*n*e^(-1) + 1/2*(x*e + d)^2*a*f*e^(-2)
- (x*e + d)*a*d*f*e^(-2) + (x*e + d)*b*g*e^(-1)*log(c) + (x*e + d)*a*g*e^(-
1)
```

Mupad [B]
time = 0.27, size = 104, normalized size = 1.14

$$x\left(\frac{2\,a\,d\,f+2\,a\,e\,g-2\,b\,e\,g\,n}{2\,e}-\frac{d\,f\,(2\,a-b\,n)}{2\,e}\right)+\ln\left(c\,(d+e\,x)^n\right)\,\left(\frac{b\,f\,x^2}{2}+b\,g\,x\right)-\frac{\ln(d+e\,x)\,\left(b\,d^2\,f\,n-2\,b\,d\,e\,g\,n\right)}{2\,e^2}+\frac{f\,x^2\,(2\,a-b\,n)}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(f + g/x)*(a + b*log(c*(d + e*x)^n)),x)
```

```
[Out] x*((2*a*d*f + 2*a*e*g - 2*b*e*g*n)/(2*e) - (d*f*(2*a - b*n))/(2*e)) + log(c
*(d + e*x)^n)*(b*g*x + (b*f*x^2)/2) - (log(d + e*x)*(b*d^2*f*n - 2*b*d*e*g*
n))/(2*e^2) + (f*x^2*(2*a - b*n))/4
```

3.304 $\int \left(f+\frac{g}{x}\right)^2 x^2(a+b\log(c(d+ex)^n))\,dx$

Optimal. Leaf size=120

$$-\frac{b(df-eg)^2nx}{3e^2}+\frac{b(df-eg)n(g+fx)^2}{6ef}-\frac{bn(g+fx)^3}{9f}+\frac{b(df-eg)^3n\log(d+ex)}{3e^3f}+\frac{(g+fx)^3\left(a+b\log(c(d$$

```
[Out] -1/3*b*(d*f-e*g)^2*n*x/e^2+1/6*b*(d*f-e*g)*n*(f*x+g)^2/e/f-1/9*b*n*(f*x+g)^
3/f+1/3*b*(d*f-e*g)^3*n*ln(e*x+d)/e^3/f+1/3*(f*x+g)^3*(a+b*ln(c*(e*x+d)^n))
/f
```

Rubi [A]
time = 0.08, antiderivative size = 120, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.111$, Rules used = {2459, 2442, 45}

$$\frac{(fx+g)^3\left(a+b\log\left(c(d+ex)^n\right)\right)}{3f}+\frac{bn(df-eg)^3\log(d+ex)}{3e^3f}-\frac{bnx(df-eg)^2}{3e^2}+\frac{bn(fx+g)^2(df-eg)}{6ef}-\frac{bn(fx+g)^3}{9f}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g/x)^2*x^2*(a + b*Log[c*(d + e*x)^n]),x]
```

```
[Out] -1/3*(b*(d*f - e*g)^2*n*x)/e^2 + (b*(d*f - e*g)*n*(g + f*x)^2)/(6*e*f) - (b
*n*(g + f*x)^3)/(9*f) + (b*(d*f - e*g)^3*n*Log[d + e*x])/(3*e^3*f) + ((g +
f*x)^3*(a + b*Log[c*(d + e*x)^n]))/(3*f)
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2442

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[(f + g*x)^(q + 1)*((a + b*Log[c*(d + e*x)^n])/(
g*(q + 1))), x] - Dist[b*e*(n/(g*(q + 1))), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 2459

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)/(x_))^(q_.)*(x_)^(m_.), x_Symbol] :> Int[(g + f*x)^q*(a + b*Log[c*(d + e*
x)^n])^p, x] /; FreeQ[{a, b, c, d, e, f, g, m, n, p, q}, x] && EqQ[m, q] &&
```

```
IntegerQ[q]
```

Rubi steps

$$\begin{aligned}\int \left(f+\frac{g}{x}\right)^2 x^2(a+b\log(c(d+ex)^n))\,dx &= \int (g+fx)^2(a+b\log(c(d+ex)^n))\,dx\\ &= \frac{(g+fx)^3(a+b\log(c(d+ex)^n))}{3f}-\frac{(ben)\int \frac{(g+fx)^3}{d+ex}\,dx}{3f}\\ &= \frac{(g+fx)^3(a+b\log(c(d+ex)^n))}{3f}-\frac{(ben)\int \left(\frac{f(-df+eg)^2}{e^3}+\frac{(-df+}{e^3(d+}\right.}{}\\ &= -\frac{b(df-eg)^2nx}{3e^2}+\frac{b(df-eg)n(g+fx)^2}{6ef}-\frac{bn(g+fx)^3}{9f}+\frac{b(df}{}\end{aligned}$$

Mathematica [A]
time = 0.11, size = 150, normalized size = 1.25

$$\frac{6bd^2f(df-3eg)n\log(d+ex)+e(x(6ae^2(3g^2+3fgx+f^2x^2)-bn(6d^2f^2-3def(6g+fx)+e^2(18g^2+9fgx+2f^2x^2)))+6be(3dg^2+ex(3g^2+3fgx+f^2x^2))\log(c(d+ex)^n))}{18e^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g/x)^2*x^2*(a + b*Log[c*(d + e*x)^n]),x]
```

```
[Out] (6*b*d^2*f*(d*f - 3*e*g)*n*Log[d + e*x] + e*(x*(6*a*e^2*(3*g^2 + 3*f*g*x +
f^2*x^2) - b*n*(6*d^2*f^2 - 3*d*e*f*(6*g + f*x) + e^2*(18*g^2 + 9*f*g*x + 2
*f^2*x^2))) + 6*b*e*(3*d*g^2 + e*x*(3*g^2 + 3*f*g*x + f^2*x^2))*Log[c*(d +
e*x)^n]))/(18*e^3)
```

Maple [C] Result contains higher order function than in optimal. Order 9 vs. order 3.
time = 0.30, size = 585, normalized size = 4.88

method	result
risch	$\frac{a f^2 x^3}{3}+xa\,g^2+\frac{b\,g^2 nd\ln(ex+d)}{e}-b\,g^2nx+\frac{(fx+g)^3 b\ln((ex+d)^n)}{3f}-\frac{f^2bn\,x^3}{9}+fag\,x^2+\frac{if^2\pi b\,x^3\mathrm{csgn}(ic)\mathrm{csgn}(ic(}{6}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f+g/x)^2*x^2*(a+b*ln(c*(e*x+d)^n)),x,method=_RETURNVERBOSE)
```

```
[Out] 1/3*a*f^2*x^3+x*a*g^2-1/6*I*f^2*Pi*b*x^3*csgn(I*c*(e*x+d)^n)^3-1/2*I*Pi*b*g
^2*x*csgn(I*c*(e*x+d)^n)^3+b*g^2/e*n*d*ln(e*x+d)-b*g^2*n*x+1/6*I*f^2*Pi*b*x
^3*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+1/6*I*f^2*Pi*b*x^3*csgn(I*(e*x+d)^n)*csg
n(I*c*(e*x+d)^n)^2-1/2*I*f*Pi*b*g*x^2*csgn(I*c*(e*x+d)^n)^3+1/2*I*Pi*b*g^2*
x*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+1/2*I*Pi*b*g^2*x*csgn(I*(e*x+d)^n)*csgn(I
```

```
*c*(e*x+d)^n)^2+1/3*(f*x+g)^3*b/f*ln((e*x+d)^n)-1/9*f^2*b*n*x^3+f*a*g*x^2+f
*ln(c)*b*g*x^2-1/3/f*ln(e*x+d)*b*g^3*n+1/3*f^2*ln(c)*b*x^3+ln(c)*b*g^2*x+1/
6/e*f^2*b*d*n*x^2-1/2*f*b*g*n*x^2-1/3/e^2*f^2*b*d^2*n*x+1/3/e^3*f^2*ln(e*x+
d)*b*d^3*n+1/e*f*b*d*n*g*x-1/e^2*f*ln(e*x+d)*b*d^2*g*n-1/6*I*f^2*Pi*b*x^3*c
sgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+1/2*I*f*Pi*b*g*x^2*csgn(I*c)
*csgn(I*c*(e*x+d)^n)^2+1/2*I*f*Pi*b*g*x^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d
)^n)^2-1/2*I*Pi*b*g^2*x*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-1/2
*I*f*Pi*b*g*x^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)
```

Maxima [A]
time = 0.27, size = 190, normalized size = 1.58

$$\frac{1}{3}bf^2x^3\log\left((xe+d)^n c\right)+\frac{1}{3}af^2x^3+\frac{1}{18}\left(6d^3e^{(-4)}\log(xe+d)-\left(2x^3e^2-3dx^2e+6d^2x\right)e^{(-3)}\right)bf^2ne-\frac{1}{2}\left(2d^2e^{(-3)}\log(xe+d)+\left(x^2e-2dx\right)e^{(-2)}\right)bfgne+\left(de^{(-2)}\log(xe+d)-xe^{(-1)}\right)bg^2ne+bfgx^2\log\left((xe+d)^n c\right)+afgx^2+bg^2x\log\left((xe+d)^n c\right)+ag^2x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f+g/x)^2*x^2*(a+b*log(c*(e*x+d)^n)),x, algorithm="maxima")
```

```
[Out] 1/3*b*f^2*x^3*log((x*e + d)^n*c) + 1/3*a*f^2*x^3 + 1/18*(6*d^3*e^(-4)*log(x
*e + d) - (2*x^3*e^2 - 3*d*x^2*e + 6*d^2*x)*e^(-3))*b*f^2*n*e - 1/2*(2*d^2*
e^(-3)*log(x*e + d) + (x^2*e - 2*d*x)*e^(-2))*b*f*g*n*e + (d*e^(-2)*log(x*e
 + d) - x*e^(-1))*b*g^2*n*e + b*f*g*x^2*log((x*e + d)^n*c) + a*f*g*x^2 + b*
g^2*x*log((x*e + d)^n*c) + a*g^2*x
```

Fricas [A]
time = 0.36, size = 195, normalized size = 1.62

$$-\frac{1}{18}\left(6bd^2f^2nxe-6\left(bf^2x^3+3bfgx^2+3bg^2x\right)e^3\log(c)+\left(2\left(bf^2n-3af^2\right)x^3+9\left(bfgn-2afg\right)x^2+18\left(bg^2n-ag^2\right)x\right)e^3-3\left(bdf^2nx^2+6bdfgnx\right)e^2-6\left(bd^3f^2n-3bd^2fgne+3bdg^2ne^2+\left(bf^2nx^3+3bfgnx^2+3bg^2nx\right)e^3\right)\log(xe+d)\right)e^{(-3)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f+g/x)^2*x^2*(a+b*log(c*(e*x+d)^n)),x, algorithm="fricas")
```

```
[Out] -1/18*(6*b*d^2*f^2*n*x*e - 6*(b*f^2*x^3 + 3*b*f*g*x^2 + 3*b*g^2*x)*e^3*log(
c) + (2*(b*f^2*n - 3*a*f^2)*x^3 + 9*(b*f*g*n - 2*a*f*g)*x^2 + 18*(b*g^2*n -
 a*g^2)*x)*e^3 - 3*(b*d*f^2*n*x^2 + 6*b*d*f*g*n*x)*e^2 - 6*(b*d^3*f^2*n - 3
*b*d^2*f*g*n*e + 3*b*d*g^2*n*e^2 + (b*f^2*n*x^3 + 3*b*f*g*n*x^2 + 3*b*g^2*n
*x)*e^3)*log(x*e + d))*e^(-3)
```

Sympy [B] Leaf count of result is larger than twice the leaf count of optimal. 252 vs. $2(102) = 204$.
time = 5.58, size = 252, normalized size = 2.10

$$\begin{cases}\frac{af^2x^3}{3}+afgx^2+ag^2x+\frac{bd^3f^2\log\left(c(d+ex)^n\right)}{3e^3}-\frac{bd^2f^2nx}{3e^2}-\frac{bd^2fg\log\left(c(d+ex)^n\right)}{e^2}+\frac{bdf^2nx^2}{6e}+\frac{bdfgnx}{e}+\frac{bdg^2\log\left(c(d+ex)^n\right)}{e}-\frac{bf^2nx^3}{9}+\frac{bf^2x^3\log\left(c(d+ex)^n\right)}{3}-\frac{bfgnx^2}{2}+bfgx^2\log\left(c(d+ex)^n\right)-bg^2nx+bg^2x\log\left(c(d+ex)^n\right) & \text{for}\ e\neq 0\\ \left(a+b\log\left(cd^n\right)\right)\left(\frac{f^2x^3}{3}+fgx^2+g^2x\right) & \text{otherwise}\end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f+g/x)**2*x**2*(a+b*ln(c*(e*x+d)**n)),x)
```

```
[Out] Piecewise((a*f**2*x**3/3 + a*f*g*x**2 + a*g**2*x + b*d**3*f**2*log(c*(d + e
*x)**n)/(3*e**3) - b*d**2*f**2*n*x/(3*e**2) - b*d**2*f*g*log(c*(d + e*x)**n
)/e**2 + b*d*f**2*n*x**2/(6*e) + b*d*f*g*n*x/e + b*d*g**2*log(c*(d + e*x)**
n)/e - b*f**2*n*x**3/9 + b*f**2*x**3*log(c*(d + e*x)**n)/3 - b*f*g*n*x**2/2
 + b*f*g*x**2*log(c*(d + e*x)**n) - b*g**2*n*x + b*g**2*x*log(c*(d + e*x)**
n), Ne(e, 0)), ((a + b*log(c*d**n))*(f**2*x**3/3 + f*g*x**2 + g**2*x), True
))
```

Giac [B] Leaf count of result is larger than twice the leaf count of optimal. 430 vs. 2(112) = 224.
time = 5.22, size = 430, normalized size = 3.58

$$\frac{1}{3}(xe+d)^3bf^2ne^{(-3)}\log(xe+d)-(xe+d)^2bdf^2ne^{(-3)}\log(xe+d)+(xe+d)bd^2f^2ne^{(-3)}\log(xe+d)-\frac{1}{9}(xe+d)^3bf^2ne^{(-3)}+\frac{1}{2}(xe+d)^2bdf^2ne^{(-3)}-(xe+d)bd^2f^2ne^{(-3)}+(xe+d)^2bfgne^{(-2)}\log(xe+d)-2(xe+d)bdfgne^{(-2)}\log(xe+d)+\frac{1}{3}(xe+d)^3bf^2e^{(-3)}\log(c)-(xe+d)^2bdf^2e^{(-3)}\log(c)+(xe+d)bd^2f^2e^{(-3)}\log(c)-\frac{1}{2}(xe+d)^2bfgne^{(-2)}+2(xe+d)bdfgne^{(-2)}+\frac{1}{3}(xe+d)^3af^2e^{(-3)}-(xe+d)^2adf^2e^{(-3)}+(xe+d)ad^2f^2e^{(-3)}+(xe+d)bg^2ne^{(-1)}\log(xe+d)+(xe+d)^2bfge^{(-2)}\log(c)-2(xe+d)bdfge^{(-2)}\log(c)-(xe+d)bg^2ne^{(-1)}+(xe+d)^2afge^{(-2)}-2(xe+d)adfge^{(-2)}+(xe+d)bg^2e^{(-1)}\log(c)+(xe+d)ag^2e^{(-1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f+g/x)^2*x^2*(a+b*log(c*(e*x+d)^n)),x, algorithm="giac")
```

```
[Out] 1/3*(x*e + d)^3*b*f^2*n*e^(-3)*log(x*e + d) - (x*e + d)^2*b*d*f^2*n*e^(-3)*
log(x*e + d) + (x*e + d)*b*d^2*f^2*n*e^(-3)*log(x*e + d) - 1/9*(x*e + d)^3*
b*f^2*n*e^(-3) + 1/2*(x*e + d)^2*b*d*f^2*n*e^(-3) - (x*e + d)*b*d^2*f^2*n*e
^(-3) + (x*e + d)^2*b*f*g*n*e^(-2)*log(x*e + d) - 2*(x*e + d)*b*d*f*g*n*e^(
-2)*log(x*e + d) + 1/3*(x*e + d)^3*b*f^2*e^(-3)*log(c) - (x*e + d)^2*b*d*f^
2*e^(-3)*log(c) + (x*e + d)*b*d^2*f^2*e^(-3)*log(c) - 1/2*(x*e + d)^2*b*f*g
*n*e^(-2) + 2*(x*e + d)*b*d*f*g*n*e^(-2) + 1/3*(x*e + d)^3*a*f^2*e^(-3) - (
x*e + d)^2*a*d*f^2*e^(-3) + (x*e + d)*a*d^2*f^2*e^(-3) + (x*e + d)*b*g^2*n*
e^(-1)*log(x*e + d) + (x*e + d)^2*b*f*g*e^(-2)*log(c) - 2*(x*e + d)*b*d*f*g
*e^(-2)*log(c) - (x*e + d)*b*g^2*n*e^(-1) + (x*e + d)^2*a*f*g*e^(-2) - 2*(x
*e + d)*a*d*f*g*e^(-2) + (x*e + d)*b*g^2*e^(-1)*log(c) + (x*e + d)*a*g^2*e^
(-1)
```

Mupad [B]
time = 0.30, size = 212, normalized size = 1.77

$$x^2\left(\frac{f\,(a\,d\,f+2\,a\,e\,g-b\,e\,g\,n)}{2\,e}-\frac{d\,f^2\,(3\,a-b\,n)}{6\,e}\right)+x\left(\frac{3\,a\,e\,g^2-3\,b\,e\,g^2\,n+6\,a\,d\,f\,g}{3\,e}-\frac{d\left(\frac{f\,(a\,d\,f+2\,a\,e\,g-b\,e\,g\,n)}{e}-\frac{d\,f^2\,(3\,a-b\,n)}{3\,e}\right)}{e}\right)+\ln\left(c\,(d+e\,x)^n\right)\left(\frac{b\,f^2\,x^3}{3}+b\,f\,g\,x^2+b\,g^2\,x\right)+\frac{f^2\,x^3\,(3\,a-b\,n)}{9}+\frac{\ln(d+e\,x)\,\left(b\,n\,d^3\,f^2-3\,b\,n\,d^2\,e\,f\,g+3\,b\,n\,d\,e^2\,g^2\right)}{3\,e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(f + g/x)^2*(a + b*log(c*(d + e*x)^n)),x)
```

```
[Out] x^2*((f*(a*d*f + 2*a*e*g - b*e*g*n))/(2*e) - (d*f^2*(3*a - b*n))/(6*e)) + x
*((3*a*e*g^2 - 3*b*e*g^2*n + 6*a*d*f*g)/(3*e) - (d*((f*(a*d*f + 2*a*e*g - b
*e*g*n))/e - (d*f^2*(3*a - b*n))/(3*e)))/e) + log(c*(d + e*x)^n)*((b*f^2*x^
3)/3 + b*g^2*x + b*f*g*x^2) + (f^2*x^3*(3*a - b*n))/9 + (log(d + e*x)*(b*d^
3*f^2*n + 3*b*d*e^2*g^2*n - 3*b*d^2*e*f*g*n))/(3*e^3)
```

3.305 $\int \left(f+\frac{g}{x}\right)^3 x^3(a+b\log(c(d+ex)^n))\,dx$

Optimal. Leaf size=149

$$\frac{b(df-eg)^3nx}{4e^3}-\frac{b(df-eg)^2n(g+fx)^2}{8e^2f}+\frac{b(df-eg)n(g+fx)^3}{12ef}-\frac{bn(g+fx)^4}{16f}-\frac{b(df-eg)^4n\log(d+ex)}{4e^4f}+($$

```
[Out] 1/4*b*(d*f-e*g)^3*n*x/e^3-1/8*b*(d*f-e*g)^2*n*(f*x+g)^2/e^2/f+1/12*b*(d*f-e
*g)*n*(f*x+g)^3/e/f-1/16*b*n*(f*x+g)^4/f-1/4*b*(d*f-e*g)^4*n*ln(e*x+d)/e^4/
f+1/4*(f*x+g)^4*(a+b*ln(c*(e*x+d)^n))/f
```

Rubi [A]
time = 0.09, antiderivative size = 149, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.111$, Rules used = {2459, 2442, 45}

$$\frac{(fx+g)^4(a+b\log(c(d+ex)^n))}{4f}-\frac{bn(df-eg)^4\log(d+ex)}{4e^4f}+\frac{bnx(df-eg)^3}{4e^3}-\frac{bn(fx+g)^2(df-eg)^2}{8e^2f}+\frac{bn(fx+g)^3(df-eg)}{12ef}-\frac{bn(fx+g)^4}{16f}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g/x)^3*x^3*(a + b*Log[c*(d + e*x)^n]),x]
```

```
[Out] (b*(d*f - e*g)^3*n*x)/(4*e^3) - (b*(d*f - e*g)^2*n*(g + f*x)^2)/(8*e^2*f) +
 (b*(d*f - e*g)*n*(g + f*x)^3)/(12*e*f) - (b*n*(g + f*x)^4)/(16*f) - (b*(d*
f - e*g)^4*n*Log[d + e*x])/(4*e^4*f) + ((g + f*x)^4*(a + b*Log[c*(d + e*x)^
n]))/(4*f)
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2442

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[(f + g*x)^(q + 1)*((a + b*Log[c*(d + e*x)^n])/(
g*(q + 1))), x] - Dist[b*e*(n/(g*(q + 1))), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 2459

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)/(x_))^(q_.)*(x_)^(m_.), x_Symbol] :> Int[(g + f*x)^q*(a + b*Log[c*(d + e*
x)^n])^p, x] /; FreeQ[{a, b, c, d, e, f, g, m, n, p, q}, x] && EqQ[m, q] &&
```

```
IntegerQ[q]
```

Rubi steps

$$\int \left(f+\frac{g}{x}\right)^3 x^3(a+b\log(c(d+ex)^n))\,dx = \int (g+fx)^3(a+b\log(c(d+ex)^n))\,dx$$
$$= \frac{(g+fx)^4(a+b\log(c(d+ex)^n))}{4f} - \frac{(ben)\int \frac{(g+fx)^4}{d+ex}\,dx}{4f}$$
$$= \frac{(g+fx)^4(a+b\log(c(d+ex)^n))}{4f} - \frac{(ben)\int \left(\frac{f(-df+eg)^3}{e^4} + \frac{(-df+}{e^4(d+}\right.}{}$$
$$= \frac{b(df-eg)^3nx}{4e^3} - \frac{b(df-eg)^2n(g+fx)^2}{8e^2f} + \frac{b(df-eg)n(g+fx)}{12ef}$$

Mathematica [A]
time = 0.16, size = 226, normalized size = 1.52

$$\frac{ex(12ae^3(4g^3+6fg^2x+4f^2gx^2+f^3x^3)+bn(12d^3f^3-6d^2ef^2(8g+fx)+4de^2f(18g^2+6fgx+f^2x^2)-e^3(48g^3+36fg^2x+16f^2gx^2+3f^3x^3)))-12bd^2f(d^2f^2-4defg+6e^2g^2)n\log(d+ex)+12be^3(4dg^3+ex(4g^3+6fg^2x+4f^2gx^2+f^3x^3))\log(c(d+ex)^n)}{48e^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g/x)^3*x^3*(a + b*Log[c*(d + e*x)^n]),x]
```

```
[Out] (e*x*(12*a*e^3*(4*g^3 + 6*f*g^2*x + 4*f^2*g*x^2 + f^3*x^3) + b*n*(12*d^3*f^
3 - 6*d^2*e*f^2*(8*g + f*x) + 4*d*e^2*f*(18*g^2 + 6*f*g*x + f^2*x^2) - e^3*
(48*g^3 + 36*f*g^2*x + 16*f^2*g*x^2 + 3*f^3*x^3))) - 12*b*d^2*f*(d^2*f^2 -
4*d*e*f*g + 6*e^2*g^2)*n*Log[d + e*x] + 12*b*e^3*(4*d*g^3 + e*x*(4*g^3 + 6*
f*g^2*x + 4*f^2*g*x^2 + f^3*x^3))*Log[c*(d + e*x)^n])/(48*e^4)
```

Maple [C] Result contains higher order function than in optimal. Order 9 vs. order 3.
time = 0.29, size = 836, normalized size = 5.61

method	result
risch	$\frac{a f^3 x^4}{4} + xa g^3 + \frac{b g^3 nd \ln(ex+d)}{e} - b g^3 nx + \frac{i f^3 \pi b x^4 \mathrm{csgn}(i(ex+d)^n)\mathrm{csgn}(ic(ex+d)^n)^2}{8} - \frac{i f^2 \pi b g x^3 \mathrm{csgn}(ic(ex+d)^n)^3}{2} +$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f+g/x)^3*x^3*(a+b*ln(c*(e*x+d)^n)),x,method=_RETURNVERBOSE)
```

```
[Out] 1/4*a*f^3*x^4+x*a*g^3+b*g^3/e*n*d*ln(e*x+d)-b*g^3*n*x+1/4*f^3*ln(c)*b*x^4+l
n(c)*b*g^3*x+3/2*f*a*g^2*x^2-1/16*f^3*b*n*x^4+f^2*a*g*x^3+3/2*f*ln(c)*b*g^2
*x^2-1/4/f*ln(e*x+d)*b*g^4*n+f^2*ln(c)*b*g*x^3+1/8*I*f^3*Pi*b*x^4*csgn(I*(e
*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-1/2*I*f^2*Pi*b*g*x^3*csgn(I*c*(e*x+d)^n)^3+1
```

```
/2/e*f^2*b*d*g*n*x^2-1/e^2*f^2*b*d^2*g*n*x+3/2/e*f*b*d*g^2*n*x-3/2/e^2*f*ln
(e*x+d)*b*d^2*g^2*n+1/e^3*f^2*ln(e*x+d)*b*d^3*g*n+1/8*I*f^3*Pi*b*x^4*csgn(I
*c)*csgn(I*c*(e*x+d)^n)^2-3/4*I*f*Pi*b*g^2*x^2*csgn(I*c*(e*x+d)^n)^3+1/2*I*
Pi*b*g^3*x*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+1/2*I*Pi*b*g^3*x*csgn(I*(e*x+d)^
n)*csgn(I*c*(e*x+d)^n)^2+1/4*(f*x+g)^4*b/f*ln((e*x+d)^n)-3/4*I*f*Pi*b*g^2*x
^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-1/2*I*f^2*Pi*b*g*x^3*csg
n(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-1/4/e^4*f^3*ln(e*x+d)*b*d^4*n-
1/8*I*f^3*Pi*b*x^4*csgn(I*c*(e*x+d)^n)^3-1/2*I*Pi*b*g^3*x*csgn(I*c*(e*x+d)^
n)^3+1/12/e*f^3*b*d*n*x^3-1/3*f^2*b*g*n*x^3-1/8/e^2*f^3*b*d^2*n*x^2-3/4*f*b
*g^2*n*x^2-1/2*I*Pi*b*g^3*x*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)
+1/2*I*f^2*Pi*b*g*x^3*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+3/4*I*f*Pi*b*
g^2*x^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+3/4*I*f*Pi*b*g^2*x^2*csgn(I
*c)*csgn(I*c*(e*x+d)^n)^2+1/2*I*f^2*Pi*b*g*x^3*csgn(I*c)*csgn(I*c*(e*x+d)^n
)^2-1/8*I*f^3*Pi*b*x^4*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+1/4/
e^3*f^3*b*d^3*n*x
```

Maxima [**B**] Leaf count of result is larger than twice the leaf count of optimal. 287 vs. $2(139) = 278$.
time = 0.28, size = 287, normalized size = 1.93

$$\frac{1}{4}bf^3x^4\log\left((xe+d)^nc\right)+\frac{1}{4}af^3x^4+bf^2gx^3\log\left((xe+d)^nc\right)+af^2gx^3-\frac{1}{48}\left(12d^4e^{(-5)}\log\left(xe+d\right)+\left(3x^4e^3-4dx^3e^2+6d^2x^2e-12d^3x\right)e^{(-4)}\right)bf^3ne+\frac{1}{6}\left(6d^3e^{(-4)}\log\left(xe+d\right)-\left(2x^3e^2-3dx^2e+6d^2x\right)e^{(-3)}\right)bf^2gne-\frac{3}{4}\left(2d^2e^{(-3)}\log\left(xe+d\right)+\left(x^2e-2dx\right)e^{(-2)}\right)bfg^2ne+\left(de^{(-2)}\log\left(xe+d\right)-xe^{(-1)}\right)bg^3ne+\frac{3}{2}bfg^2x^2\log\left((xe+d)^nc\right)+\frac{3}{2}afg^2x^2+bg^3x\log\left((xe+d)^nc\right)+ag^3x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f+g/x)^3*x^3*(a+b*log(c*(e*x+d)^n)),x, algorithm="maxima")
```

```
[Out] 1/4*b*f^3*x^4*log((x*e + d)^n*c) + 1/4*a*f^3*x^4 + b*f^2*g*x^3*log((x*e + d
)^n*c) + a*f^2*g*x^3 - 1/48*(12*d^4*e^(-5)*log(x*e + d) + (3*x^4*e^3 - 4*d*
x^3*e^2 + 6*d^2*x^2*e - 12*d^3*x)*e^(-4))*b*f^3*n*e + 1/6*(6*d^3*e^(-4)*log
(x*e + d) - (2*x^3*e^2 - 3*d*x^2*e + 6*d^2*x)*e^(-3))*b*f^2*g*n*e - 3/4*(2*
d^2*e^(-3)*log(x*e + d) + (x^2*e - 2*d*x)*e^(-2))*b*f*g^2*n*e + (d*e^(-2)*l
og(x*e + d) - x*e^(-1))*b*g^3*n*e + 3/2*b*f*g^2*x^2*log((x*e + d)^n*c) + 3/
2*a*f*g^2*x^2 + b*g^3*x*log((x*e + d)^n*c) + a*g^3*x
```

Fricas [**B**] Leaf count of result is larger than twice the leaf count of optimal. 304 vs. $2(139) = 278$.
time = 0.36, size = 304, normalized size = 2.04

$$\frac{1}{48}\left(12bd^3f^3nxe+12\left(bf^3x^4+4bf^2gx^3+6bfg^2x^2+4bg^3x\right)e^4\log\left(c\right)-\left(3\left(bf^3n-4af^3\right)x^4+16\left(bf^2gn-3af^2g\right)x^3+36\left(bfg^2n-2afg^2\right)x^2+48\left(bg^3n-ag^3\right)x\right)e^4+4\left(bdf^3nx^3+6bdf^2gnx^2+18bdfg^2nx\right)e^3-6\left(bd^2f^3nx^2+8bd^2f^2gnx\right)e^2-12\left(bd^4f^3n-4bd^3f^2gne+6bd^2fg^2ne^2-4bdg^3ne^3-\left(bf^3nx^4+4bf^2gnx^3+6bfg^2nx^2+4bg^3nx\right)e^4\right)\log\left(xe+d\right)\right)e^{(-4)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f+g/x)^3*x^3*(a+b*log(c*(e*x+d)^n)),x, algorithm="fricas")
```

```
[Out] 1/48*(12*b*d^3*f^3*n*x*e + 12*(b*f^3*x^4 + 4*b*f^2*g*x^3 + 6*b*f*g^2*x^2 +
4*b*g^3*x)*e^4*log(c) - (3*(b*f^3*n - 4*a*f^3)*x^4 + 16*(b*f^2*g*n - 3*a*f^
2*g)*x^3 + 36*(b*f*g^2*n - 2*a*f*g^2)*x^2 + 48*(b*g^3*n - a*g^3)*x)*e^4 + 4
*(b*d*f^3*n*x^3 + 6*b*d*f^2*g*n*x^2 + 18*b*d*f*g^2*n*x)*e^3 - 6*(b*d^2*f^3*
```

```
n*x^2 + 8*b*d^2*f^2*g*n*x)*e^2 - 12*(b*d^4*f^3*n - 4*b*d^3*f^2*g*n*e + 6*b*
d^2*f*g^2*n*e^2 - 4*b*d*g^3*n*e^3 - (b*f^3*n*x^4 + 4*b*f^2*g*n*x^3 + 6*b*f*
g^2*n*x^2 + 4*b*g^3*n*x)*e^4)*log(x*e + d))*e^(-4)
```

Sympy [**B**] Leaf count of result is larger than twice the leaf count of optimal. 410 vs. $2(128) = 256$.
time = 26.99, size = 410, normalized size = 2.75

$$\begin{cases} \frac{af^3x^4}{4} + af^2gx^3 + \frac{3afg^2x^2}{2} + ag^3x - \frac{bd^4f^3\log(c(d+ex)^n)}{4e^4} + \frac{bd^3f^3nx}{4e^3} + \frac{bd^3f^2g\log(c(d+ex)^n)}{e^3} - \frac{bd^2f^3nx^2}{8e^2} - \frac{bd^2f^2gnx}{e^2} - \frac{3bd^2fg^2\log(c(d+ex)^n)}{2e^2} + \frac{bdf^3nx^3}{12e} + \frac{bdf^2gnx^2}{2e} + \frac{3bdfg^2nx}{2e} + \frac{bdg^3\log(c(d+ex)^n)}{e} - \frac{bf^3nx^4}{16} + \frac{bf^3x^4\log(c(d+ex)^n)}{4} - \frac{bf^2gnx^3}{3} + bf^2gx^3\log(c(d+ex)^n) - \frac{3bfg^2nx^2}{4} + \frac{3bfg^2x^2\log(c(d+ex)^n)}{2} - bg^3nx + bg^3x\log(c(d+ex)^n) & \text{for}\ e \neq 0 \\ (a + b\log(cd^n))\left(\frac{f^3x^4}{4} + f^2gx^3 + \frac{3fg^2x^2}{2} + g^3x\right) & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f+g/x)**3*x**3*(a+b*ln(c*(e*x+d)**n)),x)
```

```
[Out] Piecewise((a*f**3*x**4/4 + a*f**2*g*x**3 + 3*a*f*g**2*x**2/2 + a*g**3*x - b
*d**4*f**3*log(c*(d + e*x)**n)/(4*e**4) + b*d**3*f**3*n*x/(4*e**3) + b*d**3
*f**2*g*log(c*(d + e*x)**n)/e**3 - b*d**2*f**3*n*x**2/(8*e**2) - b*d**2*f**
2*g*n*x/e**2 - 3*b*d**2*f*g**2*log(c*(d + e*x)**n)/(2*e**2) + b*d*f**3*n*x*
*3/(12*e) + b*d*f**2*g*n*x**2/(2*e) + 3*b*d*f*g**2*n*x/(2*e) + b*d*g**3*log
(c*(d + e*x)**n)/e - b*f**3*n*x**4/16 + b*f**3*x**4*log(c*(d + e*x)**n)/4 -
 b*f**2*g*n*x**3/3 + b*f**2*g*x**3*log(c*(d + e*x)**n) - 3*b*f*g**2*n*x**2/
4 + 3*b*f*g**2*x**2*log(c*(d + e*x)**n)/2 - b*g**3*n*x + b*g**3*x*log(c*(d
+ e*x)**n), Ne(e, 0)), ((a + b*log(c*d**n))*(f**3*x**4/4 + f**2*g*x**3 + 3*
f*g**2*x**2/2 + g**3*x), True))
```

Giac [**B**] Leaf count of result is larger than twice the leaf count of optimal. 780 vs. $2(139) = 278$.
time = 4.80, size = 780, normalized size = 5.23

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f+g/x)^3*x^3*(a+b*log(c*(e*x+d)^n)),x, algorithm="giac")
```

```
[Out] 1/4*(x*e + d)^4*b*f^3*n*e^(-4)*log(x*e + d) - (x*e + d)^3*b*d*f^3*n*e^(-4)*
log(x*e + d) + 3/2*(x*e + d)^2*b*d^2*f^3*n*e^(-4)*log(x*e + d) - (x*e + d)*
b*d^3*f^3*n*e^(-4)*log(x*e + d) - 1/16*(x*e + d)^4*b*f^3*n*e^(-4) + 1/3*(x*
e + d)^3*b*d*f^3*n*e^(-4) - 3/4*(x*e + d)^2*b*d^2*f^3*n*e^(-4) + (x*e + d)*
b*d^3*f^3*n*e^(-4) + (x*e + d)^3*b*f^2*g*n*e^(-3)*log(x*e + d) - 3*(x*e + d
)^2*b*d*f^2*g*n*e^(-3)*log(x*e + d) + 3*(x*e + d)*b*d^2*f^2*g*n*e^(-3)*log(
x*e + d) + 1/4*(x*e + d)^4*b*f^3*e^(-4)*log(c) - (x*e + d)^3*b*d*f^3*e^(-4)
*log(c) + 3/2*(x*e + d)^2*b*d^2*f^3*e^(-4)*log(c) - (x*e + d)*b*d^3*f^3*e^(
-4)*log(c) - 1/3*(x*e + d)^3*b*f^2*g*n*e^(-3) + 3/2*(x*e + d)^2*b*d*f^2*g*n
*e^(-3) - 3*(x*e + d)*b*d^2*f^2*g*n*e^(-3) + 1/4*(x*e + d)^4*a*f^3*e^(-4) -
 (x*e + d)^3*a*d*f^3*e^(-4) + 3/2*(x*e + d)^2*a*d^2*f^3*e^(-4) - (x*e + d)*
a*d^3*f^3*e^(-4) + 3/2*(x*e + d)^2*b*f*g^2*n*e^(-2)*log(x*e + d) - 3*(x*e +
 d)*b*d*f*g^2*n*e^(-2)*log(x*e + d) + (x*e + d)^3*b*f^2*g*e^(-3)*log(c) - 3
```

```
*(x*e + d)^2*b*d*f^2*g*e^(-3)*log(c) + 3*(x*e + d)*b*d^2*f^2*g*e^(-3)*log(c
) - 3/4*(x*e + d)^2*b*f*g^2*n*e^(-2) + 3*(x*e + d)*b*d*f*g^2*n*e^(-2) + (x*
e + d)^3*a*f^2*g*e^(-3) - 3*(x*e + d)^2*a*d*f^2*g*e^(-3) + 3*(x*e + d)*a*d^
2*f^2*g*e^(-3) + (x*e + d)*b*g^3*n*e^(-1)*log(x*e + d) + 3/2*(x*e + d)^2*b*
f*g^2*e^(-2)*log(c) - 3*(x*e + d)*b*d*f*g^2*e^(-2)*log(c) - (x*e + d)*b*g^3
*n*e^(-1) + 3/2*(x*e + d)^2*a*f*g^2*e^(-2) - 3*(x*e + d)*a*d*f*g^2*e^(-2) +
 (x*e + d)*b*g^3*e^(-1)*log(c) + (x*e + d)*a*g^3*e^(-1)
```

Mupad [B]

time = 0.37, size = 352, normalized size = 2.36

$$x\left(\frac{4aeg^3+12adfg^2-4beg^3n}{4e}+\frac{d\left(\frac{d\left(\frac{f^2(adf+3aeg-begn)}{e}-\frac{df^3(4a-bn)}{4e}\right)}{e}-\frac{3fg(2adf+2aeg-begn)}{2e}\right)}{e}\right)+x^3\left(\frac{f^2(adf+3aeg-begn)}{3e}-\frac{df^3(4a-bn)}{12e}\right)+\ln\left(c(d+ex)^n\right)\left(\frac{bf^3x^4}{4}+bf^2gx^3+\frac{3bfg^2x^2}{2}+bg^3x\right)-x^2\left(\frac{d\left(\frac{f^2(adf+3aeg-begn)}{e}-\frac{df^3(4a-bn)}{4e}\right)}{2e}-\frac{3fg(2adf+2aeg-begn)}{4e}\right)-\frac{\ln(d+ex)\left(bnd^4f^3-4bnd^3ef^2g+6bnd^2e^2fg^2-4bnde^3g^3\right)}{4e^4}+\frac{f^3x^4(4a-bn)}{16}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(f + g/x)^3*(a + b*log(c*(d + e*x)^n)),x)
```

```
[Out] x*((4*a*e*g^3 + 12*a*d*f*g^2 - 4*b*e*g^3*n)/(4*e) + (d*((d*((f^2*(a*d*f + 3
*a*e*g - b*e*g*n))/e - (d*f^3*(4*a - b*n))/(4*e)))/e - (3*f*g*(2*a*d*f + 2*
a*e*g - b*e*g*n))/(2*e)))/e) + x^3*((f^2*(a*d*f + 3*a*e*g - b*e*g*n))/(3*e)
 - (d*f^3*(4*a - b*n))/(12*e)) + log(c*(d + e*x)^n)*((b*f^3*x^4)/4 + b*g^3*
x + (3*b*f*g^2*x^2)/2 + b*f^2*g*x^3) - x^2*((d*((f^2*(a*d*f + 3*a*e*g - b*e
*g*n))/e - (d*f^3*(4*a - b*n))/(4*e)))/(2*e) - (3*f*g*(2*a*d*f + 2*a*e*g -
b*e*g*n))/(4*e)) - (log(d + e*x)*(b*d^4*f^3*n - 4*b*d*e^3*g^3*n - 4*b*d^3*e
*f^2*g*n + 6*b*d^2*e^2*f*g^2*n))/(4*e^4) + (f^3*x^4*(4*a - b*n))/16
```

3.306 $\int \frac{a+b\log(c(d+ex)^n)}{\left(f+\frac{g}{x}\right)x}\,dx$

Optimal. Leaf size=63

$$\frac{(a+b\log\left(c(d+ex)^n\right))\log\left(-\frac{e(g+fx)}{df-eg}\right)}{f}+\frac{bn\text{Li}_2\left(\frac{f(d+ex)}{df-eg}\right)}{f}$$

```
[Out] (a+b*ln(c*(e*x+d)^n))*ln(-e*(f*x+g)/(d*f-e*g))/f+b*n*polylog(2,f*(e*x+d)/(d
*f-e*g))/f
```

Rubi [A]
time = 0.07, antiderivative size = 63, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.148$, Rules used = {2459, 2441, 2440, 2438}

$$\frac{bn\text{PolyLog}\left(2,\frac{f(d+ex)}{df-eg}\right)}{f}+\frac{\log\left(-\frac{e(fx+g)}{df-eg}\right)(a+b\log\left(c(d+ex)^n\right))}{f}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])/((f + g/x)*x),x]
```

```
[Out] ((a + b*Log[c*(d + e*x)^n])*Log[-((e*(g + f*x))/(d*f - e*g))])/f + (b*n*Pol
yLog[2, (f*(d + e*x))/(d*f - e*g)])/f
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + c*e*(x/g)])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2441

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d + e*x
)^n])/g), x] - Dist[b*e*(n/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2459

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)/(x_))^(q_.)*(x_)^(m_.), x_Symbol] :> Int[(g + f*x)^q*(a + b*Log[c*(d + e*
x)^n])^p, x] /; FreeQ[{a, b, c, d, e, f, g, m, n, p, q}, x] && EqQ[m, q] &&
 IntegerQ[q]
```

Rubi steps

$$\begin{aligned}\int \frac{a+b\log\left(c(d+ex)^n\right)}{\left(f+\frac{g}{x}\right)x}\,dx &= \int \frac{a+b\log\left(c(d+ex)^n\right)}{g+fx}\,dx\\ &= \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)\log\left(-\frac{e(g+fx)}{df-eg}\right)}{f}-\frac{(ben)\int\frac{\log\left(\frac{e(g+fx)}{-df+eg}\right)}{d+ex}\,dx}{f}\\ &= \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)\log\left(-\frac{e(g+fx)}{df-eg}\right)}{f}-\frac{(bn)\text{Subst}\left(\int\frac{\log\left(1+\frac{fx}{-df+eg}\right)}{x}\,dx,x,d\right.}{f}\\ &= \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)\log\left(-\frac{e(g+fx)}{df-eg}\right)}{f}+\frac{bn\text{Li}_2\left(\frac{f(d+ex)}{df-eg}\right)}{f}\end{aligned}$$

Mathematica [A]
time = 0.01, size = 62, normalized size = 0.98

$$\frac{\left(a+b\log\left(c(d+ex)^n\right)\right)\log\left(\frac{e(g+fx)}{-df+eg}\right)}{f}+\frac{bn\text{Li}_2\left(\frac{f(d+ex)}{df-eg}\right)}{f}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])/((f + g/x)*x),x]
```

```
[Out] ((a + b*Log[c*(d + e*x)^n])*Log[(e*(g + f*x))/(-(d*f) + e*g)])/f + (b*n*Pol
yLog[2, (f*(d + e*x))/(d*f - e*g)])/f
```

Maple [C] Result contains higher order function than in optimal. Order 9 vs. order 4.
time = 0.18, size = 261, normalized size = 4.14

method	result
risch	$\frac{b\ln(fx+g)\ln((ex+d)^n)}{f}-\frac{bn\,\text{dilog}\left(\frac{(fx+g)e+df-eg}{df-eg}\right)}{f}-\frac{bn\ln(fx+g)\ln\left(\frac{(fx+g)e+df-eg}{df-eg}\right)}{f}-\frac{i\ln(fx+g)b\pi\,\text{csgn}(ic)\text{csgn}(i(ex+d)}{2f}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))/(f+g/x)/x,x,method=_RETURNVERBOSE)
```

```
[Out] b*ln(f*x+g)/f*ln((e*x+d)^n)-b/f*n*dilog(((f*x+g)*e+d*f-e*g)/(d*f-e*g))-b/f*
n*ln(f*x+g)*ln(((f*x+g)*e+d*f-e*g)/(d*f-e*g))-1/2*I*ln(f*x+g)/f*b*Pi*csgn(I
*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+1/2*I*ln(f*x+g)/f*b*Pi*csgn(I*c)*
csgn(I*c*(e*x+d)^n)^2+1/2*I*ln(f*x+g)/f*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*
x+d)^n)^2-1/2*I*ln(f*x+g)/f*b*Pi*csgn(I*c*(e*x+d)^n)^3+ln(f*x+g)/f*b*ln(c)+
a*ln(f*x+g)/f
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(f+g/x)/x,x, algorithm="maxima")
[Out] b*integrate((log((x*e + d)^n) + log(c))/(f*x + g), x) + a*log(f*x + g)/f
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(f+g/x)/x,x, algorithm="fricas")
[Out] integral((b*log((x*e + d)^n*c) + a)/(f*x + g), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{a + b \log \left(c(d + ex)^{n}\right)}{fx + g}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))/(f+g/x)/x,x)
[Out] Integral((a + b*log(c*(d + e*x)**n))/(f*x + g), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(f+g/x)/x,x, algorithm="giac")
[Out] integrate((b*log((x*e + d)^n*c) + a)/((f + g/x)*x), x)
```

Mupad [F]

time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)}{x\,\left(f+\frac{g}{x}\right)} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))/(x*(f + g/x)),x)
[Out] int((a + b*log(c*(d + e*x)^n))/(x*(f + g/x)), x)
```

3.307 $\int \frac{a+b\log(c(d+ex)^n)}{\left(f+\frac{g}{x}\right)^2 x^2}\,dx$

Optimal. Leaf size=74

$$-\frac{ben\log(d+ex)}{f(df-eg)}-\frac{a+b\log\left(c(d+ex)^n\right)}{f(g+fx)}+\frac{ben\log(g+fx)}{f(df-eg)}$$

```
[Out] -b*e*n*ln(e*x+d)/f/(d*f-e*g)+(-a-b*ln(c*(e*x+d)^n))/f/(f*x+g)+b*e*n*ln(f*x+
g)/f/(d*f-e*g)
```

Rubi [A]
time = 0.06, antiderivative size = 74, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.148$, Rules used = {2459, 2442, 36, 31}

$$-\frac{a+b\log\left(c(d+ex)^n\right)}{f(fx+g)}-\frac{ben\log(d+ex)}{f(df-eg)}+\frac{ben\log(fx+g)}{f(df-eg)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])/((f + g/x)^2*x^2),x]
```

```
[Out] -((b*e*n*Log[d + e*x])/(f*(d*f - e*g))) - (a + b*Log[c*(d + e*x)^n])/(f*(g
+ f*x)) + (b*e*n*Log[g + f*x])/(f*(d*f - e*g))
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 36

```
Int[1/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))), x_Symbol] :> Dist[b/(b*c
 - a*d), Int[1/(a + b*x), x], x] - Dist[d/(b*c - a*d), Int[1/(c + d*x), x],
 x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0]
```

Rule 2442

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[(f + g*x)^(q + 1)*((a + b*Log[c*(d + e*x)^n])/(
g*(q + 1))), x] - Dist[b*e*(n/(g*(q + 1))), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 2459

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)/(x_))^(q_.)*(x_)^(m_.), x_Symbol] :> Int[(g + f*x)^q*(a + b*Log[c*(d + e*
```

```
x)^n])^p, x] /; FreeQ[{a, b, c, d, e, f, g, m, n, p, q}, x] && EqQ[m, q] &&
 IntegerQ[q]
```

Rubi steps

$$\begin{aligned}\int \frac{a+b\log\left(c(d+ex)^n\right)}{\left(f+\frac{g}{x}\right)^2 x^2}\,dx &= \int \frac{a+b\log\left(c(d+ex)^n\right)}{(g+fx)^2}\,dx\\ &= -\frac{a+b\log\left(c(d+ex)^n\right)}{f(g+fx)}+\frac{(ben)\int \frac{1}{(d+ex)(g+fx)}\,dx}{f}\\ &= -\frac{a+b\log\left(c(d+ex)^n\right)}{f(g+fx)}+\frac{(ben)\int \frac{1}{g+fx}\,dx}{df-eg}-\frac{\left(be^2n\right)\int \frac{1}{d+ex}\,dx}{f(df-eg)}\\ &= -\frac{ben\log(d+ex)}{f(df-eg)}-\frac{a+b\log\left(c(d+ex)^n\right)}{f(g+fx)}+\frac{ben\log(g+fx)}{f(df-eg)}\end{aligned}$$

Mathematica [A]
time = 0.05, size = 57, normalized size = 0.77

$$\frac{-\frac{a+b\log(c(d+ex)^n)}{g+fx}+\frac{ben(\log(d+ex)-\log(g+fx))}{-df+eg}}{f}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])/((f + g/x)^2*x^2),x]
```

```
[Out] (-((a + b*Log[c*(d + e*x)^n])/(g + f*x)) + (b*e*n*(Log[d + e*x] - Log[g + f
*x]))/(-(d*f) + e*g))/f
```

Maple [C] Result contains higher order function than in optimal. Order 9 vs. order 3.
time = 0.31, size = 354, normalized size = 4.78

method	result
risch	$-\frac{b\ln((ex+d)^n)}{f(fx+g)}-\frac{-i\pi beg\,\mathrm{csgn}(i(ex+d)^n)\mathrm{csgn}(ic(ex+d)^n)^2+i\pi bdf\,\mathrm{csgn}(i(ex+d)^n)\mathrm{csgn}(ic(ex+d)^n)^2+i\pi beg\,\mathrm{csgn}(ic)\mathrm{csgn}(i(ex+}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))/(f+g/x)^2/x^2,x,method=_RETURNVERBOSE)
```

```
[Out] -b/f/(f*x+g)*ln((e*x+d)^n)-1/2*(-I*Pi*b*e*g*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x
+d)^n)^2+I*Pi*b*d*f*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+I*Pi*b*e*g*csgn
(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-I*Pi*b*d*f*csgn(I*c)*csgn(I*(e*
x+d)^n)*csgn(I*c*(e*x+d)^n)-I*Pi*b*e*g*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-I*Pi
*b*d*f*csgn(I*c*(e*x+d)^n)^3+I*Pi*b*d*f*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I*P
```

```
i*b*e*g*csgn(I*c*(e*x+d)^n)^3-2*ln(-f*x-g)*b*e*f*n*x+2*ln(e*x+d)*b*e*f*n*x-
2*ln(-f*x-g)*b*e*g*n+2*ln(e*x+d)*b*e*g*n+2*ln(c)*b*d*f-2*ln(c)*b*e*g+2*a*d*
f-2*a*e*g)/(f*x+g)/f/(d*f-e*g)
```

Maxima [A]
time = 0.27, size = 90, normalized size = 1.22

$$bn\left(\frac{\log(fx+g)}{df^2-fge}-\frac{\log(xe+d)}{df^2-fge}\right)e-\frac{b\log\left((xe+d)^nc\right)}{f^2x+fg}-\frac{a}{f^2x+fg}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(f+g/x)^2/x^2,x, algorithm="maxima")
```

```
[Out] b*n*(log(f*x + g)/(d*f^2 - f*g*e) - log(x*e + d)/(d*f^2 - f*g*e))*e - b*log
((x*e + d)^n*c)/(f^2*x + f*g) - a/(f^2*x + f*g)
```

Fricas [A]
time = 0.39, size = 99, normalized size = 1.34

$$-\frac{adf-age-(bfnx+bgn)e\log(fx+g)+(bfnxe+bdfn)\log(xe+d)+(bdf-bge)\log(c)}{df^3x+df^2g-(f^2gx+fg^2)e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(f+g/x)^2/x^2,x, algorithm="fricas")
```

```
[Out] -(a*d*f - a*g*e - (b*f*n*x + b*g*n)*e*log(f*x + g) + (b*f*n*x*e + b*d*f*n)*
log(x*e + d) + (b*d*f - b*g*e)*log(c))/(d*f^3*x + d*f^2*g - (f^2*g*x + f*g^
2)*e)
```

Sympy [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: NotImplementedError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))/(f+g/x)**2/x**2,x)
```

```
[Out] Exception raised: NotImplementedError >> no valid subset found
```

Giac [A]
time = 6.01, size = 111, normalized size = 1.50

$$\frac{bfnxe\log(fx+g)-bfnxe\log(xe+d)+bgne\log(fx+g)-bdfn\log(xe+d)-bdf\log(c)+bge\log(c)-adf+age}{df^3x-f^2gxe+df^2g-fg^2e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(f+g/x)^2/x^2,x, algorithm="giac")
```

```
[Out] (b*f*n*x*e*log(f*x + g) - b*f*n*x*e*log(x*e + d) + b*g*n*e*log(f*x + g) - b
*d*f*n*log(x*e + d) - b*d*f*log(c) + b*g*e*log(c) - a*d*f + a*g*e)/(d*f^3*x
 - f^2*g*x*e + d*f^2*g - f*g^2*e)
```

Mupad [B]
time = 0.90, size = 84, normalized size = 1.14

$$-\frac{a}{x\,f^2+g\,f}-\frac{b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)}{f\,\left(g+f\,x\right)}+\frac{b\,e\,n\,\mathrm{atan}\left(\frac{e\,g\,2{}\mathrm{i}+e\,f\,x\,2{}\mathrm{i}}{d\,f-e\,g}+1{}\mathrm{i}\right)\,2{}\mathrm{i}}{f\,\left(d\,f-e\,g\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))/(x^2*(f + g/x)^2),x)
```

```
[Out] (b*e*n*atan((e*g*2i + e*f*x*2i)/(d*f - e*g) + 1i)*2i)/(f*(d*f - e*g)) - (b*
log(c*(d + e*x)^n))/(f*(g + f*x)) - a/(f*g + f^2*x)
```

3.308 $\int \frac{a+b\log(c(d+ex)^n)}{\left(f+\frac{g}{x}\right)^3x^3}\,dx$

Optimal. Leaf size=112

$$-\frac{ben}{2f(df-eg)(g+fx)}+\frac{be^2n\log(d+ex)}{2f(df-eg)^2}-\frac{a+b\log\left(c(d+ex)^n\right)}{2f(g+fx)^2}-\frac{be^2n\log(g+fx)}{2f(df-eg)^2}$$

```
[Out] -1/2*b*e*n/f/(d*f-e*g)/(f*x+g)+1/2*b*e^2*n*ln(e*x+d)/f/(d*f-e*g)^2+1/2*(-a-b*ln(c*(e*x+d)^n))/f/(f*x+g)^2-1/2*b*e^2*n*ln(f*x+g)/f/(d*f-e*g)^2
```

Rubi [A]
time = 0.08, antiderivative size = 112, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.111$, Rules used = {2459, 2442, 46}

$$-\frac{a+b\log\left(c(d+ex)^n\right)}{2f(fx+g)^2}+\frac{be^2n\log(d+ex)}{2f(df-eg)^2}-\frac{be^2n\log(fx+g)}{2f(df-eg)^2}-\frac{ben}{2f(fx+g)(df-eg)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])/((f + g/x)^3*x^3),x]
```

```
[Out] -1/2*(b*e*n)/(f*(d*f - e*g)*(g + f*x)) + (b*e^2*n*Log[d + e*x])/(2*f*(d*f - e*g)^2) - (a + b*Log[c*(d + e*x)^n])/(2*f*(g + f*x)^2) - (b*e^2*n*Log[g + f*x])/(2*f*(d*f - e*g)^2)
```

Rule 46

```
Int[((a_) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m + n + 2, 0])
```

Rule 2442

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_))^(q_.), x_Symbol] :> Simp[(f + g*x)^(q + 1)*((a + b*Log[c*(d + e*x)^n])/(g*(q + 1))), x] - Dist[b*e*(n/(g*(q + 1))), Int[(f + g*x)^(q + 1)/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && NeQ[q, -1]
```

Rule 2459

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.)/(x_))^(q_.)*(x_)^(m_.), x_Symbol] :> Int[(g + f*x)^q*(a + b*Log[c*(d + e*x)^n])^p, x] /; FreeQ[{a, b, c, d, e, f, g, m, n, p, q}, x] && EqQ[m, q] &&
```

IntegerQ[q]

Rubi steps

$$\int \frac{a+b\log\left(c(d+ex)^n\right)}{\left(f+\frac{g}{x}\right)^3 x^3}\,dx = \int \frac{a+b\log\left(c(d+ex)^n\right)}{(g+fx)^3}\,dx$$
$$= -\frac{a+b\log\left(c(d+ex)^n\right)}{2f(g+fx)^2} + \frac{(ben)\int \frac{1}{(d+ex)(g+fx)^2}\,dx}{2f}$$
$$= -\frac{a+b\log\left(c(d+ex)^n\right)}{2f(g+fx)^2} + \frac{(ben)\int \left(\frac{e^2}{(df-eg)^2(d+ex)} + \frac{f}{(df-eg)(g+fx)^2} - \frac{ef}{(df-eg)^2(g+\ldots}\right.}{2f}$$
$$= -\frac{ben}{2f(df-eg)(g+fx)} + \frac{be^2n\log(d+ex)}{2f(df-eg)^2} - \frac{a+b\log\left(c(d+ex)^n\right)}{2f(g+fx)^2} - \frac{be^2n\,\mathrm{l}\ldots}{2f(\ldots}$$

Mathematica [A]
time = 0.08, size = 83, normalized size = 0.74

$$-\frac{a+b\log\left(c(d+ex)^n\right) - \frac{ben(g+fx)(-df+eg+e(g+fx)\log(d+ex)-e(g+fx)\log(g+fx))}{(df-eg)^2}}{2f(g+fx)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])/((f + g/x)^3*x^3),x]
```

```
[Out] -1/2*(a + b*Log[c*(d + e*x)^n] - (b*e*n*(g + f*x)*(-(d*f) + e*g + e*(g + f*
x)*Log[d + e*x] - e*(g + f*x)*Log[g + f*x]))/(d*f - e*g)^2)/(f*(g + f*x)^2)
```

Maple [C] Result contains higher order function than in optimal. Order 9 vs. order 3.
time = 0.31, size = 633, normalized size = 5.65

method	result
risch	$-\frac{b\ln\left((ex+d)^n\right)}{2f(fx+g)^2} - \frac{i\pi b\,d^2f^2\,\mathrm{csgn}(i(ex+d)^n)\mathrm{csgn}(ic(ex+d)^n)^2 + i\pi b\,e^2g^2\,\mathrm{csgn}(ic)\mathrm{csgn}(ic(ex+d)^n)^2 + i\pi b\,e^2g^2\,\mathrm{csgn}(i(ex+d)^n)\mathrm{csgn}(i\ldots}{\ldots}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))/(f+g/x)^3/x^3,x,method=_RETURNVERBOSE)
```

```
[Out] -1/2*b/f/(f*x+g)^2*ln((e*x+d)^n)-1/4*(2*a*e^2*g^2+2*ln(f*x+g)*b*e^2*g^2*n-2
*ln(-e*x-d)*b*e^2*g^2*n-2*b*e^2*g^2*n+4*ln(f*x+g)*b*e^2*f*g*n*x+I*Pi*b*d^2*
f^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+I*Pi*b*e^2*g^2*csgn(I*c)*csgn(I
*c*(e*x+d)^n)^2+2*b*d*e*f^2*n*x+2*a*d^2*f^2-4*ln(-e*x-d)*b*e^2*f*g*n*x-4*a*
d*e*f*g+2*ln(c)*b*d^2*f^2+2*ln(c)*b*e^2*g^2+2*b*d*e*f*n*g+2*ln(f*x+g)*b*e^2
```

```
*f^2*n*x^2-2*ln(-e*x-d)*b*e^2*f^2*n*x^2+I*Pi*b*e^2*g^2*csgn(I*(e*x+d)^n)*cs
gn(I*c*(e*x+d)^n)^2+I*Pi*b*d^2*f^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-4*ln(c)*
b*d*e*f*g-2*b*e^2*f*g*n*x-2*I*Pi*b*d*e*f*g*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+
d)^n)^2-2*I*Pi*b*d*e*f*g*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-I*Pi*b*d^2*f^2*csg
n(I*c*(e*x+d)^n)^3+2*I*Pi*b*d*e*f*g*csgn(I*c*(e*x+d)^n)^3+2*I*Pi*b*d*e*f*g*
csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-I*Pi*b*e^2*g^2*csgn(I*c)*cs
gn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-I*Pi*b*e^2*g^2*csgn(I*c*(e*x+d)^n)^3-I*
Pi*b*d^2*f^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n))/(f*x+g)^2/(d*
f-e*g)^2/f
```

Maxima [A]
time = 0.31, size = 174, normalized size = 1.55

$$-\frac{1}{2}\,bn\left(\frac{e\log\left(fx+g\right)}{d^2f^3-2\,df^2ge+fg^2e^2}-\frac{e\log\left(xe+d\right)}{d^2f^3-2\,df^2ge+fg^2e^2}+\frac{1}{df^2g-fg^2e+\left(df^3-f^2ge\right)x}\right)e-\frac{b\log\left(\left(xe+d\right)^nc\right)}{2\left(f^3x^2+2\,f^2gx+fg^2\right)}-\frac{a}{2\left(f^3x^2+2\,f^2gx+fg^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(f+g/x)^3/x^3,x, algorithm="maxima")
```

```
[Out] -1/2*b*n*(e*log(f*x + g)/(d^2*f^3 - 2*d*f^2*g*e + f*g^2*e^2) - e*log(x*e +
d)/(d^2*f^3 - 2*d*f^2*g*e + f*g^2*e^2) + 1/(d*f^2*g - f*g^2*e + (d*f^3 - f^
2*g*e)*x))*e - 1/2*b*log((x*e + d)^n*c)/(f^3*x^2 + 2*f^2*g*x + f*g^2) - 1/2
*a/(f^3*x^2 + 2*f^2*g*x + f*g^2)
```

Fricas [B] Leaf count of result is larger than twice the leaf count of optimal. 258 vs. $2(108) = 216$.
time = 0.36, size = 258, normalized size = 2.30

$$-\frac{ad^2f^2+\left(bf^2nx^2+2\,bfgnx+bg^2n\right)e^2\log\left(fx+g\right)-\left(bfgnx+bg^2n-ag^2\right)e^2+\left(bdf^2nx+bdfgn-2\,adfg\right)e+\left(bd^2f^2n-2\,bdfgne-\left(bf^2nx^2+2\,bfgnx\right)e^2\right)\log\left(xe+d\right)+\left(bd^2f^2-2\,bdfge+bg^2e^2\right)\log\left(c\right)}{2\left(d^2f^5x^2+2\,d^2f^4gx+d^2f^3g^2+\left(f^3g^2x^2+2\,f^2g^3x+fg^4\right)e^2-2\left(df^4gx^2+2\,df^3g^2x+df^2g^3\right)e\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(f+g/x)^3/x^3,x, algorithm="fricas")
```

```
[Out] -1/2*(a*d^2*f^2 + (b*f^2*n*x^2 + 2*b*f*g*n*x + b*g^2*n)*e^2*log(f*x + g) -
(b*f*g*n*x + b*g^2*n - a*g^2)*e^2 + (b*d*f^2*n*x + b*d*f*g*n - 2*a*d*f*g)*e
 + (b*d^2*f^2*n - 2*b*d*f*g*n*e - (b*f^2*n*x^2 + 2*b*f*g*n*x)*e^2)*log(x*e
+ d) + (b*d^2*f^2 - 2*b*d*f*g*e + b*g^2*e^2)*log(c))/(d^2*f^5*x^2 + 2*d^2*f
^4*g*x + d^2*f^3*g^2 + (f^3*g^2*x^2 + 2*f^2*g^3*x + f*g^4)*e^2 - 2*(d*f^4*g
*x^2 + 2*d*f^3*g^2*x + d*f^2*g^3)*e)
```

Sympy [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: NotImplementedError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))/(f+g/x)**3/x**3,x)
```

```
[Out] Exception raised: NotImplementedError >> no valid subset found
```

Giac [B] Leaf count of result is larger than twice the leaf count of optimal. 302 vs. 2(108) = 216.
time = 2.50, size = 302, normalized size = 2.70

$$-\frac{bf^2nx^2e^2\log\left(fx+g\right)-bf^2nx^2e^2\log\left(xe+d\right)+bdf^2nxe+2\,bfgnxe^2\log\left(fx+g\right)+bd^2f^2n\log\left(xe+d\right)-2\,bfgnxe^2\log\left(xe+d\right)-2\,bdfgne\log\left(xe+d\right)-bfgnxe^2+bdfgne+bg^2ne^2\log\left(fx+g\right)+bd^2f^2\log\left(c\right)-2\,bdfge\log\left(c\right)+ad^2f^2-bg^2ne^2-2\,adfge+bg^2e^2\log\left(c\right)+ag^2e^2}{2\,\left(d^2f^5x^2-2\,df^4gx^2e+2\,d^2f^4gx+f^3g^2x^2e^2-4\,df^3g^2xe+d^2f^3g^2+2\,f^2g^3xe^2-2\,df^2g^3e+fg^4e^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(f+g/x)^3/x^3,x, algorithm="giac")
```

```
[Out] -1/2*(b*f^2*n*x^2*e^2*log(f*x + g) - b*f^2*n*x^2*e^2*log(x*e + d) + b*d*f^2
*n*x*e + 2*b*f*g*n*x*e^2*log(f*x + g) + b*d^2*f^2*n*log(x*e + d) - 2*b*f*g*
n*x*e^2*log(x*e + d) - 2*b*d*f*g*n*e*log(x*e + d) - b*f*g*n*x*e^2 + b*d*f*g
*n*e + b*g^2*n*e^2*log(f*x + g) + b*d^2*f^2*log(c) - 2*b*d*f*g*e*log(c) + a
*d^2*f^2 - b*g^2*n*e^2 - 2*a*d*f*g*e + b*g^2*e^2*log(c) + a*g^2*e^2)/(d^2*f
^5*x^2 - 2*d*f^4*g*x^2*e + 2*d^2*f^4*g*x + f^3*g^2*x^2*e^2 - 4*d*f^3*g^2*x*
e + d^2*f^3*g^2 + 2*f^2*g^3*x*e^2 - 2*d*f^2*g^3*e + f*g^4*e^2)
```

Mupad [B]
time = 0.67, size = 173, normalized size = 1.54

$$\frac{b\,e^2\,n\,\mathrm{atanh}\left(\frac{2\,d^2\,f^3-2\,e^2\,f\,g^2}{2\,f\,{\left(d\,f-e\,g\right)}^2}+\frac{2\,e\,f\,x}{d\,f-e\,g}\right)}{f\,{\left(d\,f-e\,g\right)}^2}-\frac{b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)}{2\,f\,\left(f^2\,x^2+2\,f\,g\,x+g^2\right)}-\frac{\frac{a\,d\,f-a\,e\,g+b\,e\,g\,n}{d\,f-e\,g}+\frac{b\,e\,f\,n\,x}{d\,f-e\,g}}{2\,f^3\,x^2+4\,f^2\,g\,x+2\,f\,g^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))/(x^3*(f + g/x)^3),x)
```

```
[Out] (b*e^2*n*atanh((2*d^2*f^3 - 2*e^2*f*g^2)/(2*f*(d*f - e*g)^2) + (2*e*f*x)/(d
*f - e*g)))/(f*(d*f - e*g)^2) - (b*log(c*(d + e*x)^n))/(2*f*(g^2 + f^2*x^2
+ 2*f*g*x)) - ((a*d*f - a*e*g + b*e*g*n)/(d*f - e*g) + (b*e*f*n*x)/(d*f - e
*g))/(2*f*g^2 + 2*f^3*x^2 + 4*f^2*g*x)
```

3.309 $\int \frac{\log(a+bx)}{c+\frac{d}{x^2}}\,dx$

Optimal. Leaf size=247

$$-\frac{x}{c}+\frac{(a+bx)\log(a+bx)}{bc}-\frac{\sqrt{d}\,\log(a+bx)\log\left(\frac{b\left(\sqrt{d}-\sqrt{-c}\,x\right)}{a\sqrt{-c}+b\sqrt{d}}\right)}{2(-c)^{3/2}}+\frac{\sqrt{d}\,\log(a+bx)\log\left(-\frac{b\left(\sqrt{d}+\sqrt{-c}\,x\right.}{a\sqrt{-c}-b\sqrt{d}}\right.}{2(-c)^{3/2}}$$

```
[Out] -x/c+(b*x+a)*ln(b*x+a)/b/c+1/2*ln(b*x+a)*ln(-b*(x*(-c)^(1/2)+d^(1/2))/(a*(-
c)^(1/2)-b*d^(1/2)))*d^(1/2)/(-c)^(3/2)-1/2*ln(b*x+a)*ln(b*(-x*(-c)^(1/2)+d
^(1/2))/(a*(-c)^(1/2)+b*d^(1/2)))*d^(1/2)/(-c)^(3/2)+1/2*polylog(2,(b*x+a)*
(-c)^(1/2)/(a*(-c)^(1/2)-b*d^(1/2)))*d^(1/2)/(-c)^(3/2)-1/2*polylog(2,(b*x+
a)*(-c)^(1/2)/(a*(-c)^(1/2)+b*d^(1/2)))*d^(1/2)/(-c)^(3/2)
```

Rubi [A]
time = 0.25, antiderivative size = 247, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 6, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}} = 0.375$, Rules used = {2456, 2436, 2332, 2441, 2440, 2438}

$$\frac{\sqrt{d}\,\text{PolyLog}\left(2,\frac{\sqrt{-c}\,(a+bx)}{a\sqrt{-c}-b\sqrt{d}}\right)}{2(-c)^{3/2}}-\frac{\sqrt{d}\,\text{PolyLog}\left(2,\frac{\sqrt{-c}\,(a+bx)}{a\sqrt{-c}+b\sqrt{d}}\right)}{2(-c)^{3/2}}-\frac{\sqrt{d}\,\log(a+bx)\log\left(\frac{b\left(\sqrt{d}-\sqrt{-c}\,x\right)}{a\sqrt{-c}+b\sqrt{d}}\right)}{2(-c)^{3/2}}+\frac{\sqrt{d}\,\log(a+bx)\log\left(-\frac{b\left(\sqrt{-c}\,x+\sqrt{d}\right)}{a\sqrt{-c}-b\sqrt{d}}\right)}{2(-c)^{3/2}}+\frac{(a+bx)\log(a+bx)}{bc}-\frac{x}{c}$$

Antiderivative was successfully verified.

```
[In] Int[Log[a + b*x]/(c + d/x^2),x]
```

```
[Out] -(x/c) + ((a + b*x)*Log[a + b*x])/(b*c) - (Sqrt[d]*Log[a + b*x]*Log[(b*(Sqr
t[d] - Sqrt[-c]*x))/(a*Sqrt[-c] + b*Sqrt[d])])/(2*(-c)^(3/2)) + (Sqrt[d]*Lo
g[a + b*x]*Log[-((b*(Sqrt[d] + Sqrt[-c]*x))/(a*Sqrt[-c] - b*Sqrt[d]))])/(2*
(-c)^(3/2)) + (Sqrt[d]*PolyLog[2, (Sqrt[-c]*(a + b*x))/(a*Sqrt[-c] - b*Sqrt
[d])])/(2*(-c)^(3/2)) - (Sqrt[d]*PolyLog[2, (Sqrt[-c]*(a + b*x))/(a*Sqrt[-c
] + b*Sqrt[d])])/(2*(-c)^(3/2))
```

Rule 2332

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2436

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + c*e*(x/g)])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2441

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d + e*x
)^n])/g), x] - Dist[b*e*(n/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2456

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_)^(r_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a + b*Log[c*(d + e*x)
^n])^p, (f + g*x^r)^q, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, r}, x] && I
GtQ[p, 0] && IntegerQ[q] && (GtQ[q, 0] || (IntegerQ[r] && NeQ[r, 1]))
```

Rubi steps

$$\int \frac{\log(a+bx)}{c+\frac{d}{x^2}}\,dx = \int \left(\frac{\log(a+bx)}{c} - \frac{d\log(a+bx)}{c\,(d+cx^2)}\right)\,dx$$

$$= \frac{\int \log(a+bx)\,dx}{c} - \frac{d\int \frac{\log(a+bx)}{d+cx^2}\,dx}{c}$$

$$= \frac{\text{Subst}(\int \log(x)\,dx, x, a+bx)}{bc} - \frac{d\int \left(\frac{\log(a+bx)}{2\sqrt{d}\left(\sqrt{d}-\sqrt{-c}\,x\right)} + \frac{\log(a+bx)}{2\sqrt{d}\left(\sqrt{d}+\sqrt{-c}\,x\right)}\right)\,dx}{c}$$

$$= -\frac{x}{c} + \frac{(a+bx)\log(a+bx)}{bc} - \frac{\sqrt{d}\,\int \frac{\log(a+bx)}{\sqrt{d}-\sqrt{-c}\,x}\,dx}{2c} - \frac{\sqrt{d}\,\int \frac{\log(a+bx)}{\sqrt{d}+\sqrt{-c}\,x}\,dx}{2c}$$

$$= -\frac{x}{c} + \frac{(a+bx)\log(a+bx)}{bc} - \frac{\sqrt{d}\,\log(a+bx)\log\left(\frac{b\left(\sqrt{d}-\sqrt{-c}\,x\right)}{a\sqrt{-c}+b\sqrt{d}}\right)}{2(-c)^{3/2}} + \frac{\sqrt{d}\,\log(a+bx)}{}$$

$$= -\frac{x}{c} + \frac{(a+bx)\log(a+bx)}{bc} - \frac{\sqrt{d}\,\log(a+bx)\log\left(\frac{b\left(\sqrt{d}-\sqrt{-c}\,x\right)}{a\sqrt{-c}+b\sqrt{d}}\right)}{2(-c)^{3/2}} + \frac{\sqrt{d}\,\log(a+bx)}{}$$

$$= -\frac{x}{c} + \frac{(a+bx)\log(a+bx)}{bc} - \frac{\sqrt{d}\,\log(a+bx)\log\left(\frac{b\left(\sqrt{d}-\sqrt{-c}\,x\right)}{a\sqrt{-c}+b\sqrt{d}}\right)}{2(-c)^{3/2}} + \frac{\sqrt{d}\,\log(a+bx)}{}$$

Mathematica [A]
time = 0.13, size = 247, normalized size = 1.00

$$-\frac{x}{c} + \frac{(a+bx)\log(a+bx)}{bc} - \frac{\sqrt{d}\,\log(a+bx)\log\left(\frac{b\left(\sqrt{d}-\sqrt{-c}\,x\right)}{a\sqrt{-c}+b\sqrt{d}}\right)}{2(-c)^{3/2}} + \frac{\sqrt{d}\,\log(a+bx)\log\left(-\frac{b\left(\sqrt{d}+\sqrt{-c}\,x\right)}{a\sqrt{-c}-b\sqrt{d}}\right)}{2(-c)^{3/2}} + \frac{\sqrt{d}\,\text{Li}_2\left(\frac{\sqrt{-c}\,(a+bx)}{a\sqrt{-c}-b\sqrt{d}}\right)}{2(-c)^{3/2}} - \frac{\sqrt{d}\,\text{Li}_2\left(\frac{\sqrt{-c}\,(a+bx)}{a\sqrt{-c}+b\sqrt{d}}\right)}{2(-c)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[a + b*x]/(c + d/x^2),x]
```

```
[Out] -(x/c) + ((a + b*x)*Log[a + b*x])/(b*c) - (Sqrt[d]*Log[a + b*x]*Log[(b*(Sqr
t[d] - Sqrt[-c]*x))/(a*Sqrt[-c] + b*Sqrt[d])])/(2*(-c)^(3/2)) + (Sqrt[d]*Lo
g[a + b*x]*Log[-((b*(Sqrt[d] + Sqrt[-c]*x))/(a*Sqrt[-c] - b*Sqrt[d]))])/(2*
(-c)^(3/2)) + (Sqrt[d]*PolyLog[2, (Sqrt[-c]*(a + b*x))/(a*Sqrt[-c] - b*Sqrt
[d])])/(2*(-c)^(3/2)) - (Sqrt[d]*PolyLog[2, (Sqrt[-c]*(a + b*x))/(a*Sqrt[-c
] + b*Sqrt[d])])/(2*(-c)^(3/2))
```

Maple [A]
time = 0.35, size = 220, normalized size = 0.89

method	result
derivativedivides	$\frac{\frac{(bx+a)\ln(bx+a)-bx-a}{c}-\frac{\left(\frac{\ln(bx+a)\left(\ln\left(\frac{b\sqrt{-cd}+ca-c(bx+a)}{b\sqrt{-cd}+ca}\right)-\ln\left(\frac{b\sqrt{-cd}-ca+c(bx+a)}{b\sqrt{-cd}-ca}\right)\right)}{2b\sqrt{-cd}}+\frac{\operatorname{dilog}\left(\frac{b\sqrt{-cd}+ca\cdots}{b\sqrt{-cd}\cdots}\right)\cdots}{\cdots}\cdots\right.}{c}\cdots}{b}$
default	$\frac{\frac{(bx+a)\ln(bx+a)-bx-a}{c}-\frac{\left(\frac{\ln(bx+a)\left(\ln\left(\frac{b\sqrt{-cd}+ca-c(bx+a)}{b\sqrt{-cd}+ca}\right)-\ln\left(\frac{b\sqrt{-cd}-ca+c(bx+a)}{b\sqrt{-cd}-ca}\right)\right)}{2b\sqrt{-cd}}+\frac{\operatorname{dilog}\left(\frac{b\sqrt{-cd}+ca\cdots}{b\sqrt{-cd}\cdots}\right)\cdots}{\cdots}\cdots\right.}{c}\cdots}{b}$
risch	$\frac{\ln(bx+a)x}{c}+\frac{\ln(bx+a)a}{bc}-\frac{x}{c}-\frac{a}{bc}-\frac{d\ln(bx+a)\ln\left(\frac{b\sqrt{-cd}+ca-c(bx+a)}{b\sqrt{-cd}+ca}\right)}{2c\sqrt{-cd}}+\frac{d\ln(bx+a)\ln\left(\frac{b\sqrt{-cd}-ca+\cdots}{b\sqrt{-cd}\cdots}\right)}{2c\sqrt{-cd}}\cdots$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(b*x+a)/(c+d/x^2),x,method=_RETURNVERBOSE)
```

```
[Out] 1/b*(1/c*((b*x+a)*ln(b*x+a)-b*x-a)-(1/2*ln(b*x+a)*(ln((b*(-c*d)^(1/2)+c*a-c
*(b*x+a))/(b*(-c*d)^(1/2)+c*a))-ln((b*(-c*d)^(1/2)-c*a+c*(b*x+a))/(b*(-c*d)
^(1/2)-c*a)))/b/(-c*d)^(1/2)+1/2*(dilog((b*(-c*d)^(1/2)+c*a-c*(b*x+a))/(b*(
-c*d)^(1/2)+c*a))-dilog((b*(-c*d)^(1/2)-c*a+c*(b*x+a))/(b*(-c*d)^(1/2)-c*a)
))/b/(-c*d)^(1/2))*d*b^2/c)
```

Maxima [C] Result contains complex when optimal does not.
time = 0.56, size = 298, normalized size = 1.21

$$-\left(\frac{d\arctan\left(\frac{cx}{\sqrt{cd}}\right)}{\sqrt{cd}\,c}-\frac{x}{c}\right)\log\left(bx+a\right)-\frac{2\,bcx-2\,ac\log\left(bx+a\right)+\left(b\arctan\left(\frac{(b^2x+ab)\sqrt{c}\,\sqrt{d}}{a^2c+b^2d},\frac{abcx+a^2c}{a^2c+b^2d}\right)\log\left(cx^2+d\right)-b\arctan\left(\frac{\sqrt{c}\,x}{\sqrt{d}}\right)\log\left(\frac{b^2cx^2+2\,abcx+a^2c}{a^2c+b^2d}\right)+i\,b\mathrm{Li}_2\left(-\frac{abcx+b^2d+(i\,b^2x-i\,ab)\sqrt{c}\,\sqrt{d}}{a^2c+2i\,ab\sqrt{c}\,\sqrt{d}-b^2d}\right)-i\,b\mathrm{Li}_2\left(-\frac{abcx+b^2d-(i\,b^2x-i\,ab)\sqrt{c}\,\sqrt{d}}{a^2c-2i\,ab\sqrt{c}\,\sqrt{d}-b^2d}\right)\right)\sqrt{c}\,\sqrt{d}}{2\,bc^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(b*x+a)/(c+d/x^2),x, algorithm="maxima")
```

```
[Out] -(d*arctan(c*x/sqrt(c*d))/(sqrt(c*d)*c) - x/c)*log(b*x + a) - 1/2*(2*b*c*x
- 2*a*c*log(b*x + a) + (b*arctan2((b^2*x + a*b)*sqrt(c)*sqrt(d)/(a^2*c + b^
2*d), (a*b*c*x + a^2*c)/(a^2*c + b^2*d))*log(c*x^2 + d) - b*arctan(sqrt(c)*
x/sqrt(d))*log((b^2*c*x^2 + 2*a*b*c*x + a^2*c)/(a^2*c + b^2*d)) + I*b*dilog
(-(a*b*c*x + b^2*d + (I*b^2*x - I*a*b)*sqrt(c)*sqrt(d))/(a^2*c + 2*I*a*b*sq
rt(c)*sqrt(d) - b^2*d)) - I*b*dilog(-(a*b*c*x + b^2*d - (I*b^2*x - I*a*b)*s
qrt(c)*sqrt(d))/(a^2*c - 2*I*a*b*sqrt(c)*sqrt(d) - b^2*d)))*sqrt(c)*sqrt(d)
)/(b*c^2)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(b*x+a)/(c+d/x^2),x, algorithm="fricas")
[Out] integral(x^2*log(b*x + a)/(c*x^2 + d), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^2 \log (a + bx)}{cx^2 + d}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(b*x+a)/(c+d/x**2),x)
[Out] Integral(x**2*log(a + b*x)/(c*x**2 + d), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(b*x+a)/(c+d/x^2),x, algorithm="giac")
[Out] integrate(log(b*x + a)/(c + d/x^2), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\ln (a + b\, x)}{c + \frac{d}{x^2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(log(a + b*x)/(c + d/x^2),x)
[Out] int(log(a + b*x)/(c + d/x^2), x)
```

3.310 $\int \frac{x^5(a+b\log(c(d+ex)^n))^2}{f+gx^2}\,dx$

Optimal. Leaf size=831

$$-\frac{2abdfnx}{eg^2}+\frac{2b^2dfn^2x}{eg^2}-\frac{2b^2d^3n^2x}{e^3g}-\frac{b^2fn^2(d+ex)^2}{4e^2g^2}+\frac{3b^2d^2n^2(d+ex)^2}{4e^4g}-\frac{2b^2dn^2(d+ex)^3}{9e^4g}+\frac{b^2n^2(d+ex)^4}{32e^4g}+$$

```
[Out] -2*a*b*d*f*n*x/e/g^2+2*b^2*d*f*n^2*x/e/g^2-2*b^2*d^3*n^2*x/e^3/g-1/4*b^2*f*
n^2*(e*x+d)^2/e^2/g^2+3/4*b^2*d^2*n^2*(e*x+d)^2/e^4/g-2/9*b^2*d*n^2*(e*x+d)
^3/e^4/g+1/32*b^2*n^2*(e*x+d)^4/e^4/g+1/4*b^2*d^4*n^2*ln(e*x+d)^2/e^4/g-2*b
^2*d*f*n*(e*x+d)*ln(c*(e*x+d)^n)/e^2/g^2+2*b*d^3*n*(e*x+d)*(a+b*ln(c*(e*x+d
)^n))/e^4/g+1/2*b*f*n*(e*x+d)^2*(a+b*ln(c*(e*x+d)^n))/e^2/g^2-3/2*b*d^2*n*(
e*x+d)^2*(a+b*ln(c*(e*x+d)^n))/e^4/g+2/3*b*d*n*(e*x+d)^3*(a+b*ln(c*(e*x+d)^
n))/e^4/g-1/8*b*n*(e*x+d)^4*(a+b*ln(c*(e*x+d)^n))/e^4/g-1/2*b*d^4*n*ln(e*x+
d)*(a+b*ln(c*(e*x+d)^n))/e^4/g+1/4*x^4*(a+b*ln(c*(e*x+d)^n))^2/g+d*f*(e*x+d
)*(a+b*ln(c*(e*x+d)^n))^2/e^2/g^2-1/2*f*(e*x+d)^2*(a+b*ln(c*(e*x+d)^n))^2/e
^2/g^2+1/2*f^2*(a+b*ln(c*(e*x+d)^n))^2*ln(e*((-f)^(1/2)-x*g^(1/2))/(e*(-f)^
(1/2)+d*g^(1/2)))/g^3+1/2*f^2*(a+b*ln(c*(e*x+d)^n))^2*ln(e*((-f)^(1/2)+x*g^
(1/2))/(e*(-f)^(1/2)-d*g^(1/2)))/g^3+b*f^2*n*(a+b*ln(c*(e*x+d)^n))*polylog(
2,-(e*x+d)*g^(1/2)/(e*(-f)^(1/2)-d*g^(1/2)))/g^3+b*f^2*n*(a+b*ln(c*(e*x+d)^
n))*polylog(2,(e*x+d)*g^(1/2)/(e*(-f)^(1/2)+d*g^(1/2)))/g^3-b^2*f^2*n^2*pol
ylog(3,-(e*x+d)*g^(1/2)/(e*(-f)^(1/2)-d*g^(1/2)))/g^3-b^2*f^2*n^2*polylog(3
,(e*x+d)*g^(1/2)/(e*(-f)^(1/2)+d*g^(1/2)))/g^3
```

Rubi [A]
time = 0.79, antiderivative size = 831, normalized size of antiderivative = 1.00, number of steps used = 28, number of rules used = 19, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.655$, Rules used = {2463, 2448, 2436, 2333, 2332, 2437, 2342, 2341, 2445, 2458, 45, 2372, 12, 14, 2338, 2443, 2481, 2421, 6724}

Antiderivative was successfully verified.

```
[In] Int[(x^5*(a + b*Log[c*(d + e*x)^n])^2)/(f + g*x^2),x]
```

```
[Out] (-2*a*b*d*f*n*x)/(e*g^2) + (2*b^2*d*f*n^2*x)/(e*g^2) - (2*b^2*d^3*n^2*x)/(e
^3*g) - (b^2*f*n^2*(d + e*x)^2)/(4*e^2*g^2) + (3*b^2*d^2*n^2*(d + e*x)^2)/(
4*e^4*g) - (2*b^2*d*n^2*(d + e*x)^3)/(9*e^4*g) + (b^2*n^2*(d + e*x)^4)/(32*
e^4*g) + (b^2*d^4*n^2*Log[d + e*x]^2)/(4*e^4*g) - (2*b^2*d*f*n*(d + e*x)*Lo
g[c*(d + e*x)^n])/(e^2*g^2) + (2*b*d^3*n*(d + e*x)*(a + b*Log[c*(d + e*x)^n
]))/(e^4*g) + (b*f*n*(d + e*x)^2*(a + b*Log[c*(d + e*x)^n]))/(2*e^2*g^2) -
(3*b*d^2*n*(d + e*x)^2*(a + b*Log[c*(d + e*x)^n]))/(2*e^4*g) + (2*b*d*n*(d
```

```
+ e*x)^3*(a + b*Log[c*(d + e*x)^n]))/(3*e^4*g) - (b*n*(d + e*x)^4*(a + b*Lo
g[c*(d + e*x)^n]))/(8*e^4*g) - (b*d^4*n*Log[d + e*x]*(a + b*Log[c*(d + e*x)
^n]))/(2*e^4*g) + (x^4*(a + b*Log[c*(d + e*x)^n])^2)/(4*g) + (d*f*(d + e*x)
*(a + b*Log[c*(d + e*x)^n])^2)/(e^2*g^2) - (f*(d + e*x)^2*(a + b*Log[c*(d +
 e*x)^n])^2)/(2*e^2*g^2) + (f^2*(a + b*Log[c*(d + e*x)^n])^2*Log[(e*(Sqrt[-
f] - Sqrt[g]*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(2*g^3) + (f^2*(a + b*Log[c*(d
+ e*x)^n])^2*Log[(e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g])])/(2*g
^3) + (b*f^2*n*(a + b*Log[c*(d + e*x)^n])*PolyLog[2, -((Sqrt[g]*(d + e*x))/
(e*Sqrt[-f] - d*Sqrt[g]))])/g^3 + (b*f^2*n*(a + b*Log[c*(d + e*x)^n])*PolyL
og[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/g^3 - (b^2*f^2*n^2*Pol
yLog[3, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/g^3 - (b^2*f^2*n^
2*PolyLog[3, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/g^3
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] &&  !LinearQ[u, x] &&  !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2332

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2333

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2338

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2341

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_.)*(x_))^(m_.), x_Symbol] :>
Simp[(d*x)^(m + 1)*((a + b*Log[c*x^n])/(d*(m + 1))), x] - Simp[b*n*((d*x)^(
m + 1)/(d*(m + 1)^2)), x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[m, -1]
```

Rule 2342

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_.)*(x_))^(m_.), x_Symbo
l] :> Simp[(d*x)^(m + 1)*((a + b*Log[c*x^n])^p/(d*(m + 1))), x] - Dist[b*n*
(p/(m + 1)), Int[(d*x)^m*(a + b*Log[c*x^n])^(p - 1), x], x] /; FreeQ[{a, b,
 c, d, m, n}, x] && NeQ[m, -1] && GtQ[p, 0]
```

Rule 2372

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*(x_)^(m_.)*((d_) + (e_.)*(x_)^(r_
.))^(q_.), x_Symbol] :> With[{u = IntHide[x^m*(d + e*x^r)^q, x]}, Dist[a +
b*Log[c*x^n], u, x] - Dist[b*n, Int[SimplifyIntegrand[u/x, x], x], x]] /; F
reeQ[{a, b, c, d, e, n, r}, x] && IGtQ[q, 0] && IntegerQ[m] &&  !(EqQ[q, 1]
 && EqQ[m, -1])
```

Rule 2421

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> Simp[(-PolyLog[2, (-d)*f*x^m])*((a + b*Log[c
*x^n])^p/m), x] + Dist[b*n*(p/m), Int[PolyLog[2, (-d)*f*x^m]*((a + b*Log[c*
x^n])^(p - 1)/x), x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0
] && EqQ[d*e, 1]
```

Rule 2436

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2437

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[(f*(x/d))^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2443

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d
+ e*x)^n])^p/g), x] - Dist[b*e*n*(p/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]*
```

```
((a + b*Log[c*(d + e*x)^n])^(p - 1)/(d + e*x)), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[(f + g*x)^(q + 1)*((a + b*Log[c*(d + e*x)^
n])^p/(g*(q + 1))), x] - Dist[b*e*n*(p/(g*(q + 1))), Int[(f + g*x)^(q + 1)*
((a + b*Log[c*(d + e*x)^n])^(p - 1)/(d + e*x)), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && GtQ[p, 0] && NeQ[q, -1] && Int
egersQ[2*p, 2*q] && ( !IGtQ[q, 0] || (EqQ[p, 2] && NeQ[q, 1]))
```

Rule 2448

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q*(a + b*Log[c*(d
 + e*x)^n])^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f -
 d*g, 0] && IGtQ[q, 0]
```

Rule 2458

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[(g*(x/e))^q*((e*h - d*i)/e + i*(x/e))^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2463

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rule 2481

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[(k*(x/d))^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + j*(x/e))^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 6724

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
```

```
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{x^5(a+b\log(c(d+ex)^n))^2}{f+gx^2}\,dx = \int \left(-\frac{fx(a+b\log(c(d+ex)^n))^2}{g^2} + \frac{x^3(a+b\log(c(d+ex)^n))^2}{g} + \frac{f^2x(a$$

$$= -\frac{f\int x(a+b\log(c(d+ex)^n))^2\,dx}{g^2} + \frac{f^2\int \frac{x(a+b\log(c(d+ex)^n))^2}{f+gx^2}\,dx}{g^2} + \frac{\int x^3(a$$

$$= \frac{x^4(a+b\log(c(d+ex)^n))^2}{4g} - \frac{f\int \left(-\frac{d(a+b\log(c(d+ex)^n))^2}{e} + \frac{(d+ex)(a+b\log(c(d+}{e}\right.}{g^2}$$

$$= \frac{x^4(a+b\log(c(d+ex)^n))^2}{4g} - \frac{f^2\int \frac{(a+b\log(c(d+ex)^n))^2}{\sqrt{-f}-\sqrt{g}\,x}\,dx}{2g^{5/2}} + \frac{f^2\int \frac{(a+b\log(c(d+}{\sqrt{-f}+\sqrt{}}}{2g^{5/2}}$$

$$= \frac{bn\left(\frac{48d^3(d+ex)}{e^4} - \frac{36d^2(d+ex)^2}{e^4} + \frac{16d(d+ex)^3}{e^4} - \frac{3(d+ex)^4}{e^4} - \frac{12d^4\log(d+ex)}{e^4}\right)(a+b\,\mathrm{lo}}{24g}$$

$$= \frac{bn\left(\frac{48d^3(d+ex)}{e^4} - \frac{36d^2(d+ex)^2}{e^4} + \frac{16d(d+ex)^3}{e^4} - \frac{3(d+ex)^4}{e^4} - \frac{12d^4\log(d+ex)}{e^4}\right)(a+b\,\mathrm{lo}}{24g}$$

$$= -\frac{2abdfnx}{eg^2} - \frac{b^2fn^2(d+ex)^2}{4e^2g^2} + \frac{bfn(d+ex)^2(a+b\log(c(d+ex)^n))}{2e^2g^2} + $$

$$= -\frac{2abdfnx}{eg^2} + \frac{2b^2dfn^2x}{eg^2} - \frac{2b^2d^3n^2x}{e^3g} - \frac{b^2fn^2(d+ex)^2}{4e^2g^2} + \frac{3b^2d^2n^2(d+ex)}{4e^4g}$$

$$= -\frac{2abdfnx}{eg^2} + \frac{2b^2dfn^2x}{eg^2} - \frac{2b^2d^3n^2x}{e^3g} - \frac{b^2fn^2(d+ex)^2}{4e^2g^2} + \frac{3b^2d^2n^2(d+ex)}{4e^4g}$$

Mathematica [C] Result contains complex when optimal does not.
time = 0.60, size = 862, normalized size = 1.04

Antiderivative was successfully verified.

```
[In] Integrate[(x^5*(a + b*Log[c*(d + e*x)^n])^2)/(f + g*x^2),x]
```

```
[Out] (-144*e^4*f*g*x^2*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2 + 72*e^4*
g^2*x^4*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2 + 144*e^4*f^2*(a -
b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2*Log[f + g*x^2] - 12*b*n*(a - b*n
*Log[d + e*x] + b*Log[c*(d + e*x)^n])*(12*e^2*f*g*(e*x*(2*d - e*x) - 2*(d^2
 - e^2*x^2)*Log[d + e*x]) + g^2*(e*x*(-12*d^3 + 6*d^2*e*x - 4*d*e^2*x^2 + 3
*e^3*x^3) + 12*(d^4 - e^4*x^4)*Log[d + e*x]) - 24*e^4*f^2*(Log[d + e*x]*Log
[1 - (Sqrt[g]*(d + e*x))/((-I)*e*Sqrt[f] + d*Sqrt[g])] + PolyLog[2, (Sqrt[g
]*(d + e*x))/((-I)*e*Sqrt[f] + d*Sqrt[g])]) - 24*e^4*f^2*(Log[d + e*x]*Log[
1 - (Sqrt[g]*(d + e*x))/(I*e*Sqrt[f] + d*Sqrt[g])] + PolyLog[2, (Sqrt[g]*(d
 + e*x))/(I*e*Sqrt[f] + d*Sqrt[g])])) + b^2*n^2*(-72*e^2*f*g*(e*x*(-6*d + e
*x) + (6*d^2 + 4*d*e*x - 2*e^2*x^2)*Log[d + e*x] - 2*(d^2 - e^2*x^2)*Log[d
+ e*x]^2) - g^2*(e*x*(300*d^3 - 78*d^2*e*x + 28*d*e^2*x^2 - 9*e^3*x^3) - 12
*(25*d^4 + 12*d^3*e*x - 6*d^2*e^2*x^2 + 4*d*e^3*x^3 - 3*e^4*x^4)*Log[d + e*
x] + 72*(d^4 - e^4*x^4)*Log[d + e*x]^2) + 144*e^4*f^2*(Log[d + e*x]^2*Log[1
 - (Sqrt[g]*(d + e*x))/((-I)*e*Sqrt[f] + d*Sqrt[g])] + 2*Log[d + e*x]*PolyL
og[2, (Sqrt[g]*(d + e*x))/((-I)*e*Sqrt[f] + d*Sqrt[g])] - 2*PolyLog[3, (Sqr
t[g]*(d + e*x))/((-I)*e*Sqrt[f] + d*Sqrt[g])]) + 144*e^4*f^2*(Log[d + e*x]^
2*Log[1 - (Sqrt[g]*(d + e*x))/(I*e*Sqrt[f] + d*Sqrt[g])] + 2*Log[d + e*x]*P
olyLog[2, (Sqrt[g]*(d + e*x))/(I*e*Sqrt[f] + d*Sqrt[g])] - 2*PolyLog[3, (Sq
rt[g]*(d + e*x))/(I*e*Sqrt[f] + d*Sqrt[g])])))/(288*e^4*g^3)
```

Maple [F]
time = 0.18, size = 0, normalized size = 0.00

$$\int \frac{x^5(a + b\ln(c(ex + d)^n))^2}{g\,x^2 + f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^5*(a+b*ln(c*(e*x+d)^n))^2/(g*x^2+f),x)
```

```
[Out] int(x^5*(a+b*ln(c*(e*x+d)^n))^2/(g*x^2+f),x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(a+b*log(c*(e*x+d)^n))^2/(g*x^2+f),x, algorithm="maxima")
```

```
[Out] 1/4*a^2*(2*f^2*log(g*x^2 + f)/g^3 + (g*x^4 - 2*f*x^2)/g^2) + integrate((b^2
*x^5*log((x*e + d)^n)^2 + 2*(b^2*log(c) + a*b)*x^5*log((x*e + d)^n) + (b^2*
log(c)^2 + 2*a*b*log(c))*x^5)/(g*x^2 + f), x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(a+b*log(c*(e*x+d)^n))^2/(g*x^2+f),x, algorithm="fricas")
```

```
[Out] integral((b^2*x^5*log((x*e + d)^n*c)^2 + 2*a*b*x^5*log((x*e + d)^n*c) + a^2
*x^5)/(g*x^2 + f), x)
```

Sympy [F(-1)] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**5*(a+b*ln(c*(e*x+d)**n))**2/(g*x**2+f),x)
```

```
[Out] Timed out
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(a+b*log(c*(e*x+d)^n))^2/(g*x^2+f),x, algorithm="giac")
```

```
[Out] integrate((b*log((x*e + d)^n*c) + a)^2*x^5/(g*x^2 + f), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x^5\,{\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)}^2}{g\,x^2+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^5*(a + b*log(c*(d + e*x)^n))^2)/(f + g*x^2),x)
```

```
[Out] int((x^5*(a + b*log(c*(d + e*x)^n))^2)/(f + g*x^2), x)
```

3.311 $\int \frac{x^3(a+b\log(c(d+ex)^n))^2}{f+gx^2}\,dx$

Optimal. Leaf size=499

$$\frac{2abdnx}{eg}-\frac{2b^2dn^2x}{eg}+\frac{b^2n^2(d+ex)^2}{4e^2g}+\frac{2b^2dn(d+ex)\log\left(c(d+ex)^n\right)}{e^2g}-\frac{bn(d+ex)^2\left(a+b\log\left(c(d+ex)^n\right)\right)}{2e^2g}-$$

```
[Out] 2*a*b*d*n*x/e/g-2*b^2*d*n^2*x/e/g+1/4*b^2*n^2*(e*x+d)^2/e^2/g+2*b^2*d*n*(e*
x+d)*ln(c*(e*x+d)^n)/e^2/g-1/2*b*n*(e*x+d)^2*(a+b*ln(c*(e*x+d)^n))/e^2/g-d*
(e*x+d)*(a+b*ln(c*(e*x+d)^n))^2/e^2/g+1/2*(e*x+d)^2*(a+b*ln(c*(e*x+d)^n))^2
/e^2/g-1/2*f*(a+b*ln(c*(e*x+d)^n))^2*ln(e*((-f)^(1/2)-x*g^(1/2))/(e*(-f)^(1
/2)+d*g^(1/2)))/g^2-1/2*f*(a+b*ln(c*(e*x+d)^n))^2*ln(e*((-f)^(1/2)+x*g^(1/2
))/(e*(-f)^(1/2)-d*g^(1/2)))/g^2-b*f*n*(a+b*ln(c*(e*x+d)^n))*polylog(2,-(e*
x+d)*g^(1/2)/(e*(-f)^(1/2)-d*g^(1/2)))/g^2-b*f*n*(a+b*ln(c*(e*x+d)^n))*poly
log(2,(e*x+d)*g^(1/2)/(e*(-f)^(1/2)+d*g^(1/2)))/g^2+b^2*f*n^2*polylog(3,-(e
*x+d)*g^(1/2)/(e*(-f)^(1/2)-d*g^(1/2)))/g^2+b^2*f*n^2*polylog(3,(e*x+d)*g^(
1/2)/(e*(-f)^(1/2)+d*g^(1/2)))/g^2
```

Rubi [A]
time = 0.48, antiderivative size = 499, normalized size of antiderivative = 1.00, number of steps used = 21, number of rules used = 12, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.414$, Rules used = {2463, 2448, 2436, 2333, 2332, 2437, 2342, 2341, 2443, 2481, 2421, 6724}

$$-\frac{bfn\,\text{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{g^2}-\frac{bfn\,\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+e\sqrt{-f}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{g^2}+\frac{b^2fn^2\,\text{PolyLog}\left(3,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)}{g^2}+\frac{b^2fn^2\,\text{PolyLog}\left(3,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+e\sqrt{-f}}\right)}{g^2}-\frac{bn(d+ex)^2\left(a+b\log\left(c(d+ex)^n\right)\right)}{2e^2g}+\frac{(d+ex)^2\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{2e^2g}-\frac{d(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{e^2g}-\frac{f\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}x\right)}{d\sqrt{g}+e\sqrt{-f}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{2g^2}-\frac{f\log\left(\frac{e\left(\sqrt{-f}+\sqrt{g}x\right)}{e\sqrt{-f}-d\sqrt{g}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{2g^2}+\frac{2abdnx}{eg}+\frac{2b^2dn(d+ex)\log\left(c(d+ex)^n\right)}{e^2g}+\frac{b^2n^2(d+ex)^2}{4e^2g}-\frac{2b^2dn^2x}{eg}$$

Antiderivative was successfully verified.

```
[In] Int[(x^3*(a + b*Log[c*(d + e*x)^n])^2)/(f + g*x^2),x]
```

```
[Out] (2*a*b*d*n*x)/(e*g) - (2*b^2*d*n^2*x)/(e*g) + (b^2*n^2*(d + e*x)^2)/(4*e^2*
g) + (2*b^2*d*n*(d + e*x)*Log[c*(d + e*x)^n])/(e^2*g) - (b*n*(d + e*x)^2*(a
 + b*Log[c*(d + e*x)^n]))/(2*e^2*g) - (d*(d + e*x)*(a + b*Log[c*(d + e*x)^n
])^2)/(e^2*g) + ((d + e*x)^2*(a + b*Log[c*(d + e*x)^n])^2)/(2*e^2*g) - (f*(
a + b*Log[c*(d + e*x)^n])^2*Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[-f] + d*
Sqrt[g])])/(2*g^2) - (f*(a + b*Log[c*(d + e*x)^n])^2*Log[(e*(Sqrt[-f] + Sqr
t[g]*x))/(e*Sqrt[-f] - d*Sqrt[g])])/(2*g^2) - (b*f*n*(a + b*Log[c*(d + e*x)
^n])*PolyLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/g^2 - (b*
f*n*(a + b*Log[c*(d + e*x)^n])*PolyLog[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] +
 d*Sqrt[g])])/g^2 + (b^2*f*n^2*PolyLog[3, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f]
 - d*Sqrt[g]))])/g^2 + (b^2*f*n^2*PolyLog[3, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f
] + d*Sqrt[g])])/g^2
```

Rule 2332

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2333

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2341

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_.)*(x_))^(m_.), x_Symbol] :>
Simp[(d*x)^(m + 1)*((a + b*Log[c*x^n])/(d*(m + 1))), x] - Simp[b*n*((d*x)^(
m + 1)/(d*(m + 1)^2)), x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[m, -1]
```

Rule 2342

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_.)*(x_))^(m_.), x_Symbo
l] :> Simp[(d*x)^(m + 1)*((a + b*Log[c*x^n])^p/(d*(m + 1))), x] - Dist[b*n*
(p/(m + 1)), Int[(d*x)^m*(a + b*Log[c*x^n])^(p - 1), x], x] /; FreeQ[{a, b,
 c, d, m, n}, x] && NeQ[m, -1] && GtQ[p, 0]
```

Rule 2421

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> Simp[(-PolyLog[2, (-d)*f*x^m])*((a + b*Log[c
*x^n])^p/m), x] + Dist[b*n*(p/m), Int[PolyLog[2, (-d)*f*x^m]*((a + b*Log[c*
x^n])^(p - 1)/x), x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0
] && EqQ[d*e, 1]
```

Rule 2436

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2437

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[(f*(x/d))^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2443

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d
```

```
+ e*x)^n])^p/g), x] - Dist[b*e*n*(p/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]*
((a + b*Log[c*(d + e*x)^n])^(p - 1)/(d + e*x)), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2448

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q*(a + b*Log[c*(d
 + e*x)^n])^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f -
 d*g, 0] && IGtQ[q, 0]
```

Rule 2463

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rule 2481

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[(k*(x/d))^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + j*(x/e))^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 6724

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{x^3(a+b\log(c(d+ex)^n))^2}{f+gx^2}\,dx = \int \left(\frac{x(a+b\log(c(d+ex)^n))^2}{g} - \frac{fx(a+b\log(c(d+ex)^n))^2}{g(f+gx^2)}\right)dx$$

$$= \frac{\int x(a+b\log(c(d+ex)^n))^2\,dx}{g} - \frac{f\int \frac{x(a+b\log(c(d+ex)^n))^2}{f+gx^2}\,dx}{g}$$

$$= \frac{\int \left(-\frac{d(a+b\log(c(d+ex)^n))^2}{e} + \frac{(d+ex)(a+b\log(c(d+ex)^n))^2}{e}\right)dx}{g} - \frac{f\int\left(-\frac{(a+b\log(\ldots}{2\sqrt{g}\left(\sqrt{\ldots}\right.}\right.}{\ldots}$$

$$= \frac{f\int \frac{(a+b\log(c(d+ex)^n))^2}{\sqrt{-f}-\sqrt{g}\,x}\,dx}{2g^{3/2}} - \frac{f\int \frac{(a+b\log(c(d+ex)^n))^2}{\sqrt{-f}+\sqrt{g}\,x}\,dx}{2g^{3/2}} + \frac{\int(d+ex)(a+b\log\ldots}{eg\ldots}$$

$$= -\frac{f(a+b\log(c(d+ex)^n))^2\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}\,x\right)}{e\sqrt{-f}+d\sqrt{g}}\right)}{2g^2} - \frac{f(a+b\log(c(d+\ldots}{\ldots}$$

$$= -\frac{d(d+ex)(a+b\log(c(d+ex)^n))^2}{e^2g} + \frac{(d+ex)^2(a+b\log(c(d+ex)^n))^{\ldots}}{2e^2g}\ldots$$

$$= \frac{2abdnx}{eg} + \frac{b^2n^2(d+ex)^2}{4e^2g} - \frac{bn(d+ex)^2(a+b\log(c(d+ex)^n))}{2e^2g} - \frac{d(d+\ldots}{\ldots}$$

$$= \frac{2abdnx}{eg} - \frac{2b^2dn^2x}{eg} + \frac{b^2n^2(d+ex)^2}{4e^2g} + \frac{2b^2dn(d+ex)\log(c(d+ex)^n)}{e^2g} - \ldots$$

Mathematica [C] Result contains complex when optimal does not.
time = 0.24, size = 637, normalized size = 1.28

$$\frac{2e^2gx^2(a-bn\log(d+ex)+b\log(c(d+ex)^n))^2 - 2e^2f(a-bn\log(d+ex)+b\log(c(d+ex)^n))^2\log(f+gx^2) + 2bn(a-bn\log(d+ex)+b\log(c(d+ex)^n))\left(egx(2d-ex) - 2g(d^2-e^2x^2)\log(d+ex) - 2e^2f\left(\log(d+ex)\log\left(1-\frac{\sqrt{g}(d+ex)}{-ie\sqrt{f}+d\sqrt{g}}\right)+\mathrm{Li}_2\left(\frac{\sqrt{g}(d+ex)}{-ie\sqrt{f}+d\sqrt{g}}\right)\right) - 2e^2f\left(\log(d+ex)\log\left(1-\frac{\sqrt{g}(d+ex)}{ie\sqrt{f}+d\sqrt{g}}\right)+\mathrm{Li}_2\left(\frac{\sqrt{g}(d+ex)}{ie\sqrt{f}+d\sqrt{g}}\right)\right)\right) - b^2n^2\left(g\left(ex(6d-ex)+(-6d^2-4dex+2e^2x^2)\log(d+ex)+2(d^2-e^2x^2)\log^2(d+ex)\right) + 2e^2f\left(\log^2(d+ex)\log\left(1-\frac{\sqrt{g}(d+ex)}{-ie\sqrt{f}+d\sqrt{g}}\right)+2\log(d+ex)\mathrm{Li}_2\left(\frac{\sqrt{g}(d+ex)}{-ie\sqrt{f}+d\sqrt{g}}\right)-2\mathrm{Li}_3\left(\frac{\sqrt{g}(d+ex)}{-ie\sqrt{f}+d\sqrt{g}}\right)\right) + 2e^2f\left(\log^2(d+ex)\log\left(1-\frac{\sqrt{g}(d+ex)}{ie\sqrt{f}+d\sqrt{g}}\right)+2\log(d+ex)\mathrm{Li}_2\left(\frac{\sqrt{g}(d+ex)}{ie\sqrt{f}+d\sqrt{g}}\right)-2\mathrm{Li}_3\left(\frac{\sqrt{g}(d+ex)}{ie\sqrt{f}+d\sqrt{g}}\right)\right)\right)}{4e^2g^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^3*(a + b*Log[c*(d + e*x)^n])^2)/(f + g*x^2),x]
```

```
[Out] (2*e^2*g*x^2*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2 - 2*e^2*f*(a -
 b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2*Log[f + g*x^2] + 2*b*n*(a - b*n
*Log[d + e*x] + b*Log[c*(d + e*x)^n])*(e*g*x*(2*d - e*x) - 2*g*(d^2 - e^2*x
^2)*Log[d + e*x] - 2*e^2*f*(Log[d + e*x]*Log[1 - (Sqrt[g]*(d + e*x))/((-I)*
e*Sqrt[f] + d*Sqrt[g])] + PolyLog[2, (Sqrt[g]*(d + e*x))/((-I)*e*Sqrt[f] +
d*Sqrt[g])]) - 2*e^2*f*(Log[d + e*x]*Log[1 - (Sqrt[g]*(d + e*x))/(I*e*Sqrt[
f] + d*Sqrt[g])] + PolyLog[2, (Sqrt[g]*(d + e*x))/(I*e*Sqrt[f] + d*Sqrt[g])
])) - b^2*n^2*(g*(e*x*(6*d - e*x) + (-6*d^2 - 4*d*e*x + 2*e^2*x^2)*Log[d +
e*x] + 2*(d^2 - e^2*x^2)*Log[d + e*x]^2) + 2*e^2*f*(Log[d + e*x]^2*Log[1 -
(Sqrt[g]*(d + e*x))/((-I)*e*Sqrt[f] + d*Sqrt[g])] + 2*Log[d + e*x]*PolyLog[
2, (Sqrt[g]*(d + e*x))/((-I)*e*Sqrt[f] + d*Sqrt[g])] - 2*PolyLog[3, (Sqrt[g
]*(d + e*x))/((-I)*e*Sqrt[f] + d*Sqrt[g])]) + 2*e^2*f*(Log[d + e*x]^2*Log[1
 - (Sqrt[g]*(d + e*x))/(I*e*Sqrt[f] + d*Sqrt[g])] + 2*Log[d + e*x]*PolyLog[
2, (Sqrt[g]*(d + e*x))/(I*e*Sqrt[f] + d*Sqrt[g])] - 2*PolyLog[3, (Sqrt[g]*(
d + e*x))/(I*e*Sqrt[f] + d*Sqrt[g])])))/(4*e^2*g^2)
```

Maple [F]
time = 0.17, size = 0, normalized size = 0.00

$$\int \frac{x^{3}\left(a+b\ln\left(c\left(ex+d\right)^{n}\right)\right)^{2}}{g\,x^{2}+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(a+b*ln(c*(e*x+d)^n))^2/(g*x^2+f),x)
```

```
[Out] int(x^3*(a+b*ln(c*(e*x+d)^n))^2/(g*x^2+f),x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(a+b*log(c*(e*x+d)^n))^2/(g*x^2+f),x, algorithm="maxima")
```

```
[Out] 1/2*a^2*(x^2/g - f*log(g*x^2 + f)/g^2) + integrate((b^2*x^3*log((x*e + d)^n
)^2 + 2*(b^2*log(c) + a*b)*x^3*log((x*e + d)^n) + (b^2*log(c)^2 + 2*a*b*log
(c))*x^3)/(g*x^2 + f), x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(a+b*log(c*(e*x+d)^n))^2/(g*x^2+f),x, algorithm="fricas")
```

```
[Out] integral((b^2*x^3*log((x*e + d)^n*c)^2 + 2*a*b*x^3*log((x*e + d)^n*c) + a^2
*x^3)/(g*x^2 + f), x)
```

Sympy [F(-1)] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(a+b*ln(c*(e*x+d)**n))**2/(g*x**2+f),x)
```

```
[Out] Timed out
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(a+b*log(c*(e*x+d)^n))^2/(g*x^2+f),x, algorithm="giac")
```

```
[Out] integrate((b*log((x*e + d)^n*c) + a)^2*x^3/(g*x^2 + f), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x^3\,{\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)}^2}{g\,x^2+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^3*(a + b*log(c*(d + e*x)^n))^2)/(f + g*x^2),x)
```

```
[Out] int((x^3*(a + b*log(c*(d + e*x)^n))^2)/(f + g*x^2), x)
```

3.312 $\int \frac{x(a+b\log(c(d+ex)^n))^2}{f+gx^2}\,dx$

Optimal. Leaf size=317

$$\frac{(a+b\log(c(d+ex)^n))^2\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}\,x\right)}{e\sqrt{-f}+d\sqrt{g}}\right)}{2g}+\frac{(a+b\log(c(d+ex)^n))^2\log\left(\frac{e\left(\sqrt{-f}+\sqrt{g}\,x\right)}{e\sqrt{-f}-d\sqrt{g}}\right)}{2g}+\frac{bn(a}{}$$

```
[Out] 1/2*(a+b*ln(c*(e*x+d)^n))^2*ln(e*((-f)^(1/2)-x*g^(1/2))/(e*(-f)^(1/2)+d*g^(
1/2)))/g+1/2*(a+b*ln(c*(e*x+d)^n))^2*ln(e*((-f)^(1/2)+x*g^(1/2))/(e*(-f)^(1
/2)-d*g^(1/2)))/g+b*n*(a+b*ln(c*(e*x+d)^n))*polylog(2,-(e*x+d)*g^(1/2)/(e*(
-f)^(1/2)-d*g^(1/2)))/g+b*n*(a+b*ln(c*(e*x+d)^n))*polylog(2,(e*x+d)*g^(1/2)
/(e*(-f)^(1/2)+d*g^(1/2)))/g-b^2*n^2*polylog(3,-(e*x+d)*g^(1/2)/(e*(-f)^(1/
2)-d*g^(1/2)))/g-b^2*n^2*polylog(3,(e*x+d)*g^(1/2)/(e*(-f)^(1/2)+d*g^(1/2))
)/g
```

Rubi [A]

time = 0.26, antiderivative size = 317, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.185$, Rules used = {2463, 2443, 2481, 2421, 6724}

$$\frac{bn\,\text{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)(a+b\log(c(d+ex)^n))}{g}+\frac{bn\,\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+e\sqrt{-f}}\right)(a+b\log(c(d+ex)^n))}{g}-\frac{b^2n^2\,\text{PolyLog}\left(3,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)}{g}-\frac{b^2n^2\,\text{PolyLog}\left(3,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+e\sqrt{-f}}\right)}{g}+\frac{\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}\,x\right)}{d\sqrt{g}+e\sqrt{-f}}\right)(a+b\log(c(d+ex)^n))^2}{2g}+\frac{\log\left(\frac{e\left(\sqrt{-f}+\sqrt{g}\,x\right)}{e\sqrt{-f}-d\sqrt{g}}\right)(a+b\log(c(d+ex)^n))^2}{2g}$$

Antiderivative was successfully verified.

```
[In] Int[(x*(a + b*Log[c*(d + e*x)^n])^2)/(f + g*x^2),x]
```

```
[Out] ((a + b*Log[c*(d + e*x)^n])^2*Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[-f] +
d*Sqrt[g])])/(2*g) + ((a + b*Log[c*(d + e*x)^n])^2*Log[(e*(Sqrt[-f] + Sqrt[
g]*x))/(e*Sqrt[-f] - d*Sqrt[g])])/(2*g) + (b*n*(a + b*Log[c*(d + e*x)^n])*P
olyLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/g + (b*n*(a + b
*Log[c*(d + e*x)^n])*PolyLog[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g]
)])/g - (b^2*n^2*PolyLog[3, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))
])/g - (b^2*n^2*PolyLog[3, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/g
```

Rule 2421

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> Simp[(-PolyLog[2, (-d)*f*x^m])*((a + b*Log[c
*x^n])^p/m), x] + Dist[b*n*(p/m), Int[PolyLog[2, (-d)*f*x^m]*((a + b*Log[c*
x^n])^(p - 1)/x), x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0
] && EqQ[d*e, 1]
```

Rule 2443

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d
+ e*x)^n])^p/g), x] - Dist[b*e*n*(p/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]*
((a + b*Log[c*(d + e*x)^n])^(p - 1)/(d + e*x)), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2463

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rule 2481

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[(k*(x/d))^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + j*(x/e))^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 6724

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{x(a+b\log(c(d+ex)^n))^2}{f+gx^2}\,dx = \int \left(-\frac{(a+b\log(c(d+ex)^n))^2}{2\sqrt{g}\left(\sqrt{-f}-\sqrt{g}\,x\right)}+\frac{(a+b\log(c(d+ex)^n))^2}{2\sqrt{g}\left(\sqrt{-f}+\sqrt{g}\,x\right)}\right)dx$$

$$= -\frac{\int \frac{(a+b\log(c(d+ex)^n))^2}{\sqrt{-f}-\sqrt{g}\,x}\,dx}{2\sqrt{g}}+\frac{\int \frac{(a+b\log(c(d+ex)^n))^2}{\sqrt{-f}+\sqrt{g}\,x}\,dx}{2\sqrt{g}}$$

$$= \frac{(a+b\log(c(d+ex)^n))^2\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}\,x\right)}{e\sqrt{-f}+d\sqrt{g}}\right)}{2g}+\frac{(a+b\log(c(d+ex)\cdots}{\cdots}$$

$$= \frac{(a+b\log(c(d+ex)^n))^2\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}\,x\right)}{e\sqrt{-f}+d\sqrt{g}}\right)}{2g}+\frac{(a+b\log(c(d+ex)\cdots}{\cdots}$$

$$= \frac{(a+b\log(c(d+ex)^n))^2\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}\,x\right)}{e\sqrt{-f}+d\sqrt{g}}\right)}{2g}+\frac{(a+b\log(c(d+ex)\cdots}{\cdots}$$

$$= \frac{(a+b\log(c(d+ex)^n))^2\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}\,x\right)}{e\sqrt{-f}+d\sqrt{g}}\right)}{2g}+\frac{(a+b\log(c(d+ex)\cdots}{\cdots}$$

<u>Mathematica</u> [C] Result contains complex when optimal does not.
time = 0.12, size = 464, normalized size = 1.46

$$\frac{(a-bn\log(d+ex)+b\log(c(d+ex)^n))^2\log(f+gx^2)+2bn(a-bn\log(d+ex)+b\log(c(d+ex)^n))\left(\log(d+ex)\left(\log\left(1-\frac{\sqrt{g}(d+ex)}{-ie\sqrt{f}+d\sqrt{g}}\right)+\log\left(1-\frac{\sqrt{g}(d+ex)}{ie\sqrt{f}+d\sqrt{g}}\right)\right)+\mathrm{Li}_2\left(\frac{\sqrt{g}(d+ex)}{-ie\sqrt{f}+d\sqrt{g}}\right)+\mathrm{Li}_2\left(\frac{\sqrt{g}(d+ex)}{ie\sqrt{f}+d\sqrt{g}}\right)\right)+b^2n^2\left(\log^2(d+ex)\log\left(1-\frac{\sqrt{g}(d+ex)}{-ie\sqrt{f}+d\sqrt{g}}\right)+\log^2(d+ex)\log\left(1-\frac{\sqrt{g}(d+ex)}{ie\sqrt{f}+d\sqrt{g}}\right)+2\log(d+ex)\mathrm{Li}_2\left(\frac{\sqrt{g}(d+ex)}{-ie\sqrt{f}+d\sqrt{g}}\right)+2\log(d+ex)\mathrm{Li}_2\left(\frac{\sqrt{g}(d+ex)}{ie\sqrt{f}+d\sqrt{g}}\right)-2\mathrm{Li}_3\left(\frac{\sqrt{g}(d+ex)}{-ie\sqrt{f}+d\sqrt{g}}\right)-2\mathrm{Li}_3\left(\frac{\sqrt{g}(d+ex)}{ie\sqrt{f}+d\sqrt{g}}\right)\right)}{2g}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x*(a + b*Log[c*(d + e*x)^n])^2)/(f + g*x^2),x]
```

```
[Out] ((a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2*Log[f + g*x^2] + 2*b*n*(a
- b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])*(Log[d + e*x]*(Log[1 - (Sqrt[g]*
```

```
(d + e*x))/((-I)*e*Sqrt[f] + d*Sqrt[g])] + Log[1 - (Sqrt[g]*(d + e*x))/(I*e
*Sqrt[f] + d*Sqrt[g])]) + PolyLog[2, (Sqrt[g]*(d + e*x))/((-I)*e*Sqrt[f] +
d*Sqrt[g])] + PolyLog[2, (Sqrt[g]*(d + e*x))/(I*e*Sqrt[f] + d*Sqrt[g])]) +
b^2*n^2*(Log[d + e*x]^2*Log[1 - (Sqrt[g]*(d + e*x))/((-I)*e*Sqrt[f] + d*Sqr
t[g])] + Log[d + e*x]^2*Log[1 - (Sqrt[g]*(d + e*x))/(I*e*Sqrt[f] + d*Sqrt[g
])] + 2*Log[d + e*x]*PolyLog[2, (Sqrt[g]*(d + e*x))/((-I)*e*Sqrt[f] + d*Sqr
t[g])] + 2*Log[d + e*x]*PolyLog[2, (Sqrt[g]*(d + e*x))/(I*e*Sqrt[f] + d*Sqr
t[g])] - 2*PolyLog[3, (Sqrt[g]*(d + e*x))/((-I)*e*Sqrt[f] + d*Sqrt[g])] - 2
*PolyLog[3, (Sqrt[g]*(d + e*x))/(I*e*Sqrt[f] + d*Sqrt[g])]))/(2*g)
```

Maple [F]
time = 0.17, size = 0, normalized size = 0.00

$$\int \frac{x(a+b\ln\left(c(ex+d)^{n}\right))^{2}}{g\,x^{2}+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(a+b*ln(c*(e*x+d)^n))^2/(g*x^2+f),x)
```

```
[Out] int(x*(a+b*ln(c*(e*x+d)^n))^2/(g*x^2+f),x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*log(c*(e*x+d)^n))^2/(g*x^2+f),x, algorithm="maxima")
```

```
[Out] 1/2*a^2*log(g*x^2 + f)/g + integrate((b^2*x*log((x*e + d)^n)^2 + 2*(b^2*log
(c) + a*b)*x*log((x*e + d)^n) + (b^2*log(c)^2 + 2*a*b*log(c))*x)/(g*x^2 + f
), x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*log(c*(e*x+d)^n))^2/(g*x^2+f),x, algorithm="fricas")
```

```
[Out] integral((b^2*x*log((x*e + d)^n*c)^2 + 2*a*b*x*log((x*e + d)^n*c) + a^2*x)/
(g*x^2 + f), x)
```

Sympy [F(-1)] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*ln(c*(e*x+d)**n))**2/(g*x**2+f),x)
```

```
[Out] Timed out
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*log(c*(e*x+d)^n))^2/(g*x^2+f),x, algorithm="giac")
```

```
[Out] integrate((b*log((x*e + d)^n*c) + a)^2*x/(g*x^2 + f), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x\,{\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)}^2}{g\,x^2+f} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x*(a + b*log(c*(d + e*x)^n))^2)/(f + g*x^2),x)
```

```
[Out] int((x*(a + b*log(c*(d + e*x)^n))^2)/(f + g*x^2), x)
```

3.313 $\int \frac{(a+b\log(c(d+ex)^n))^2}{x(f+gx^2)}\,dx$

Optimal. Leaf size=397

$$\frac{\log\left(-\frac{ex}{d}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{f}-\frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^2\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}\,x\right)}{e\sqrt{-f}+d\sqrt{g}}\right)}{2f}-\frac{\left(a+b\log\left(c(d+ex)\right.\right.}{}$$

```
[Out] ln(-e*x/d)*(a+b*ln(c*(e*x+d)^n))^2/f-1/2*(a+b*ln(c*(e*x+d)^n))^2*ln(e*((-f)
^(1/2)-x*g^(1/2))/(e*(-f)^(1/2)+d*g^(1/2)))/f-1/2*(a+b*ln(c*(e*x+d)^n))^2*l
n(e*((-f)^(1/2)+x*g^(1/2))/(e*(-f)^(1/2)-d*g^(1/2)))/f+2*b*n*(a+b*ln(c*(e*x
+d)^n))*polylog(2,1+e*x/d)/f-b*n*(a+b*ln(c*(e*x+d)^n))*polylog(2,-(e*x+d)*g
^(1/2)/(e*(-f)^(1/2)-d*g^(1/2)))/f-b*n*(a+b*ln(c*(e*x+d)^n))*polylog(2,(e*x
+d)*g^(1/2)/(e*(-f)^(1/2)+d*g^(1/2)))/f-2*b^2*n^2*polylog(3,1+e*x/d)/f+b^2*
n^2*polylog(3,-(e*x+d)*g^(1/2)/(e*(-f)^(1/2)-d*g^(1/2)))/f+b^2*n^2*polylog(
3,(e*x+d)*g^(1/2)/(e*(-f)^(1/2)+d*g^(1/2)))/f
```

Rubi [A]
time = 0.43, antiderivative size = 397, normalized size of antiderivative = 1.00, number of steps used = 16, number of rules used = 5, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.172$, Rules used = {2463, 2443, 2481, 2421, 6724}

$$-\frac{bn\,\text{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{f}-\frac{bn\,\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+e\sqrt{-f}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{f}+\frac{2bn\,\text{PolyLog}\left(2,\frac{ex}{d}+1\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{f}+\frac{b^2n^2\,\text{PolyLog}\left(3,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)}{f}+\frac{b^2n^2\,\text{PolyLog}\left(3,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+e\sqrt{-f}}\right)}{f}-\frac{2b^2n^2\,\text{PolyLog}\left(3,\frac{ex}{d}+1\right)}{f}-\frac{\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}\,x\right)}{d\sqrt{g}+e\sqrt{-f}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{2f}-\frac{\log\left(\frac{e\left(\sqrt{-f}+\sqrt{g}\,x\right)}{e\sqrt{-f}-d\sqrt{g}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{2f}+\frac{\log\left(-\frac{ex}{d}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{f}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^2/(x*(f + g*x^2)),x]
```

```
[Out] (Log[-((e*x)/d)]*(a + b*Log[c*(d + e*x)^n])^2)/f - ((a + b*Log[c*(d + e*x)^
n])^2*Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(2*f) - ((a
 + b*Log[c*(d + e*x)^n])^2*Log[(e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d*S
qrt[g])])/(2*f) - (b*n*(a + b*Log[c*(d + e*x)^n])*PolyLog[2, -((Sqrt[g]*(d
+ e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/f - (b*n*(a + b*Log[c*(d + e*x)^n])*Pol
yLog[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/f + (2*b*n*(a + b*Lo
g[c*(d + e*x)^n])*PolyLog[2, 1 + (e*x)/d])/f + (b^2*n^2*PolyLog[3, -((Sqrt[
g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/f + (b^2*n^2*PolyLog[3, (Sqrt[g]*
(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/f - (2*b^2*n^2*PolyLog[3, 1 + (e*x)/d
])/f
```

Rule 2421

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> Simp[(-PolyLog[2, (-d)*f*x^m])*((a + b*Log[c
*x^n])^p/m), x] + Dist[b*n*(p/m), Int[PolyLog[2, (-d)*f*x^m]*((a + b*Log[c*
x^n])^(p - 1)/x), x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0
```

```
] && EqQ[d*e, 1]
```

Rule 2443

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d
+ e*x)^n])^p/g), x] - Dist[b*e*n*(p/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]*
((a + b*Log[c*(d + e*x)^n])^(p - 1)/(d + e*x)), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2463

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rule 2481

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[(k*(x/d))^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + j*(x/e))^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 6724

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(a+b\log(c(d+ex)^n))^2}{x(f+gx^2)}\,dx = \int \left(\frac{(a+b\log(c(d+ex)^n))^2}{fx} - \frac{gx(a+b\log(c(d+ex)^n))^2}{f(f+gx^2)}\right)dx$$

$$= \frac{\int \frac{(a+b\log(c(d+ex)^n))^2}{x}\,dx}{f} - \frac{g\int \frac{x(a+b\log(c(d+ex)^n))^2}{f+gx^2}\,dx}{f}$$

$$= \frac{\log\left(-\frac{ex}{d}\right)(a+b\log(c(d+ex)^n))^2}{f} - \frac{g\int\left(-\frac{(a+b\log(c(d+ex)^n))^2}{2\sqrt{g}\left(\sqrt{-f}-\sqrt{g}\,x\right)} + \frac{(a+b}{2\sqrt{g}\,(}\right.}{f}$$

$$= \frac{\log\left(-\frac{ex}{d}\right)(a+b\log(c(d+ex)^n))^2}{f} + \frac{\sqrt{g}\int \frac{(a+b\log(c(d+ex)^n))^2}{\sqrt{-f}-\sqrt{g}\,x}\,dx}{2f} - \frac{\sqrt{g}\int \frac{(}{}}{}$$

$$= \frac{\log\left(-\frac{ex}{d}\right)(a+b\log(c(d+ex)^n))^2}{f} - \frac{(a+b\log(c(d+ex)^n))^2\log\left(\frac{e(\sqrt{-}}{e\sqrt{-}}\right.}{2f}$$

$$= \frac{\log\left(-\frac{ex}{d}\right)(a+b\log(c(d+ex)^n))^2}{f} - \frac{(a+b\log(c(d+ex)^n))^2\log\left(\frac{e(\sqrt{-}}{e\sqrt{-}}\right.}{2f}$$

$$= \frac{\log\left(-\frac{ex}{d}\right)(a+b\log(c(d+ex)^n))^2}{f} - \frac{(a+b\log(c(d+ex)^n))^2\log\left(\frac{e(\sqrt{-}}{e\sqrt{-}}\right.}{2f}$$

$$= \frac{\log\left(-\frac{ex}{d}\right)(a+b\log(c(d+ex)^n))^2}{f} - \frac{(a+b\log(c(d+ex)^n))^2\log\left(\frac{e(\sqrt{-}}{e\sqrt{-}}\right.}{2f}$$

Mathematica [C] Result contains complex when optimal does not.

time = 0.20, size = 576, normalized size = 1.45

$$-\frac{-2\log(x)\left(a-bn\log(d+ex)+b\log\left(c(d+ex)^n\right)\right)^2+\left(a-bn\log(d+ex)+b\log\left(c(d+ex)^n\right)\right)^2\log\left(f+gx^2\right)+2bn\left(a-bn\log(d+ex)+b\log\left(c(d+ex)^n\right)\right)\left(\log(d+ex)\log\left(1-\frac{\sqrt{g}\,(d+ex)}{-ie\sqrt{f}+d\sqrt{g}}\right)+\log(d+ex)\log\left(1-\frac{\sqrt{g}\,(d+ex)}{ie\sqrt{f}+d\sqrt{g}}\right)+\mathrm{Li}_2\left(\frac{\sqrt{g}\,(d+ex)}{-ie\sqrt{f}+d\sqrt{g}}\right)+\mathrm{Li}_2\left(\frac{\sqrt{g}\,(d+ex)}{ie\sqrt{f}+d\sqrt{g}}\right)-2\left(\log\left(-\frac{ex}{d}\right)\log(d+ex)+\mathrm{Li}_2\left(1+\frac{ex}{d}\right)\right)\right)+b^2n^2\left(-2\log\left(-\frac{ex}{d}\right)\log^2(d+ex)+\log^2(d+ex)\log\left(1-\frac{\sqrt{g}\,(d+ex)}{-ie\sqrt{f}+d\sqrt{g}}\right)+\log^2(d+ex)\log\left(1-\frac{\sqrt{g}\,(d+ex)}{ie\sqrt{f}+d\sqrt{g}}\right)+2\log(d+ex)\mathrm{Li}_2\left(\frac{\sqrt{g}\,(d+ex)}{-ie\sqrt{f}+d\sqrt{g}}\right)+2\log(d+ex)\mathrm{Li}_2\left(\frac{\sqrt{g}\,(d+ex)}{ie\sqrt{f}+d\sqrt{g}}\right)-4\log(d+ex)\mathrm{Li}_2\left(1+\frac{ex}{d}\right)-2\mathrm{Li}_3\left(\frac{\sqrt{g}\,(d+ex)}{-ie\sqrt{f}+d\sqrt{g}}\right)-2\mathrm{Li}_3\left(\frac{\sqrt{g}\,(d+ex)}{ie\sqrt{f}+d\sqrt{g}}\right)+4\mathrm{Li}_3\left(1+\frac{ex}{d}\right)\right)}{2f}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^2/(x*(f + g*x^2)),x]
```

```
[Out] -1/2*(-2*Log[x]*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2 + (a - b*n*
Log[d + e*x] + b*Log[c*(d + e*x)^n])^2*Log[f + g*x^2] + 2*b*n*(a - b*n*Log[
d + e*x] + b*Log[c*(d + e*x)^n])*(Log[d + e*x]*Log[1 - (Sqrt[g]*(d + e*x))/
((-I)*e*Sqrt[f] + d*Sqrt[g])] + Log[d + e*x]*Log[1 - (Sqrt[g]*(d + e*x))/(I
*e*Sqrt[f] + d*Sqrt[g])] + PolyLog[2, (Sqrt[g]*(d + e*x))/((-I)*e*Sqrt[f] +
 d*Sqrt[g])] + PolyLog[2, (Sqrt[g]*(d + e*x))/(I*e*Sqrt[f] + d*Sqrt[g])] -
2*(Log[-((e*x)/d)]*Log[d + e*x] + PolyLog[2, 1 + (e*x)/d])) + b^2*n^2*(-2*L
og[-((e*x)/d)]*Log[d + e*x]^2 + Log[d + e*x]^2*Log[1 - (Sqrt[g]*(d + e*x))/
((-I)*e*Sqrt[f] + d*Sqrt[g])] + Log[d + e*x]^2*Log[1 - (Sqrt[g]*(d + e*x))/
(I*e*Sqrt[f] + d*Sqrt[g])] + 2*Log[d + e*x]*PolyLog[2, (Sqrt[g]*(d + e*x))/
((-I)*e*Sqrt[f] + d*Sqrt[g])] + 2*Log[d + e*x]*PolyLog[2, (Sqrt[g]*(d + e*x
))/(I*e*Sqrt[f] + d*Sqrt[g])] - 4*Log[d + e*x]*PolyLog[2, 1 + (e*x)/d] - 2*
PolyLog[3, (Sqrt[g]*(d + e*x))/((-I)*e*Sqrt[f] + d*Sqrt[g])] - 2*PolyLog[3,
 (Sqrt[g]*(d + e*x))/(I*e*Sqrt[f] + d*Sqrt[g])] + 4*PolyLog[3, 1 + (e*x)/d]
))/f
```

Maple [F]
time = 0.17, size = 0, normalized size = 0.00

$$\int \frac{\left(a+b\ln\left(c(ex+d)^n\right)\right)^2}{x\left(g\,x^2+f\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))^2/x/(g*x^2+f),x)
```

```
[Out] int((a+b*ln(c*(e*x+d)^n))^2/x/(g*x^2+f),x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/x/(g*x^2+f),x, algorithm="maxima")
```

```
[Out] -1/2*a^2*(log(g*x^2 + f)/f - 2*log(x)/f) + integrate((b^2*log((x*e + d)^n)^
2 + b^2*log(c)^2 + 2*a*b*log(c) + 2*(b^2*log(c) + a*b)*log((x*e + d)^n))/(g
*x^3 + f*x), x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/x/(g*x^2+f),x, algorithm="fricas")
[Out] integral((b^2*log((x*e + d)^n*c)^2 + 2*a*b*log((x*e + d)^n*c) + a^2)/(g*x^3
 + f*x), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(a + b \log \left(c(d + ex)^{n}\right)\right)^{2}}{x \left(f + gx^{2}\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**2/x/(g*x**2+f),x)
[Out] Integral((a + b*log(c*(d + e*x)**n))**2/(x*(f + g*x**2)), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/x/(g*x^2+f),x, algorithm="giac")
[Out] integrate((b*log((x*e + d)^n*c) + a)^2/((g*x^2 + f)*x), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{{\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)}^2}{x\,\left(g\,x^2+f\right)} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))^2/(x*(f + g*x^2)),x)
[Out] int((a + b*log(c*(d + e*x)^n))^2/(x*(f + g*x^2)), x)
```

3.314 $\int \frac{(a+b\log(c(d+ex)^n))^2}{x^3(f+gx^2)}\,dx$

Optimal. Leaf size=551

$$\frac{b^2e^2n^2\log(x)}{d^2f}-\frac{ben(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)}{d^2fx}-\frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{2fx^2}-\frac{g\log\left(-\frac{ex}{d}\right)\left(a+b\log(c(d+\right.}{f^2}$$

```
[Out] b^2*e^2*n^2*ln(x)/d^2/f-b*e*n*(e*x+d)*(a+b*ln(c*(e*x+d)^n))/d^2/f/x-1/2*(a+
b*ln(c*(e*x+d)^n))^2/f/x^2-g*ln(-e*x/d)*(a+b*ln(c*(e*x+d)^n))^2/f^2-b*e^2*n
*(a+b*ln(c*(e*x+d)^n))*ln(1-d/(e*x+d))/d^2/f+1/2*g*(a+b*ln(c*(e*x+d)^n))^2*
ln(e*((-f)^(1/2)-x*g^(1/2))/(e*(-f)^(1/2)+d*g^(1/2)))/f^2+1/2*g*(a+b*ln(c*(
e*x+d)^n))^2*ln(e*((-f)^(1/2)+x*g^(1/2))/(e*(-f)^(1/2)-d*g^(1/2)))/f^2+b^2*
e^2*n^2*polylog(2,d/(e*x+d))/d^2/f-2*b*g*n*(a+b*ln(c*(e*x+d)^n))*polylog(2,
1+e*x/d)/f^2+b*g*n*(a+b*ln(c*(e*x+d)^n))*polylog(2,-(e*x+d)*g^(1/2)/(e*(-f)
^(1/2)-d*g^(1/2)))/f^2+b*g*n*(a+b*ln(c*(e*x+d)^n))*polylog(2,(e*x+d)*g^(1/2
)/(e*(-f)^(1/2)+d*g^(1/2)))/f^2+2*b^2*g*n^2*polylog(3,1+e*x/d)/f^2-b^2*g*n^
2*polylog(3,-(e*x+d)*g^(1/2)/(e*(-f)^(1/2)-d*g^(1/2)))/f^2-b^2*g*n^2*polylo
g(3,(e*x+d)*g^(1/2)/(e*(-f)^(1/2)+d*g^(1/2)))/f^2
```

Rubi [A]
time = 0.63, antiderivative size = 551, normalized size of antiderivative = 1.00, number of steps used = 23, number of rules used = 12, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.414$, Rules used = {2463, 2445, 2458, 2389, 2379, 2438, 2351, 31, 2443, 2481, 2421, 6724}

$$\frac{bgn\text{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{f^2}+\frac{bgn\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+e\sqrt{-f}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{f^2}-\frac{2bgn\text{PolyLog}\left(2,\frac{ex}{d}+1\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{f^2}+\frac{b^2e^2n^2\text{PolyLog}\left(2,\frac{d}{d+ex}\right)}{d^2f}-\frac{b^2gn^2\text{PolyLog}\left(3,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)}{f^2}-\frac{b^2gn^2\text{PolyLog}\left(3,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+e\sqrt{-f}}\right)}{f^2}+\frac{2b^2gn^2\text{PolyLog}\left(3,\frac{ex}{d}+1\right)}{f^2}-\frac{be^2n\log\left(1-\frac{d}{d+ex}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{d^2f}-\frac{ben(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)}{d^2fx}-\frac{g\log\left(-\frac{ex}{d}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{f^2}+\frac{g\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}x\right)}{d\sqrt{g}+e\sqrt{-f}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{2f^2}+\frac{g\log\left(\frac{e\left(\sqrt{-f}+\sqrt{g}x\right)}{e\sqrt{-f}-d\sqrt{g}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{2f^2}-\frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{2fx^2}+\frac{b^2e^2n^2\log(x)}{d^2f}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^2/(x^3*(f + g*x^2)),x]
```

```
[Out] (b^2*e^2*n^2*Log[x])/(d^2*f) - (b*e*n*(d + e*x)*(a + b*Log[c*(d + e*x)^n]))
/(d^2*f*x) - (a + b*Log[c*(d + e*x)^n])^2/(2*f*x^2) - (g*Log[-((e*x)/d)]*(a
 + b*Log[c*(d + e*x)^n])^2)/f^2 + (g*(a + b*Log[c*(d + e*x)^n])^2*Log[(e*(S
qrt[-f] - Sqrt[g]*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(2*f^2) + (g*(a + b*Log[c*
(d + e*x)^n])^2*Log[(e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g])])/(
2*f^2) - (b*e^2*n*(a + b*Log[c*(d + e*x)^n])*Log[1 - d/(d + e*x)])/(d^2*f)
+ (b^2*e^2*n^2*PolyLog[2, d/(d + e*x)])/(d^2*f) + (b*g*n*(a + b*Log[c*(d +
e*x)^n])*PolyLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/f^2 +
 (b*g*n*(a + b*Log[c*(d + e*x)^n])*PolyLog[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[-
f] + d*Sqrt[g])])/f^2 - (2*b*g*n*(a + b*Log[c*(d + e*x)^n])*PolyLog[2, 1 +
(e*x)/d])/f^2 - (b^2*g*n^2*PolyLog[3, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d
*Sqrt[g]))])/f^2 - (b^2*g*n^2*PolyLog[3, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] +
d*Sqrt[g])])/f^2 + (2*b^2*g*n^2*PolyLog[3, 1 + (e*x)/d])/f^2
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 2351

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_) + (e_.)*(x_)^(r_.))^(q_), x
_Symbol] :> Simp[x*(d + e*x^r)^(q + 1)*((a + b*Log[c*x^n])/d), x] - Dist[b*
(n/d), Int[(d + e*x^r)^(q + 1), x], x] /; FreeQ[{a, b, c, d, e, n, q, r}, x
] && EqQ[r*(q + 1) + 1, 0]
```

Rule 2379

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((x_)*((d_) + (e_.)*(x_)^(r
_.))), x_Symbol] :> Simp[(-Log[1 + d/(e*x^r)])*((a + b*Log[c*x^n])^p/(d*r))
, x] + Dist[b*n*(p/(d*r)), Int[Log[1 + d/(e*x^r)]*((a + b*Log[c*x^n])^(p -
1)/x), x], x] /; FreeQ[{a, b, c, d, e, n, r}, x] && IGtQ[p, 0]
```

Rule 2389

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_))/
(x_), x_Symbol] :> Dist[1/d, Int[(d + e*x)^(q + 1)*((a + b*Log[c*x^n])^p/x)
, x], x] - Dist[e/d, Int[(d + e*x)^q*(a + b*Log[c*x^n])^p, x], x] /; FreeQ[
{a, b, c, d, e, n}, x] && IGtQ[p, 0] && LtQ[q, -1] && IntegerQ[2*q]
```

Rule 2421

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> Simp[(-PolyLog[2, (-d)*f*x^m])*((a + b*Log[c
*x^n])^p/m), x] + Dist[b*n*(p/m), Int[PolyLog[2, (-d)*f*x^m]*((a + b*Log[c*
x^n])^(p - 1)/x), x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0
] && EqQ[d*e, 1]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2443

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d
+ e*x)^n])^p/g), x] - Dist[b*e*n*(p/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]*
((a + b*Log[c*(d + e*x)^n])^(p - 1)/(d + e*x)), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[(f + g*x)^(q + 1)*((a + b*Log[c*(d + e*x)^
n])^p/(g*(q + 1))), x] - Dist[b*e*n*(p/(g*(q + 1))), Int[(f + g*x)^(q + 1)*
((a + b*Log[c*(d + e*x)^n])^(p - 1)/(d + e*x)), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && GtQ[p, 0] && NeQ[q, -1] && Int
egersQ[2*p, 2*q] && ( !IGtQ[q, 0] || (EqQ[p, 2] && NeQ[q, 1]))
```

Rule 2458

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[(g*(x/e))^q*((e*h - d*i)/e + i*(x/e))^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2463

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rule 2481

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[(k*(x/d))^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + j*(x/e))^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 6724

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(a+b\log(c(d+ex)^n))^2}{x^3(f+gx^2)}\,dx = \int \left(\frac{(a+b\log(c(d+ex)^n))^2}{fx^3} - \frac{g(a+b\log(c(d+ex)^n))^2}{f^2x} + \frac{g^2x(a+b\log(\cdots}{f^2(f\cdots}\right.$$

$$= \frac{\int \frac{(a+b\log(c(d+ex)^n))^2}{x^3}\,dx}{f} - \frac{g\int \frac{(a+b\log(c(d+ex)^n))^2}{x}\,dx}{f^2} + \frac{g^2\int \frac{x(a+b\log(c(d+ex)^n))^2}{f+gx^2}\,d\cdots}{f^2}$$

$$= -\frac{(a+b\log(c(d+ex)^n))^2}{2fx^2} - \frac{g\log\left(-\frac{ex}{d}\right)(a+b\log(c(d+ex)^n))^2}{f^2} + \frac{g^2\int\left(\cdots\right.}{\cdots}$$

$$= -\frac{(a+b\log(c(d+ex)^n))^2}{2fx^2} - \frac{g\log\left(-\frac{ex}{d}\right)(a+b\log(c(d+ex)^n))^2}{f^2} - \frac{g^{3/2}\int\cdots}{\cdots}$$

$$= -\frac{(a+b\log(c(d+ex)^n))^2}{2fx^2} - \frac{g\log\left(-\frac{ex}{d}\right)(a+b\log(c(d+ex)^n))^2}{f^2} + \frac{g(a+\cdots}{\cdots}$$

$$= -\frac{ben(d+ex)(a+b\log(c(d+ex)^n))}{d^2fx} - \frac{(a+b\log(c(d+ex)^n))^2}{2fx^2} - \frac{g\log\left(\cdots\right.}{\cdots}$$

$$= \frac{b^2e^2n^2\log(x)}{d^2f} - \frac{ben(d+ex)(a+b\log(c(d+ex)^n))}{d^2fx} - \frac{be^2n\log\left(-\frac{ex}{d}\right)(a+\cdots}{d^2\cdots}$$

$$= \frac{b^2e^2n^2\log(x)}{d^2f} - \frac{ben(d+ex)(a+b\log(c(d+ex)^n))}{d^2fx} - \frac{be^2n\log\left(-\frac{ex}{d}\right)(a+\cdots}{d^2\cdots}$$

Mathematica [C] Result contains complex when optimal does not.

time = 0.40, size = 811, normalized size = 1.47

$$\frac{-d^2 f\left(a-bn\log(d+ex)+b\log\left(c(d+ex)^n\right)\right)^2-2d^2gx^2\log(x)\left(a-bn\log(d+ex)+b\log\left(c(d+ex)^n\right)\right)^2+d^2gx^2\left(a-bn\log(d+ex)+b\log\left(c(d+ex)^n\right)\right)^2\log\left(f+gx^2\right)-2bn\left(a-bn\log(d+ex)+b\log\left(c(d+ex)^n\right)\right)\left(f\left(dex+e^2x^2\log(x)+\left(d^2-e^2x^2\right)\log(d+ex)\right)-d^2gx^2\left(\log(d+ex)\log\left(\frac{e\left(\sqrt{f}+i\sqrt{g}\,x\right)}{e\sqrt{f}-id\sqrt{g}}\right)+\mathrm{Li}_2\left(-\frac{i\sqrt{g}\,(d+ex)}{e\sqrt{f}-id\sqrt{g}}\right)\right)-d^2gx^2\left(\log(d+ex)\log\left(\frac{e\left(\sqrt{f}-i\sqrt{g}\,x\right)}{e\sqrt{f}+id\sqrt{g}}\right)+\mathrm{Li}_2\left(\frac{i\sqrt{g}\,(d+ex)}{e\sqrt{f}+id\sqrt{g}}\right)\right)+2d^2gx^2\left(\log\left(-\frac{ex}{d}\right)\log(d+ex)+\mathrm{Li}_2\left(1+\frac{ex}{d}\right)\right)\right)+b^2n^2\left(f\left(2e^2x^2\log(x)-\log(d+ex)\left(2e^2x^2\log\left(-\frac{ex}{d}\right)+(d+ex)(2ex+(d-ex)\log(d+ex))\right)-2e^2x^2\mathrm{Li}_2\left(1+\frac{ex}{d}\right)\right)+d^2gx^2\left(\log^2(d+ex)\log\left(1-\frac{\sqrt{g}\,(d+ex)}{-ie\sqrt{f}+d\sqrt{g}}\right)+2\log(d+ex)\mathrm{Li}_2\left(\frac{\sqrt{g}\,(d+ex)}{-ie\sqrt{f}+d\sqrt{g}}\right)-2\mathrm{Li}_3\left(\frac{\sqrt{g}\,(d+ex)}{-ie\sqrt{f}+d\sqrt{g}}\right)\right)+d^2gx^2\left(\log^2(d+ex)\log\left(1-\frac{\sqrt{g}\,(d+ex)}{ie\sqrt{f}+d\sqrt{g}}\right)+2\log(d+ex)\mathrm{Li}_2\left(\frac{\sqrt{g}\,(d+ex)}{ie\sqrt{f}+d\sqrt{g}}\right)-2\mathrm{Li}_3\left(\frac{\sqrt{g}\,(d+ex)}{ie\sqrt{f}+d\sqrt{g}}\right)\right)-2d^2gx^2\left(\log\left(-\frac{ex}{d}\right)\log^2(d+ex)+2\log(d+ex)\mathrm{Li}_2\left(1+\frac{ex}{d}\right)-2\mathrm{Li}_3\left(1+\frac{ex}{d}\right)\right)\right)}{2d^2f^2x^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^2/(x^3*(f + g*x^2)),x]
```

```
[Out] (-(d^2*f*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2) - 2*d^2*g*x^2*Log
[x]*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2 + d^2*g*x^2*(a - b*n*Lo
g[d + e*x] + b*Log[c*(d + e*x)^n])^2*Log[f + g*x^2] - 2*b*n*(a - b*n*Log[d
+ e*x] + b*Log[c*(d + e*x)^n])*(f*(d*e*x + e^2*x^2*Log[x] + (d^2 - e^2*x^2)
*Log[d + e*x]) - d^2*g*x^2*(Log[d + e*x]*Log[(e*(Sqrt[f] + I*Sqrt[g]*x))/(e
*Sqrt[f] - I*d*Sqrt[g])] + PolyLog[2, ((-I)*Sqrt[g]*(d + e*x))/(e*Sqrt[f] -
 I*d*Sqrt[g])]) - d^2*g*x^2*(Log[d + e*x]*Log[(e*(Sqrt[f] - I*Sqrt[g]*x))/(
e*Sqrt[f] + I*d*Sqrt[g])] + PolyLog[2, (I*Sqrt[g]*(d + e*x))/(e*Sqrt[f] + I
*d*Sqrt[g])]) + 2*d^2*g*x^2*(Log[-((e*x)/d)]*Log[d + e*x] + PolyLog[2, 1 +
(e*x)/d])) + b^2*n^2*(f*(2*e^2*x^2*Log[x] - Log[d + e*x]*(2*e^2*x^2*Log[-((
e*x)/d)] + (d + e*x)*(2*e*x + (d - e*x)*Log[d + e*x])) - 2*e^2*x^2*PolyLog[
2, 1 + (e*x)/d]) + d^2*g*x^2*(Log[d + e*x]^2*Log[1 - (Sqrt[g]*(d + e*x))/((
-I)*e*Sqrt[f] + d*Sqrt[g])] + 2*Log[d + e*x]*PolyLog[2, (Sqrt[g]*(d + e*x))
/((-I)*e*Sqrt[f] + d*Sqrt[g])] - 2*PolyLog[3, (Sqrt[g]*(d + e*x))/((-I)*e*S
qrt[f] + d*Sqrt[g])]) + d^2*g*x^2*(Log[d + e*x]^2*Log[1 - (Sqrt[g]*(d + e*x
))/(I*e*Sqrt[f] + d*Sqrt[g])] + 2*Log[d + e*x]*PolyLog[2, (Sqrt[g]*(d + e*x
))/(I*e*Sqrt[f] + d*Sqrt[g])] - 2*PolyLog[3, (Sqrt[g]*(d + e*x))/(I*e*Sqrt[
f] + d*Sqrt[g])]) - 2*d^2*g*x^2*(Log[-((e*x)/d)]*Log[d + e*x]^2 + 2*Log[d +
 e*x]*PolyLog[2, 1 + (e*x)/d] - 2*PolyLog[3, 1 + (e*x)/d])))/(2*d^2*f^2*x^2
)
```

Maple [F]
time = 0.15, size = 0, normalized size = 0.00

$$\int \frac{\left(a+b\ln\left(c(ex+d)^n\right)\right)^2}{x^3\left(g\,x^2+f\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))^2/x^3/(g*x^2+f),x)
```

```
[Out] int((a+b*ln(c*(e*x+d)^n))^2/x^3/(g*x^2+f),x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/x^3/(g*x^2+f),x, algorithm="maxima")
```

```
[Out] 1/2*a^2*(g*log(g*x^2 + f)/f^2 - 2*g*log(x)/f^2 - 1/(f*x^2)) + integrate((b^
2*log((x*e + d)^n)^2 + b^2*log(c)^2 + 2*a*b*log(c) + 2*(b^2*log(c) + a*b)*l
og((x*e + d)^n))/(g*x^5 + f*x^3), x)
```

Fricas [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/x^3/(g*x^2+f),x, algorithm="fricas")
```

```
[Out] integral((b^2*log((x*e + d)^n*c)^2 + 2*a*b*log((x*e + d)^n*c) + a^2)/(g*x^5
 + f*x^3), x)
```

Sympy [**F(-1)**] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**2/x**3/(g*x**2+f),x)
```

```
[Out] Timed out
```

Giac [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/x^3/(g*x^2+f),x, algorithm="giac")
```

```
[Out] integrate((b*log((x*e + d)^n*c) + a)^2/((g*x^2 + f)*x^3), x)
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{{\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)}^2}{x^3\,\left(g\,x^2+f\right)} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))^2/(x^3*(f + g*x^2)),x)
```

```
[Out] int((a + b*log(c*(d + e*x)^n))^2/(x^3*(f + g*x^2)), x)
```

3.315 $\int \frac{x^4(a+b\log(c(d+ex)^n))^2}{f+gx^2}\,dx$

Optimal. Leaf size=701

$$\frac{2abfnx}{g^2}-\frac{2b^2fn^2x}{g^2}+\frac{2b^2d^2n^2x}{e^2g}-\frac{b^2dn^2(d+ex)^2}{2e^3g}+\frac{2b^2n^2(d+ex)^3}{27e^3g}-\frac{b^2d^3n^2\log^2(d+ex)}{3e^3g}+\frac{2b^2fn(d+ex)\log(}{eg^2}$$

[Out] 2*a*b*f*n*x/g^2-2*b^2*f*n^2*x/g^2+2*b^2*d^2*n^2*x/e^2/g-1/2*b^2*d*n^2*(e*x+d)^2/e^3/g+2/27*b^2*n^2*(e*x+d)^3/e^3/g-1/3*b^2*d^3*n^2*ln(e*x+d)^2/e^3/g+2*b^2*f*n*(e*x+d)*ln(c*(e*x+d)^n)/e/g^2-2*b*d^2*n*(e*x+d)*(a+b*ln(c*(e*x+d)^n))/e^3/g+b*d*n*(e*x+d)^2*(a+b*ln(c*(e*x+d)^n))/e^3/g-2/9*b*n*(e*x+d)^3*(a+b*ln(c*(e*x+d)^n))/e^3/g+2/3*b*d^3*n*ln(e*x+d)*(a+b*ln(c*(e*x+d)^n))/e^3/g+1/3*x^3*(a+b*ln(c*(e*x+d)^n))^2/g-f*(e*x+d)*(a+b*ln(c*(e*x+d)^n))^2/e/g^2+1/2*(-f)^(3/2)*(a+b*ln(c*(e*x+d)^n))^2*ln(e*((-f)^(1/2)-x*g^(1/2))/(e*(-f)^(1/2)+d*g^(1/2)))/g^(5/2)-1/2*(-f)^(3/2)*(a+b*ln(c*(e*x+d)^n))^2*ln(e*((-f)^(1/2)+x*g^(1/2))/(e*(-f)^(1/2)-d*g^(1/2)))/g^(5/2)-b*(-f)^(3/2)*n*(a+b*ln(c*(e*x+d)^n))*polylog(2,-(e*x+d)*g^(1/2)/(e*(-f)^(1/2)-d*g^(1/2)))/g^(5/2)+b*(-f)^(3/2)*n*(a+b*ln(c*(e*x+d)^n))*polylog(2,(e*x+d)*g^(1/2)/(e*(-f)^(1/2)+d*g^(1/2)))/g^(5/2)+b^2*(-f)^(3/2)*n^2*polylog(3,-(e*x+d)*g^(1/2)/(e*(-f)^(1/2)-d*g^(1/2)))/g^(5/2)-b^2*(-f)^(3/2)*n^2*polylog(3,(e*x+d)*g^(1/2)/(e*(-f)^(1/2)+d*g^(1/2)))/g^(5/2)

Rubi [A]
time = 0.67, antiderivative size = 701, normalized size of antiderivative = 1.00, number of steps used = 23, number of rules used = 16, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.552$, Rules used = {2463, 2436, 2333, 2332, 2445, 2458, 45, 2372, 12, 14, 2338, 2456, 2443, 2481, 2421, 6724}

Antiderivative was successfully verified.

[In] Int[(x^4*(a + b*Log[c*(d + e*x)^n])^2)/(f + g*x^2),x]

[Out] (2*a*b*f*n*x)/g^2 - (2*b^2*f*n^2*x)/g^2 + (2*b^2*d^2*n^2*x)/(e^2*g) - (b^2*d*n^2*(d + e*x)^2)/(2*e^3*g) + (2*b^2*n^2*(d + e*x)^3)/(27*e^3*g) - (b^2*d^3*n^2*Log[d + e*x]^2)/(3*e^3*g) + (2*b^2*f*n*(d + e*x)*Log[c*(d + e*x)^n])/(e*g^2) - (2*b*d^2*n*(d + e*x)*(a + b*Log[c*(d + e*x)^n]))/(e^3*g) + (b*d*n*(d + e*x)^2*(a + b*Log[c*(d + e*x)^n]))/(e^3*g) - (2*b*n*(d + e*x)^3*(a + b*Log[c*(d + e*x)^n]))/(9*e^3*g) + (2*b*d^3*n*Log[d + e*x]*(a + b*Log[c*(d + e*x)^n]))/(3*e^3*g) + (x^3*(a + b*Log[c*(d + e*x)^n])^2)/(3*g) - (f*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^2)/(e*g^2) + ((-f)^(3/2)*(a + b*Log[c*(d + e*x)^n])^2*Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(2*g^(

```
5/2)) - ((-f)^(3/2)*(a + b*Log[c*(d + e*x)^n])^2*Log[(e*(Sqrt[-f] + Sqrt[g]
*x))/(e*Sqrt[-f] - d*Sqrt[g])])/(2*g^(5/2)) - (b*(-f)^(3/2)*n*(a + b*Log[c*
(d + e*x)^n])*PolyLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/
g^(5/2) + (b*(-f)^(3/2)*n*(a + b*Log[c*(d + e*x)^n])*PolyLog[2, (Sqrt[g]*(d
 + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/g^(5/2) + (b^2*(-f)^(3/2)*n^2*PolyLog[3
, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/g^(5/2) - (b^2*(-f)^(3/
2)*n^2*PolyLog[3, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/g^(5/2)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] &&  !LinearQ[u, x] &&  !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2332

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2333

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2338

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2372

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*(x_)^(m_.)*((d_) + (e_.)*(x_)^(r_
.))^(q_.), x_Symbol] :> With[{u = IntHide[x^m*(d + e*x^r)^q, x]}, Dist[a +
b*Log[c*x^n], u, x] - Dist[b*n, Int[SimplifyIntegrand[u/x, x], x], x]] /; F
```

```
reeQ[{a, b, c, d, e, n, r}, x] && IGtQ[q, 0] && IntegerQ[m] &&  !(EqQ[q, 1]
 && EqQ[m, -1])
```

Rule 2421

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> Simp[(-PolyLog[2, (-d)*f*x^m])*((a + b*Log[c
*x^n])^p/m), x] + Dist[b*n*(p/m), Int[PolyLog[2, (-d)*f*x^m]*((a + b*Log[c*
x^n])^(p - 1)/x), x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0
] && EqQ[d*e, 1]
```

Rule 2436

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2443

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d
+ e*x)^n])^p/g), x] - Dist[b*e*n*(p/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]*
((a + b*Log[c*(d + e*x)^n])^(p - 1)/(d + e*x)), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[(f + g*x)^(q + 1)*((a + b*Log[c*(d + e*x)^
n])^p/(g*(q + 1))), x] - Dist[b*e*n*(p/(g*(q + 1))), Int[(f + g*x)^(q + 1)*
((a + b*Log[c*(d + e*x)^n])^(p - 1)/(d + e*x)), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && GtQ[p, 0] && NeQ[q, -1] && Int
egersQ[2*p, 2*q] && ( !IGtQ[q, 0] || (EqQ[p, 2] && NeQ[q, 1]))
```

Rule 2456

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_)^(r_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a + b*Log[c*(d + e*x)
^n])^p, (f + g*x^r)^q, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, r}, x] && I
GtQ[p, 0] && IntegerQ[q] && (GtQ[q, 0] || (IntegerQ[r] && NeQ[r, 1]))
```

Rule 2458

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[(g*(x/e))^q*((e*h - d*i)/e + i*(x/e))^r*(a + b*Log[c*x^n])^p, x], x, d + e
```

```
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2463

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rule 2481

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[(k*(x/d))^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + j*(x/e))^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 6724

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{x^4(a+b\log(c(d+ex)^n))^2}{f+gx^2}\,dx = \int \left(-\frac{f(a+b\log(c(d+ex)^n))^2}{g^2}+\frac{x^2(a+b\log(c(d+ex)^n))^2}{g}+\frac{f^2(a-\right.$$

$$= -\frac{f\int (a+b\log(c(d+ex)^n))^2\,dx}{g^2}+\frac{f^2\int \frac{(a+b\log(c(d+ex)^n))^2}{f+gx^2}\,dx}{g^2}+\frac{\int x^2(a}{}$$

$$= \frac{x^3(a+b\log(c(d+ex)^n))^2}{3g}-\frac{f\mathrm{Subst}\left(\int (a+b\log(cx^n))^2\,dx,x,d+ex\right)}{eg^2}$$

$$= \frac{x^3(a+b\log(c(d+ex)^n))^2}{3g}-\frac{f(d+ex)(a+b\log(c(d+ex)^n))^2}{eg^2}-\frac{(-f}{}$$

$$= \frac{2abfnx}{g^2}-\frac{bn\left(\frac{18d^2(d+ex)}{e^3}-\frac{9d(d+ex)^2}{e^3}+\frac{2(d+ex)^3}{e^3}-\frac{6d^3\log(d+ex)}{e^3}\right)(a+b\log}{9g}$$

$$= \frac{2abfnx}{g^2}-\frac{2b^2fn^2x}{g^2}+\frac{2b^2fn(d+ex)\log(c(d+ex)^n)}{eg^2}-\frac{bn\left(\frac{18d^2(d+ex)}{e^3}-\right.}{}$$

$$= \frac{2abfnx}{g^2}-\frac{2b^2fn^2x}{g^2}+\frac{2b^2fn(d+ex)\log(c(d+ex)^n)}{eg^2}-\frac{bn\left(\frac{18d^2(d+ex)}{e^3}-\right.}{}$$

$$= \frac{2abfnx}{g^2}-\frac{2b^2fn^2x}{g^2}+\frac{2b^2d^2n^2x}{e^2g}-\frac{b^2dn^2(d+ex)^2}{2e^3g}+\frac{2b^2n^2(d+ex)^3}{27e^3g}+$$

$$= \frac{2abfnx}{g^2}-\frac{2b^2fn^2x}{g^2}+\frac{2b^2d^2n^2x}{e^2g}-\frac{b^2dn^2(d+ex)^2}{2e^3g}+\frac{2b^2n^2(d+ex)^3}{27e^3g}-$$

Mathematica [C] Result contains complex when optimal does not.
time = 0.56, size = 821, normalized size = 1.17

Antiderivative was successfully verified.

```
[In] Integrate[(x^4*(a + b*Log[c*(d + e*x)^n])^2)/(f + g*x^2),x]
```

```
[Out] (-54*e^3*f*Sqrt[g]*x*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2 + 18*e
^3*g^(3/2)*x^3*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2 + 54*e^3*f^(
3/2)*ArcTan[(Sqrt[g]*x)/Sqrt[f]]*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^
n])^2 + 6*b*n*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])*(-18*e^2*f*Sqrt
[g]*(d + e*x)*(-1 + Log[d + e*x]) + g^(3/2)*(e*x*(-6*d^2 + 3*d*e*x - 2*e^2*
x^2) + 6*(d^3 + e^3*x^3)*Log[d + e*x]) + (9*I)*e^3*f^(3/2)*(Log[d + e*x]*Lo
g[1 - (Sqrt[g]*(d + e*x))/((-I)*e*Sqrt[f] + d*Sqrt[g])] + PolyLog[2, (Sqrt[
g]*(d + e*x))/((-I)*e*Sqrt[f] + d*Sqrt[g])]) - (9*I)*e^3*f^(3/2)*(Log[d + e
*x]*Log[1 - (Sqrt[g]*(d + e*x))/(I*e*Sqrt[f] + d*Sqrt[g])] + PolyLog[2, (Sq
rt[g]*(d + e*x))/(I*e*Sqrt[f] + d*Sqrt[g])])) + b^2*n^2*(-54*e^2*f*Sqrt[g]*
(2*e*x - 2*(d + e*x)*Log[d + e*x] + (d + e*x)*Log[d + e*x]^2) + g^(3/2)*(e*
x*(66*d^2 - 15*d*e*x + 4*e^2*x^2) - 6*(11*d^3 + 6*d^2*e*x - 3*d*e^2*x^2 + 2
*e^3*x^3)*Log[d + e*x] + 18*(d^3 + e^3*x^3)*Log[d + e*x]^2) + (27*I)*e^3*f^
(3/2)*(Log[d + e*x]^2*Log[1 - (Sqrt[g]*(d + e*x))/((-I)*e*Sqrt[f] + d*Sqrt[
g])] + 2*Log[d + e*x]*PolyLog[2, (Sqrt[g]*(d + e*x))/((-I)*e*Sqrt[f] + d*Sq
rt[g])] - 2*PolyLog[3, (Sqrt[g]*(d + e*x))/((-I)*e*Sqrt[f] + d*Sqrt[g])]) -
 (27*I)*e^3*f^(3/2)*(Log[d + e*x]^2*Log[1 - (Sqrt[g]*(d + e*x))/(I*e*Sqrt[f
] + d*Sqrt[g])] + 2*Log[d + e*x]*PolyLog[2, (Sqrt[g]*(d + e*x))/(I*e*Sqrt[f
] + d*Sqrt[g])] - 2*PolyLog[3, (Sqrt[g]*(d + e*x))/(I*e*Sqrt[f] + d*Sqrt[g]
)])))/(54*e^3*g^(5/2))
```

Maple [F]
time = 0.68, size = 0, normalized size = 0.00

$$\int \frac{x^{4} \left(a +b \ln \left(c \left(e x +d \right)^{n}\right)\right)^{2}}{g \,x^{2}+f}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(a+b*ln(c*(e*x+d)^n))^2/(g*x^2+f),x)
```

```
[Out] int(x^4*(a+b*ln(c*(e*x+d)^n))^2/(g*x^2+f),x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(a+b*log(c*(e*x+d)^n))^2/(g*x^2+f),x, algorithm="maxima")
```

```
[Out] 1/3*a^2*(3*f^2*arctan(g*x/sqrt(f*g))/(sqrt(f*g)*g^2) + (g*x^3 - 3*f*x)/g^2)
 + integrate((b^2*x^4*log((x*e + d)^n)^2 + 2*(b^2*log(c) + a*b)*x^4*log((x*
e + d)^n) + (b^2*log(c)^2 + 2*a*b*log(c))*x^4)/(g*x^2 + f), x)
```

Fricas [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(a+b*log(c*(e*x+d)^n))^2/(g*x^2+f),x, algorithm="fricas")
```

```
[Out] integral((b^2*x^4*log((x*e + d)^n*c)^2 + 2*a*b*x^4*log((x*e + d)^n*c) + a^2
*x^4)/(g*x^2 + f), x)
```

Sympy [**F(-1)**] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**4*(a+b*ln(c*(e*x+d)**n))**2/(g*x**2+f),x)
```

```
[Out] Timed out
```

Giac [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(a+b*log(c*(e*x+d)^n))^2/(g*x^2+f),x, algorithm="giac")
```

```
[Out] integrate((b*log((x*e + d)^n*c) + a)^2*x^4/(g*x^2 + f), x)
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x^4\,{\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)}^2}{g\,x^2+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^4*(a + b*log(c*(d + e*x)^n))^2)/(f + g*x^2),x)
```

```
[Out] int((x^4*(a + b*log(c*(d + e*x)^n))^2)/(f + g*x^2), x)
```

3.316 $\int \frac{x^2(a+b\log(c(d+ex)^n))^2}{f+gx^2}\,dx$

Optimal. Leaf size=447

$$-\frac{2abnx}{g}+\frac{2b^2n^2x}{g}-\frac{2b^2n(d+ex)\log\left(c(d+ex)^n\right)}{eg}+\frac{(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{eg}+\frac{\sqrt{-f}\,\left(a+b\log\left(c(d+\right.\right.}{}$$

```
[Out] -2*a*b*n*x/g+2*b^2*n^2*x/g-2*b^2*n*(e*x+d)*ln(c*(e*x+d)^n)/e/g+(e*x+d)*(a+b
*ln(c*(e*x+d)^n))^2/e/g+1/2*(a+b*ln(c*(e*x+d)^n))^2*ln(e*((-f)^(1/2)-x*g^(1
/2))/(e*(-f)^(1/2)+d*g^(1/2)))*(-f)^(1/2)/g^(3/2)-1/2*(a+b*ln(c*(e*x+d)^n))
^2*ln(e*((-f)^(1/2)+x*g^(1/2))/(e*(-f)^(1/2)-d*g^(1/2)))*(-f)^(1/2)/g^(3/2)
-b*n*(a+b*ln(c*(e*x+d)^n))*polylog(2,-(e*x+d)*g^(1/2)/(e*(-f)^(1/2)-d*g^(1/
2)))*(-f)^(1/2)/g^(3/2)+b*n*(a+b*ln(c*(e*x+d)^n))*polylog(2,(e*x+d)*g^(1/2)
/(e*(-f)^(1/2)+d*g^(1/2)))*(-f)^(1/2)/g^(3/2)+b^2*n^2*polylog(3,-(e*x+d)*g^
(1/2)/(e*(-f)^(1/2)-d*g^(1/2)))*(-f)^(1/2)/g^(3/2)-b^2*n^2*polylog(3,(e*x+d
)*g^(1/2)/(e*(-f)^(1/2)+d*g^(1/2)))*(-f)^(1/2)/g^(3/2)
```

Rubi [A]
time = 0.44, antiderivative size = 447, normalized size of antiderivative = 1.00, number of steps used = 16, number of rules used = 9, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.310$, Rules used = {2463, 2436, 2333, 2332, 2456, 2443, 2481, 2421, 6724}

$$-\frac{b\sqrt{-f}\,n\,\text{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{g^{3/2}}+\frac{b\sqrt{-f}\,n\,\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+e\sqrt{-f}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{g^{3/2}}+\frac{b^2\sqrt{-f}\,n^2\,\text{PolyLog}\left(3,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)}{g^{3/2}}-\frac{b^2\sqrt{-f}\,n^2\,\text{PolyLog}\left(3,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+e\sqrt{-f}}\right)}{g^{3/2}}+\frac{\sqrt{-f}\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}x\right)}{d\sqrt{g}+e\sqrt{-f}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{2g^{3/2}}-\frac{\sqrt{-f}\log\left(\frac{e\left(\sqrt{-f}+\sqrt{g}x\right)}{e\sqrt{-f}-d\sqrt{g}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{2g^{3/2}}+\frac{(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{eg}-\frac{2abnx}{g}-\frac{2b^2n(d+ex)\log\left(c(d+ex)^n\right)}{eg}+\frac{2b^2n^2x}{g}$$

Antiderivative was successfully verified.

```
[In] Int[(x^2*(a + b*Log[c*(d + e*x)^n])^2)/(f + g*x^2),x]
```

```
[Out] (-2*a*b*n*x)/g + (2*b^2*n^2*x)/g - (2*b^2*n*(d + e*x)*Log[c*(d + e*x)^n])/(
e*g) + ((d + e*x)*(a + b*Log[c*(d + e*x)^n])^2)/(e*g) + (Sqrt[-f]*(a + b*Lo
g[c*(d + e*x)^n])^2*Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[-f] + d*Sqrt[g])
])/(2*g^(3/2)) - (Sqrt[-f]*(a + b*Log[c*(d + e*x)^n])^2*Log[(e*(Sqrt[-f] +
Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g])])/(2*g^(3/2)) - (b*Sqrt[-f]*n*(a + b*L
og[c*(d + e*x)^n])*PolyLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]
))])/g^(3/2) + (b*Sqrt[-f]*n*(a + b*Log[c*(d + e*x)^n])*PolyLog[2, (Sqrt[g]
*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/g^(3/2) + (b^2*Sqrt[-f]*n^2*PolyLog[
3, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/g^(3/2) - (b^2*Sqrt[-f
]*n^2*PolyLog[3, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/g^(3/2)
```

Rule 2332

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2333

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2421

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> Simp[(-PolyLog[2, (-d)*f*x^m])*((a + b*Log[c
*x^n])^p/m), x] + Dist[b*n*(p/m), Int[PolyLog[2, (-d)*f*x^m]*((a + b*Log[c*
x^n])^(p - 1)/x), x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0
] && EqQ[d*e, 1]
```

Rule 2436

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2443

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d
+ e*x)^n])^p/g), x] - Dist[b*e*n*(p/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]*
((a + b*Log[c*(d + e*x)^n])^(p - 1)/(d + e*x)), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2456

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_)^(r_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a + b*Log[c*(d + e*x)
^n])^p, (f + g*x^r)^q, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, r}, x] && I
GtQ[p, 0] && IntegerQ[q] && (GtQ[q, 0] || (IntegerQ[r] && NeQ[r, 1]))
```

Rule 2463

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rule 2481

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[(k*(x/d))^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
```

```
(e*i - d*j)/e + j*(x/e))^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 6724

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{x^2(a+b\log(c(d+ex)^n))^2}{f+gx^2}\,dx = \int \left(\frac{(a+b\log(c(d+ex)^n))^2}{g} - \frac{f(a+b\log(c(d+ex)^n))^2}{g(f+gx^2)}\right)dx$$

$$= \frac{\int (a+b\log(c(d+ex)^n))^2\,dx}{g} - \frac{f\int \frac{(a+b\log(c(d+ex)^n))^2}{f+gx^2}\,dx}{g}$$

$$= \frac{\text{Subst}\left(\int (a+b\log(cx^n))^2\,dx, x, d+ex\right)}{eg} - \frac{f\int\left(\frac{\sqrt{-f}\,(a+b\log(c(d+ex)^n)}{2f\left(\sqrt{-f}-\sqrt{g}\,x\right)}\right.}{}$$

$$= \frac{(d+ex)(a+b\log(c(d+ex)^n))^2}{eg} - \frac{\sqrt{-f}\int \frac{(a+b\log(c(d+ex)^n))^2}{\sqrt{-f}-\sqrt{g}\,x}\,dx}{2g} - \frac{\sqrt{}}{}$$

$$= -\frac{2abnx}{g} + \frac{(d+ex)(a+b\log(c(d+ex)^n))^2}{eg} + \frac{\sqrt{-f}\,(a+b\log(c(d+}{}$$

$$= -\frac{2abnx}{g} + \frac{2b^2n^2x}{g} - \frac{2b^2n(d+ex)\log(c(d+ex)^n)}{eg} + \frac{(d+ex)(a+b\log}{eg}$$

$$= -\frac{2abnx}{g} + \frac{2b^2n^2x}{g} - \frac{2b^2n(d+ex)\log(c(d+ex)^n)}{eg} + \frac{(d+ex)(a+b\log}{eg}$$

$$= -\frac{2abnx}{g} + \frac{2b^2n^2x}{g} - \frac{2b^2n(d+ex)\log(c(d+ex)^n)}{eg} + \frac{(d+ex)(a+b\log}{eg}$$

Mathematica [C] Result contains complex when optimal does not.
time = 0.34, size = 623, normalized size = 1.39

$$\frac{e\sqrt{g}\,x(a-bn\log(d+ex)+b\log(c(d+ex)^n))^2 - e\sqrt{f}\tan^{-1}\left(\frac{\sqrt{g}\,x}{\sqrt{f}}\right)(a-bn\log(d+ex)+b\log(c(d+ex)^n))^2 + ibn(a-bn\log(d+ex)+b\log(c(d+ex)^n))\left(-2i\sqrt{g}\,(d+ex)(-1+\log(d+ex)) - e\sqrt{f}\left(\log(d+ex)\log\left(1-\frac{\sqrt{g}\,(d+ex)}{-ie\sqrt{f}+d\sqrt{g}}\right)+\text{Li}_2\left(\frac{\sqrt{g}\,(d+ex)}{-ie\sqrt{f}+d\sqrt{g}}\right)\right) + e\sqrt{f}\left(\log(d+ex)\log\left(1-\frac{\sqrt{g}\,(d+ex)}{ie\sqrt{f}+d\sqrt{g}}\right)+\text{Li}_2\left(\frac{\sqrt{g}\,(d+ex)}{ie\sqrt{f}+d\sqrt{g}}\right)\right)\right) + b^2n^2\left(\sqrt{g}\,(2ex-2(d+ex)\log(d+ex)+(d+ex)\log^2(d+ex)) - \frac{1}{2}ie\sqrt{f}\left(\log^2(d+ex)\log\left(1-\frac{\sqrt{g}\,(d+ex)}{-ie\sqrt{f}+d\sqrt{g}}\right)+2\log(d+ex)\text{Li}_2\left(\frac{\sqrt{g}\,(d+ex)}{-ie\sqrt{f}+d\sqrt{g}}\right)-2\text{Li}_3\left(\frac{\sqrt{g}\,(d+ex)}{-ie\sqrt{f}+d\sqrt{g}}\right)\right) + \frac{1}{2}ie\sqrt{f}\left(\log^2(d+ex)\log\left(1-\frac{\sqrt{g}\,(d+ex)}{ie\sqrt{f}+d\sqrt{g}}\right)+2\log(d+ex)\text{Li}_2\left(\frac{\sqrt{g}\,(d+ex)}{ie\sqrt{f}+d\sqrt{g}}\right)-2\text{Li}_3\left(\frac{\sqrt{g}\,(d+ex)}{ie\sqrt{f}+d\sqrt{g}}\right)\right)\right)}{eg^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^2*(a + b*Log[c*(d + e*x)^n])^2)/(f + g*x^2),x]
```

```
[Out] (e*Sqrt[g]*x*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2 - e*Sqrt[f]*Ar
cTan[(Sqrt[g]*x)/Sqrt[f]]*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2 +
 I*b*n*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])*((-2*I)*Sqrt[g]*(d + e
*x)*(-1 + Log[d + e*x]) - e*Sqrt[f]*(Log[d + e*x]*Log[1 - (Sqrt[g]*(d + e*x
))/((-I)*e*Sqrt[f] + d*Sqrt[g])] + PolyLog[2, (Sqrt[g]*(d + e*x))/((-I)*e*S
qrt[f] + d*Sqrt[g])]) + e*Sqrt[f]*(Log[d + e*x]*Log[1 - (Sqrt[g]*(d + e*x))
/(I*e*Sqrt[f] + d*Sqrt[g])] + PolyLog[2, (Sqrt[g]*(d + e*x))/(I*e*Sqrt[f] +
 d*Sqrt[g])])) + b^2*n^2*(Sqrt[g]*(2*e*x - 2*(d + e*x)*Log[d + e*x] + (d +
e*x)*Log[d + e*x]^2) - (I/2)*e*Sqrt[f]*(Log[d + e*x]^2*Log[1 - (Sqrt[g]*(d
+ e*x))/((-I)*e*Sqrt[f] + d*Sqrt[g])] + 2*Log[d + e*x]*PolyLog[2, (Sqrt[g]*
(d + e*x))/((-I)*e*Sqrt[f] + d*Sqrt[g])] - 2*PolyLog[3, (Sqrt[g]*(d + e*x))
/((-I)*e*Sqrt[f] + d*Sqrt[g])]) + (I/2)*e*Sqrt[f]*(Log[d + e*x]^2*Log[1 - (
Sqrt[g]*(d + e*x))/(I*e*Sqrt[f] + d*Sqrt[g])] + 2*Log[d + e*x]*PolyLog[2, (
Sqrt[g]*(d + e*x))/(I*e*Sqrt[f] + d*Sqrt[g])] - 2*PolyLog[3, (Sqrt[g]*(d +
e*x))/(I*e*Sqrt[f] + d*Sqrt[g])])))/(e*g^(3/2))
```

Maple [F]
time = 0.16, size = 0, normalized size = 0.00

$$\int \frac{x^{2}(a+b\ln\left(c(ex+d)^{n}\right))^{2}}{g\,x^{2}+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(a+b*ln(c*(e*x+d)^n))^2/(g*x^2+f),x)
```

```
[Out] int(x^2*(a+b*ln(c*(e*x+d)^n))^2/(g*x^2+f),x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*log(c*(e*x+d)^n))^2/(g*x^2+f),x, algorithm="maxima")
```

```
[Out] -a^2*(f*arctan(g*x/sqrt(f*g))/(sqrt(f*g)*g) - x/g) + integrate((b^2*x^2*log
((x*e + d)^n)^2 + 2*(b^2*log(c) + a*b)*x^2*log((x*e + d)^n) + (b^2*log(c)^2
 + 2*a*b*log(c))*x^2)/(g*x^2 + f), x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*log(c*(e*x+d)^n))^2/(g*x^2+f),x, algorithm="fricas")
```

```
[Out] integral((b^2*x^2*log((x*e + d)^n*c)^2 + 2*a*b*x^2*log((x*e + d)^n*c) + a^2
*x^2)/(g*x^2 + f), x)
```

Sympy [**F(-1)**] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(a+b*ln(c*(e*x+d)**n))**2/(g*x**2+f),x)
```

```
[Out] Timed out
```

Giac [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*log(c*(e*x+d)^n))^2/(g*x^2+f),x, algorithm="giac")
```

```
[Out] integrate((b*log((x*e + d)^n*c) + a)^2*x^2/(g*x^2 + f), x)
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x^2\,{\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)}^2}{g\,x^2+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^2*(a + b*log(c*(d + e*x)^n))^2)/(f + g*x^2),x)
```

```
[Out] int((x^2*(a + b*log(c*(d + e*x)^n))^2)/(f + g*x^2), x)
```

3.317 $\int \frac{(a+b\log(c(d+ex)^n))^2}{f+gx^2}\,dx$

Optimal. Leaf size=371

$$\frac{(a+b\log(c(d+ex)^n))^2\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}\,x\right)}{e\sqrt{-f}+d\sqrt{g}}\right)}{2\sqrt{-f}\,\sqrt{g}}-\frac{(a+b\log(c(d+ex)^n))^2\log\left(\frac{e\left(\sqrt{-f}+\sqrt{g}\,x\right)}{e\sqrt{-f}-d\sqrt{g}}\right)}{2\sqrt{-f}\,\sqrt{g}}-\frac{bn(a}{}$$

```
[Out] 1/2*(a+b*ln(c*(e*x+d)^n))^2*ln(e*((-f)^(1/2)-x*g^(1/2))/(e*(-f)^(1/2)+d*g^(
1/2)))/(-f)^(1/2)/g^(1/2)-1/2*(a+b*ln(c*(e*x+d)^n))^2*ln(e*((-f)^(1/2)+x*g^
(1/2))/(e*(-f)^(1/2)-d*g^(1/2)))/(-f)^(1/2)/g^(1/2)-b*n*(a+b*ln(c*(e*x+d)^n
))*polylog(2,-(e*x+d)*g^(1/2)/(e*(-f)^(1/2)-d*g^(1/2)))/(-f)^(1/2)/g^(1/2)+
b*n*(a+b*ln(c*(e*x+d)^n))*polylog(2,(e*x+d)*g^(1/2)/(e*(-f)^(1/2)+d*g^(1/2)
))/(-f)^(1/2)/g^(1/2)+b^2*n^2*polylog(3,-(e*x+d)*g^(1/2)/(e*(-f)^(1/2)-d*g^
(1/2)))/(-f)^(1/2)/g^(1/2)-b^2*n^2*polylog(3,(e*x+d)*g^(1/2)/(e*(-f)^(1/2)+
d*g^(1/2)))/(-f)^(1/2)/g^(1/2)
```

Rubi [A]

time = 0.27, antiderivative size = 371, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 5, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.192$, Rules used = {2456, 2443, 2481, 2421, 6724}

$$-\frac{bn\text{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)(a+b\log(c(d+ex)^n))}{\sqrt{-f}\,\sqrt{g}}+\frac{bn\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+e\sqrt{-f}}\right)(a+b\log(c(d+ex)^n))}{\sqrt{-f}\,\sqrt{g}}+\frac{b^2n^2\text{PolyLog}\left(3,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)}{\sqrt{-f}\,\sqrt{g}}-\frac{b^2n^2\text{PolyLog}\left(3,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+e\sqrt{-f}}\right)}{\sqrt{-f}\,\sqrt{g}}+\frac{\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}\,x\right)}{d\sqrt{g}+e\sqrt{-f}}\right)(a+b\log(c(d+ex)^n))^2}{2\sqrt{-f}\,\sqrt{g}}-\frac{\log\left(\frac{e\left(\sqrt{-f}+\sqrt{g}\,x\right)}{e\sqrt{-f}-d\sqrt{g}}\right)(a+b\log(c(d+ex)^n))^2}{2\sqrt{-f}\,\sqrt{g}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^2/(f + g*x^2),x]
```

```
[Out] ((a + b*Log[c*(d + e*x)^n])^2*Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[-f] +
d*Sqrt[g])])/(2*Sqrt[-f]*Sqrt[g]) - ((a + b*Log[c*(d + e*x)^n])^2*Log[(e*(S
qrt[-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g])])/(2*Sqrt[-f]*Sqrt[g]) - (b*
n*(a + b*Log[c*(d + e*x)^n])*PolyLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] -
 d*Sqrt[g]))])/(Sqrt[-f]*Sqrt[g]) + (b*n*(a + b*Log[c*(d + e*x)^n])*PolyLog
[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(Sqrt[-f]*Sqrt[g]) + (b^
2*n^2*PolyLog[3, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/(Sqrt[-f
]*Sqrt[g]) - (b^2*n^2*PolyLog[3, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g
])])/(Sqrt[-f]*Sqrt[g])
```

Rule 2421

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> Simp[(-PolyLog[2, (-d)*f*x^m])*((a + b*Log[c
*x^n])^p/m), x] + Dist[b*n*(p/m), Int[PolyLog[2, (-d)*f*x^m]*((a + b*Log[c*
x^n])^(p - 1)/x), x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0
] && EqQ[d*e, 1]
```

Rule 2443

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d
+ e*x)^n])^p/g), x] - Dist[b*e*n*(p/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]*
((a + b*Log[c*(d + e*x)^n])^(p - 1)/(d + e*x)), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2456

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_)^(r_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a + b*Log[c*(d + e*x)
^n])^p, (f + g*x^r)^q, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, r}, x] && I
GtQ[p, 0] && IntegerQ[q] && (GtQ[q, 0] || (IntegerQ[r] && NeQ[r, 1]))
```

Rule 2481

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[(k*(x/d))^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + j*(x/e))^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 6724

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(a+b\log(c(d+ex)^n))^2}{f+gx^2}\,dx = \int \left(\frac{\sqrt{-f}\,(a+b\log(c(d+ex)^n))^2}{2f\left(\sqrt{-f}-\sqrt{g}\,x\right)}+\frac{\sqrt{-f}\,(a+b\log(c(d+ex)^n))^2}{2f\left(\sqrt{-f}+\sqrt{g}\,x\right)}\right) dx$$

$$= -\frac{\int \frac{(a+b\log(c(d+ex)^n))^2}{\sqrt{-f}-\sqrt{g}\,x}\,dx}{2\sqrt{-f}} - \frac{\int \frac{(a+b\log(c(d+ex)^n))^2}{\sqrt{-f}+\sqrt{g}\,x}\,dx}{2\sqrt{-f}}$$

$$= \frac{(a+b\log(c(d+ex)^n))^2\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}\,x\right)}{e\sqrt{-f}+d\sqrt{g}}\right)}{2\sqrt{-f}\,\sqrt{g}} - \frac{(a+b\log(c(d+ex)^n)}{2\sqrt{}}$$

$$= \frac{(a+b\log(c(d+ex)^n))^2\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}\,x\right)}{e\sqrt{-f}+d\sqrt{g}}\right)}{2\sqrt{-f}\,\sqrt{g}} - \frac{(a+b\log(c(d+ex)^n)}{2\sqrt{}}$$

$$= \frac{(a+b\log(c(d+ex)^n))^2\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}\,x\right)}{e\sqrt{-f}+d\sqrt{g}}\right)}{2\sqrt{-f}\,\sqrt{g}} - \frac{(a+b\log(c(d+ex)^n)}{2\sqrt{}}$$

$$= \frac{(a+b\log(c(d+ex)^n))^2\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}\,x\right)}{e\sqrt{-f}+d\sqrt{g}}\right)}{2\sqrt{-f}\,\sqrt{g}} - \frac{(a+b\log(c(d+ex)^n)}{2\sqrt{}}$$

<u>**Mathematica**</u> **[C]** Result contains complex when optimal does not.
time = 0.15, size = 485, normalized size = 1.31

$$\frac{\tan^{-1}\left(\frac{\sqrt{g}\,x}{\sqrt{f}}\right)(a-bn\log(d+ex)+b\log(c(d+ex)^n))^2+ibn(a-bn\log(d+ex)+b\log(c(d+ex)^n))\left(\log(d+ex)\left(\log\left(1-\frac{\sqrt{g}\,(d+ex)}{-ie\sqrt{f}+d\sqrt{g}}\right)-\log\left(1-\frac{\sqrt{g}\,(d+ex)}{ie\sqrt{f}+d\sqrt{g}}\right)\right)+\text{Li}_2\left(\frac{\sqrt{g}\,(d+ex)}{-ie\sqrt{f}+d\sqrt{g}}\right)-\text{Li}_2\left(\frac{\sqrt{g}\,(d+ex)}{ie\sqrt{f}+d\sqrt{g}}\right)\right)+\frac{1}{2}ib^2n^2\left(\log^2(d+ex)\log\left(1-\frac{\sqrt{g}\,(d+ex)}{-ie\sqrt{f}+d\sqrt{g}}\right)-\log^2(d+ex)\log\left(1-\frac{\sqrt{g}\,(d+ex)}{ie\sqrt{f}+d\sqrt{g}}\right)+2\log(d+ex)\text{Li}_2\left(\frac{\sqrt{g}\,(d+ex)}{-ie\sqrt{f}+d\sqrt{g}}\right)-2\log(d+ex)\text{Li}_2\left(\frac{\sqrt{g}\,(d+ex)}{ie\sqrt{f}+d\sqrt{g}}\right)-2\text{Li}_3\left(\frac{\sqrt{g}\,(d+ex)}{-ie\sqrt{f}+d\sqrt{g}}\right)+2\text{Li}_3\left(\frac{\sqrt{g}\,(d+ex)}{ie\sqrt{f}+d\sqrt{g}}\right)\right)}{\sqrt{f}\,\sqrt{g}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^2/(f + g*x^2),x]
```

```
[Out] (ArcTan[(Sqrt[g]*x)/Sqrt[f]]*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^
2 + I*b*n*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])*(Log[d + e*x]*(Log[
```

```
1 - (Sqrt[g]*(d + e*x))/((-I)*e*Sqrt[f] + d*Sqrt[g])] - Log[1 - (Sqrt[g]*(d
 + e*x))/(I*e*Sqrt[f] + d*Sqrt[g])]) + PolyLog[2, (Sqrt[g]*(d + e*x))/((-I)
*e*Sqrt[f] + d*Sqrt[g])] - PolyLog[2, (Sqrt[g]*(d + e*x))/(I*e*Sqrt[f] + d*
Sqrt[g])]) + (I/2)*b^2*n^2*(Log[d + e*x]^2*Log[1 - (Sqrt[g]*(d + e*x))/((-I
)*e*Sqrt[f] + d*Sqrt[g])] - Log[d + e*x]^2*Log[1 - (Sqrt[g]*(d + e*x))/(I*e
*Sqrt[f] + d*Sqrt[g])] + 2*Log[d + e*x]*PolyLog[2, (Sqrt[g]*(d + e*x))/((-I
)*e*Sqrt[f] + d*Sqrt[g])] - 2*Log[d + e*x]*PolyLog[2, (Sqrt[g]*(d + e*x))/(
I*e*Sqrt[f] + d*Sqrt[g])] - 2*PolyLog[3, (Sqrt[g]*(d + e*x))/((-I)*e*Sqrt[f
] + d*Sqrt[g])] + 2*PolyLog[3, (Sqrt[g]*(d + e*x))/(I*e*Sqrt[f] + d*Sqrt[g]
)]))/(Sqrt[f]*Sqrt[g])
```

Maple [F]
time = 0.22, size = 0, normalized size = 0.00

$$\int \frac{\left(a+b\ln\left(c\left(ex+d\right)^{n}\right)\right)^{2}}{g\,x^{2}+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))^2/(g*x^2+f),x)
```

```
[Out] int((a+b*ln(c*(e*x+d)^n))^2/(g*x^2+f),x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/(g*x^2+f),x, algorithm="maxima")
```

```
[Out] a^2*arctan(g*x/sqrt(f*g))/sqrt(f*g) + integrate((b^2*log((x*e + d)^n)^2 + b
^2*log(c)^2 + 2*a*b*log(c) + 2*(b^2*log(c) + a*b)*log((x*e + d)^n))/(g*x^2
+ f), x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/(g*x^2+f),x, algorithm="fricas")
```

```
[Out] integral((b^2*log((x*e + d)^n*c)^2 + 2*a*b*log((x*e + d)^n*c) + a^2)/(g*x^2
 + f), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a + b\log{(c(d + ex)^n)})^2}{f + gx^2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**2/(g*x**2+f),x)
```

```
[Out] Integral((a + b*log(c*(d + e*x)**n))**2/(f + g*x**2), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/(g*x^2+f),x, algorithm="giac")
```

```
[Out] integrate((b*log((x*e + d)^n*c) + a)^2/(g*x^2 + f), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{{\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)}^2}{g\,x^2+f} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))^2/(f + g*x^2),x)
```

```
[Out] int((a + b*log(c*(d + e*x)^n))^2/(f + g*x^2), x)
```

3.318 $\int \frac{(a+b\log(c(d+ex)^n))^2}{x^2(f+gx^2)}\,dx$

Optimal. Leaf size=461

$$\frac{2ben\log\left(-\frac{ex}{d}\right)(a+b\log(c(d+ex)^n))}{df}-\frac{(d+ex)(a+b\log(c(d+ex)^n))^2}{dfx}+\frac{\sqrt{g}\,(a+b\log(c(d+ex)^n))^2\log}{2(-f)^{3/2}}$$

```
[Out] 2*b*e*n*ln(-e*x/d)*(a+b*ln(c*(e*x+d)^n))/d/f-(e*x+d)*(a+b*ln(c*(e*x+d)^n))^
2/d/f/x+2*b^2*e*n^2*polylog(2,1+e*x/d)/d/f+1/2*(a+b*ln(c*(e*x+d)^n))^2*ln(e
*((-f)^(1/2)-x*g^(1/2))/(e*(-f)^(1/2)+d*g^(1/2)))*g^(1/2)/(-f)^(3/2)-1/2*(a
+b*ln(c*(e*x+d)^n))^2*ln(e*((-f)^(1/2)+x*g^(1/2))/(e*(-f)^(1/2)-d*g^(1/2)))
*g^(1/2)/(-f)^(3/2)-b*n*(a+b*ln(c*(e*x+d)^n))*polylog(2,-(e*x+d)*g^(1/2)/(e
*(-f)^(1/2)-d*g^(1/2)))*g^(1/2)/(-f)^(3/2)+b*n*(a+b*ln(c*(e*x+d)^n))*polylo
g(2,(e*x+d)*g^(1/2)/(e*(-f)^(1/2)+d*g^(1/2)))*g^(1/2)/(-f)^(3/2)+b^2*n^2*po
lylog(3,-(e*x+d)*g^(1/2)/(e*(-f)^(1/2)-d*g^(1/2)))*g^(1/2)/(-f)^(3/2)-b^2*n
^2*polylog(3,(e*x+d)*g^(1/2)/(e*(-f)^(1/2)+d*g^(1/2)))*g^(1/2)/(-f)^(3/2)
```

Rubi [A]

time = 0.44, antiderivative size = 461, normalized size of antiderivative = 1.00, number of steps used = 15, number of rules used = 9, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.310$, Rules used = {2463, 2444, 2441, 2352, 2456, 2443, 2481, 2421, 6724}

$$-\frac{b\sqrt{g}\,n\,\text{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)(a+b\log(c(d+ex)^n))}{(-f)^{3/2}}+\frac{b\sqrt{g}\,n\,\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+e\sqrt{-f}}\right)(a+b\log(c(d+ex)^n))}{(-f)^{3/2}}+\frac{b^2\sqrt{g}\,n^2\text{PolyLog}\left(3,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)}{(-f)^{3/2}}-\frac{b^2\sqrt{g}\,n^2\text{PolyLog}\left(3,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+e\sqrt{-f}}\right)}{(-f)^{3/2}}+\frac{2b^2en^2\text{PolyLog}\left(2,\frac{ex}{d}+1\right)}{df}+\frac{\sqrt{g}\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}x\right)}{d\sqrt{g}+e\sqrt{-f}}\right)(a+b\log(c(d+ex)^n))^2}{2(-f)^{3/2}}-\frac{\sqrt{g}\log\left(\frac{e\left(\sqrt{-f}+\sqrt{g}x\right)}{e\sqrt{-f}-d\sqrt{g}}\right)(a+b\log(c(d+ex)^n))^2}{2(-f)^{3/2}}+\frac{2ben\log\left(-\frac{ex}{d}\right)(a+b\log(c(d+ex)^n))}{df}-\frac{(d+ex)(a+b\log(c(d+ex)^n))^2}{dfx}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^2/(x^2*(f + g*x^2)),x]
```

```
[Out] (2*b*e*n*Log[-((e*x)/d)]*(a + b*Log[c*(d + e*x)^n]))/(d*f) - ((d + e*x)*(a
+ b*Log[c*(d + e*x)^n])^2)/(d*f*x) + (Sqrt[g]*(a + b*Log[c*(d + e*x)^n])^2*
Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(2*(-f)^(3/2)) -
(Sqrt[g]*(a + b*Log[c*(d + e*x)^n])^2*Log[(e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sqr
t[-f] - d*Sqrt[g])])/(2*(-f)^(3/2)) - (b*Sqrt[g]*n*(a + b*Log[c*(d + e*x)^n
])*PolyLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/(-f)^(3/2)
+ (b*Sqrt[g]*n*(a + b*Log[c*(d + e*x)^n])*PolyLog[2, (Sqrt[g]*(d + e*x))/(e
*Sqrt[-f] + d*Sqrt[g])])/(-f)^(3/2) + (2*b^2*e*n^2*PolyLog[2, 1 + (e*x)/d])
/(d*f) + (b^2*Sqrt[g]*n^2*PolyLog[3, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*
Sqrt[g]))])/(-f)^(3/2) - (b^2*Sqrt[g]*n^2*PolyLog[3, (Sqrt[g]*(d + e*x))/(e
*Sqrt[-f] + d*Sqrt[g])])/(-f)^(3/2)
```

Rule 2352

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> Simp[(-e^(-1))*PolyLo
g[2, 1 - c*x], x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2421

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> Simp[(-PolyLog[2, (-d)*f*x^m])*((a + b*Log[c
*x^n])^p/m), x] + Dist[b*n*(p/m), Int[PolyLog[2, (-d)*f*x^m]*((a + b*Log[c*
x^n])^(p - 1)/x), x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0
] && EqQ[d*e, 1]
```

Rule 2441

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d + e*x
)^n])/g), x] - Dist[b*e*(n/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2443

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d
+ e*x)^n])^p/g), x] - Dist[b*e*n*(p/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]*
((a + b*Log[c*(d + e*x)^n])^(p - 1)/(d + e*x)), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2444

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_))^2, x_Symbol] :> Simp[(d + e*x)*((a + b*Log[c*(d + e*x)^n])^p/((e*f
- d*g)*(f + g*x))), x] - Dist[b*e*n*(p/(e*f - d*g)), Int[(a + b*Log[c*(d +
e*x)^n])^(p - 1)/(f + g*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] &&
 NeQ[e*f - d*g, 0] && GtQ[p, 0]
```

Rule 2456

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_)^(r_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a + b*Log[c*(d + e*x)
^n])^p, (f + g*x^r)^q, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, r}, x] && I
GtQ[p, 0] && IntegerQ[q] && (GtQ[q, 0] || (IntegerQ[r] && NeQ[r, 1]))
```

Rule 2463

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rule 2481

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[(k*(x/d))^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + j*(x/e))^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 6724

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(a+b\log(c(d+ex)^n))^2}{x^2(f+gx^2)}\,dx = \int \left(\frac{(a+b\log(c(d+ex)^n))^2}{fx^2} - \frac{g(a+b\log(c(d+ex)^n))^2}{f(f+gx^2)}\right) dx$$

$$= \frac{\int \frac{(a+b\log(c(d+ex)^n))^2}{x^2}\,dx}{f} - \frac{g\int \frac{(a+b\log(c(d+ex)^n))^2}{f+gx^2}\,dx}{f}$$

$$= -\frac{(d+ex)(a+b\log(c(d+ex)^n))^2}{dfx} - \frac{g\int \left(\frac{\sqrt{-f}\,(a+b\log(c(d+ex)^n))^2}{2f\left(\sqrt{-f}-\sqrt{g}\,x\right)} + \frac{\sqrt{-}}{2f}\right.}{f}$$

$$= \frac{2ben\log\left(-\frac{ex}{d}\right)(a+b\log(c(d+ex)^n))}{df} - \frac{(d+ex)(a+b\log(c(d+ex)^n))^2}{dfx}$$

$$= \frac{2ben\log\left(-\frac{ex}{d}\right)(a+b\log(c(d+ex)^n))}{df} - \frac{(d+ex)(a+b\log(c(d+ex)^n))^2}{dfx}$$

$$= \frac{2ben\log\left(-\frac{ex}{d}\right)(a+b\log(c(d+ex)^n))}{df} - \frac{(d+ex)(a+b\log(c(d+ex)^n))^2}{dfx}$$

$$= \frac{2ben\log\left(-\frac{ex}{d}\right)(a+b\log(c(d+ex)^n))}{df} - \frac{(d+ex)(a+b\log(c(d+ex)^n))^2}{dfx}$$

$$= \frac{2ben\log\left(-\frac{ex}{d}\right)(a+b\log(c(d+ex)^n))}{df} - \frac{(d+ex)(a+b\log(c(d+ex)^n))^2}{dfx}$$

<u>**Mathematica**</u> **[C]** Result contains complex when optimal does not.
time = 0.27, size = 668, normalized size = 1.45

$$\frac{-2d\sqrt{f}\,(a-bn\log(d+ex)+b\log(c(d+ex)^n))^2 - 2d\sqrt{g}\,x\tan^{-1}\left(\frac{\sqrt{g}\,x}{\sqrt{f}}\right)(a-bn\log(d+ex)+b\log(c(d+ex)^n))^2 + 2bn(a-bn\log(d+ex)+b\log(c(d+ex)^n))\left(2\sqrt{f}\,(ex\log(x)-(d+ex)\log(d+ex)) + id\sqrt{g}\,x\left(\log(d+ex)\log\left(\frac{e\left(\sqrt{f}+i\sqrt{g}\,x\right)}{e\sqrt{f}-id\sqrt{g}}\right) + \text{Li}_2\left(-\frac{i\sqrt{g}\,(d+ex)}{e\sqrt{f}-id\sqrt{g}}\right)\right) - id\sqrt{g}\,x\left(\log(d+ex)\log\left(\frac{e\left(\sqrt{f}-i\sqrt{g}\,x\right)}{e\sqrt{f}+id\sqrt{g}}\right) + \text{Li}_2\left(\frac{i\sqrt{g}\,(d+ex)}{e\sqrt{f}+id\sqrt{g}}\right)\right)\right) + b^2n^2\left(2\sqrt{f}\,\left(2ex\log\left(-\frac{ex}{d}\right)\log(d+ex) - (d+ex)\log^2(d+ex) + 2ex\text{Li}_2\left(1+\frac{ex}{d}\right)\right) - id\sqrt{g}\,x\left(\log^2(d+ex)\log\left(1-\frac{\sqrt{g}\,(d+ex)}{-ie\sqrt{f}+d\sqrt{g}}\right) + 2\log(d+ex)\text{Li}_2\left(\frac{\sqrt{g}\,(d+ex)}{-ie\sqrt{f}+d\sqrt{g}}\right) - 2\text{Li}_3\left(\frac{\sqrt{g}\,(d+ex)}{-ie\sqrt{f}+d\sqrt{g}}\right)\right) + id\sqrt{g}\,x\left(\log^2(d+ex)\log\left(1-\frac{\sqrt{g}\,(d+ex)}{ie\sqrt{f}+d\sqrt{g}}\right) + 2\log(d+ex)\text{Li}_2\left(\frac{\sqrt{g}\,(d+ex)}{ie\sqrt{f}+d\sqrt{g}}\right) - 2\text{Li}_3\left(\frac{\sqrt{g}\,(d+ex)}{ie\sqrt{f}+d\sqrt{g}}\right)\right)\right)}{2df^{3/2}x}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^2/(x^2*(f + g*x^2)),x]
```

```
[Out] (-2*d*Sqrt[f]*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2 - 2*d*Sqrt[g]
*x*ArcTan[(Sqrt[g]*x)/Sqrt[f]]*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n]
)^2 + 2*b*n*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])*(2*Sqrt[f]*(e*x*L
og[x] - (d + e*x)*Log[d + e*x]) + I*d*Sqrt[g]*x*(Log[d + e*x]*Log[(e*(Sqrt[
f] + I*Sqrt[g]*x))/(e*Sqrt[f] - I*d*Sqrt[g])] + PolyLog[2, ((-I)*Sqrt[g]*(d
 + e*x))/(e*Sqrt[f] - I*d*Sqrt[g])]) - I*d*Sqrt[g]*x*(Log[d + e*x]*Log[(e*(
Sqrt[f] - I*Sqrt[g]*x))/(e*Sqrt[f] + I*d*Sqrt[g])] + PolyLog[2, (I*Sqrt[g]*
(d + e*x))/(e*Sqrt[f] + I*d*Sqrt[g])])) + b^2*n^2*(2*Sqrt[f]*(2*e*x*Log[-((
e*x)/d)]*Log[d + e*x] - (d + e*x)*Log[d + e*x]^2 + 2*e*x*PolyLog[2, 1 + (e*
x)/d]) - I*d*Sqrt[g]*x*(Log[d + e*x]^2*Log[1 - (Sqrt[g]*(d + e*x))/((-I)*e*
Sqrt[f] + d*Sqrt[g])] + 2*Log[d + e*x]*PolyLog[2, (Sqrt[g]*(d + e*x))/((-I)
*e*Sqrt[f] + d*Sqrt[g])] - 2*PolyLog[3, (Sqrt[g]*(d + e*x))/((-I)*e*Sqrt[f]
 + d*Sqrt[g])]) + I*d*Sqrt[g]*x*(Log[d + e*x]^2*Log[1 - (Sqrt[g]*(d + e*x))
/(I*e*Sqrt[f] + d*Sqrt[g])] + 2*Log[d + e*x]*PolyLog[2, (Sqrt[g]*(d + e*x))
/(I*e*Sqrt[f] + d*Sqrt[g])] - 2*PolyLog[3, (Sqrt[g]*(d + e*x))/(I*e*Sqrt[f]
 + d*Sqrt[g])])))/(2*d*f^(3/2)*x)
```

Maple [F]
time = 0.19, size = 0, normalized size = 0.00

$$\int \frac{\left(a+b\ln\left(c(ex+d)^{n}\right)\right)^{2}}{x^{2}\left(g\,x^{2}+f\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))^2/x^2/(g*x^2+f),x)
```

```
[Out] int((a+b*ln(c*(e*x+d)^n))^2/x^2/(g*x^2+f),x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/x^2/(g*x^2+f),x, algorithm="maxima")
```

```
[Out] -a^2*(g*arctan(g*x/sqrt(f*g))/(sqrt(f*g)*f) + 1/(f*x)) + integrate((b^2*log
((x*e + d)^n)^2 + b^2*log(c)^2 + 2*a*b*log(c) + 2*(b^2*log(c) + a*b)*log((x
*e + d)^n))/(g*x^4 + f*x^2), x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/x^2/(g*x^2+f),x, algorithm="fricas")
```

```
[Out] integral((b^2*log((x*e + d)^n*c)^2 + 2*a*b*log((x*e + d)^n*c) + a^2)/(g*x^4
 + f*x^2), x)
```

Sympy [**F(-1)**] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**2/x**2/(g*x**2+f),x)
```

```
[Out] Timed out
```

Giac [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/x^2/(g*x^2+f),x, algorithm="giac")
```

```
[Out] integrate((b*log((x*e + d)^n*c) + a)^2/((g*x^2 + f)*x^2), x)
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)^2}{x^2\,\left(g\,x^2+f\right)} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))^2/(x^2*(f + g*x^2)),x)
```

```
[Out] int((a + b*log(c*(d + e*x)^n))^2/(x^2*(f + g*x^2)), x)
```

3.319 $\int \frac{(a+b\log(c(d+ex)^n))^2}{x^4(f+gx^2)}\,dx$

Optimal. Leaf size=694

$$-\frac{b^2e^2n^2}{3d^2fx}-\frac{b^2e^3n^2\log(x)}{d^3f}+\frac{b^2e^3n^2\log(d+ex)}{3d^3f}-\frac{ben(a+b\log\left(c(d+ex)^n\right))}{3dfx^2}+\frac{2be^2n(d+ex)\left(a+b\log\left(c(d+\right.\right.}{3d^3fx}$$

```
[Out] -1/3*b^2*e^2*n^2/d^2/f/x-b^2*e^3*n^2*ln(x)/d^3/f+1/3*b^2*e^3*n^2*ln(e*x+d)/
d^3/f-1/3*b*e*n*(a+b*ln(c*(e*x+d)^n))/d/f/x^2+2/3*b*e^2*n*(e*x+d)*(a+b*ln(c
*(e*x+d)^n))/d^3/f/x-2*b*e*g*n*ln(-e*x/d)*(a+b*ln(c*(e*x+d)^n))/d/f^2-1/3*(
a+b*ln(c*(e*x+d)^n))^2/f/x^3+g*(e*x+d)*(a+b*ln(c*(e*x+d)^n))^2/d/f^2/x+2/3*
b*e^3*n*(a+b*ln(c*(e*x+d)^n))*ln(1-d/(e*x+d))/d^3/f+1/2*g^(3/2)*(a+b*ln(c*(
e*x+d)^n))^2*ln(e*((-f)^(1/2)-x*g^(1/2))/(e*(-f)^(1/2)+d*g^(1/2)))/(-f)^(5/
2)-1/2*g^(3/2)*(a+b*ln(c*(e*x+d)^n))^2*ln(e*((-f)^(1/2)+x*g^(1/2))/(e*(-f)^
(1/2)-d*g^(1/2)))/(-f)^(5/2)-2/3*b^2*e^3*n^2*polylog(2,d/(e*x+d))/d^3/f-2*b
^2*e*g*n^2*polylog(2,1+e*x/d)/d/f^2-b*g^(3/2)*n*(a+b*ln(c*(e*x+d)^n))*polyl
og(2,-(e*x+d)*g^(1/2)/(e*(-f)^(1/2)-d*g^(1/2)))/(-f)^(5/2)+b*g^(3/2)*n*(a+b
*ln(c*(e*x+d)^n))*polylog(2,(e*x+d)*g^(1/2)/(e*(-f)^(1/2)+d*g^(1/2)))/(-f)^
(5/2)+b^2*g^(3/2)*n^2*polylog(3,-(e*x+d)*g^(1/2)/(e*(-f)^(1/2)-d*g^(1/2)))/
(-f)^(5/2)-b^2*g^(3/2)*n^2*polylog(3,(e*x+d)*g^(1/2)/(e*(-f)^(1/2)+d*g^(1/2
)))/(-f)^(5/2)
```

Rubi [A]

time = 0.77, antiderivative size = 694, normalized size of antiderivative = 1.00, number of steps used = 26, number of rules used = 18, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.621$, Rules used = {2463, 2445, 2458, 2389, 2379, 2438, 2351, 31, 2356, 46, 2444, 2441, 2352, 2456, 2443, 2481, 2421, 6724}

[illegible]

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^2/(x^4*(f + g*x^2)),x]
```

```
[Out] -1/3*(b^2*e^2*n^2)/(d^2*f*x) - (b^2*e^3*n^2*Log[x])/(d^3*f) + (b^2*e^3*n^2*
Log[d + e*x])/(3*d^3*f) - (b*e*n*(a + b*Log[c*(d + e*x)^n]))/(3*d*f*x^2) +
(2*b*e^2*n*(d + e*x)*(a + b*Log[c*(d + e*x)^n]))/(3*d^3*f*x) - (2*b*e*g*n*L
og[-((e*x)/d)]*(a + b*Log[c*(d + e*x)^n]))/(d*f^2) - (a + b*Log[c*(d + e*x)
^n])^2/(3*f*x^3) + (g*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^2)/(d*f^2*x) + (
g^(3/2)*(a + b*Log[c*(d + e*x)^n])^2*Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt
[-f] + d*Sqrt[g])])/(2*(-f)^(5/2)) - (g^(3/2)*(a + b*Log[c*(d + e*x)^n])^2*
Log[(e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g])])/(2*(-f)^(5/2)) +
(2*b*e^3*n*(a + b*Log[c*(d + e*x)^n])*Log[1 - d/(d + e*x)])/(3*d^3*f) - (2*
```

```
b^2*e^3*n^2*PolyLog[2, d/(d + e*x)])/(3*d^3*f) - (b*g^(3/2)*n*(a + b*Log[c*
(d + e*x)^n])*PolyLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/
(-f)^(5/2) + (b*g^(3/2)*n*(a + b*Log[c*(d + e*x)^n])*PolyLog[2, (Sqrt[g]*(d
 + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(-f)^(5/2) - (2*b^2*e*g*n^2*PolyLog[2,
1 + (e*x)/d])/(d*f^2) + (b^2*g^(3/2)*n^2*PolyLog[3, -((Sqrt[g]*(d + e*x))/(
e*Sqrt[-f] - d*Sqrt[g]))])/(-f)^(5/2) - (b^2*g^(3/2)*n^2*PolyLog[3, (Sqrt[g
]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(-f)^(5/2)
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 46

```
Int[((a_) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[E
xpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m +
 n + 2, 0])
```

Rule 2351

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_) + (e_.)*(x_)^(r_.))^(q_), x
_Symbol] :> Simp[x*(d + e*x^r)^(q + 1)*((a + b*Log[c*x^n])/d), x] - Dist[b*
(n/d), Int[(d + e*x^r)^(q + 1), x], x] /; FreeQ[{a, b, c, d, e, n, q, r}, x
] && EqQ[r*(q + 1) + 1, 0]
```

Rule 2352

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> Simp[(-e^(-1))*PolyLo
g[2, 1 - c*x], x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2356

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.),
x_Symbol] :> Simp[(d + e*x)^(q + 1)*((a + b*Log[c*x^n])^p/(e*(q + 1))), x]
- Dist[b*n*(p/(e*(q + 1))), Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^(p -
1))/x, x], x] /; FreeQ[{a, b, c, d, e, n, p, q}, x] && GtQ[p, 0] && NeQ[q,
-1] && (EqQ[p, 1] || (IntegersQ[2*p, 2*q] &&  !IGtQ[q, 0]) || (EqQ[p, 2] &&
 NeQ[q, 1]))
```

Rule 2379

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((x_)*((d_) + (e_.)*(x_)^(r
_.))), x_Symbol] :> Simp[(-Log[1 + d/(e*x^r)])*((a + b*Log[c*x^n])^p/(d*r))
, x] + Dist[b*n*(p/(d*r)), Int[Log[1 + d/(e*x^r)]*((a + b*Log[c*x^n])^(p -
1)/x), x], x] /; FreeQ[{a, b, c, d, e, n, r}, x] && IGtQ[p, 0]
```

Rule 2389

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_))/
(x_), x_Symbol] :> Dist[1/d, Int[(d + e*x)^(q + 1)*((a + b*Log[c*x^n])^p/x)
, x], x] - Dist[e/d, Int[(d + e*x)^q*(a + b*Log[c*x^n])^p, x], x] /; FreeQ[
{a, b, c, d, e, n}, x] && IGtQ[p, 0] && LtQ[q, -1] && IntegerQ[2*q]
```

Rule 2421

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> Simp[(-PolyLog[2, (-d)*f*x^m])*((a + b*Log[c
*x^n])^p/m), x] + Dist[b*n*(p/m), Int[PolyLog[2, (-d)*f*x^m]*((a + b*Log[c*
x^n])^(p - 1)/x), x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0
] && EqQ[d*e, 1]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2441

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d + e*x
)^n])/g), x] - Dist[b*e*(n/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2443

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d
+ e*x)^n])^p/g), x] - Dist[b*e*n*(p/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]*
((a + b*Log[c*(d + e*x)^n])^(p - 1)/(d + e*x)), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2444

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_))^2, x_Symbol] :> Simp[(d + e*x)*((a + b*Log[c*(d + e*x)^n])^p/((e*f
- d*g)*(f + g*x))), x] - Dist[b*e*n*(p/(e*f - d*g)), Int[(a + b*Log[c*(d +
e*x)^n])^(p - 1)/(f + g*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] &&
 NeQ[e*f - d*g, 0] && GtQ[p, 0]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[(f + g*x)^(q + 1)*((a + b*Log[c*(d + e*x)^
```

```
n])^p/(g*(q + 1))), x] - Dist[b*e*n*(p/(g*(q + 1))), Int[(f + g*x)^(q + 1)*
((a + b*Log[c*(d + e*x)^n])^(p - 1)/(d + e*x)), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && GtQ[p, 0] && NeQ[q, -1] && Int
egersQ[2*p, 2*q] && ( !IGtQ[q, 0] || (EqQ[p, 2] && NeQ[q, 1]))
```

Rule 2456

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_)^(r_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a + b*Log[c*(d + e*x)
^n])^p, (f + g*x^r)^q, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, r}, x] && I
GtQ[p, 0] && IntegerQ[q] && (GtQ[q, 0] || (IntegerQ[r] && NeQ[r, 1]))
```

Rule 2458

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[(g*(x/e))^q*((e*h - d*i)/e + i*(x/e))^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2463

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rule 2481

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[(k*(x/d))^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + j*(x/e))^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 6724

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(a+b\log(c(d+ex)^n))^2}{x^4(f+gx^2)}\,dx = \int \left(\frac{(a+b\log(c(d+ex)^n))^2}{fx^4} - \frac{g(a+b\log(c(d+ex)^n))^2}{f^2x^2} + \frac{g^2(a+b\log(}{f^2(f}\right.$$

$$= \frac{\int \frac{(a+b\log(c(d+ex)^n))^2}{x^4}\,dx}{f} - \frac{g\int \frac{(a+b\log(c(d+ex)^n))^2}{x^2}\,dx}{f^2} + \frac{g^2\int \frac{(a+b\log(c(d+ex)^n))^2}{f+gx^2}\,d}{f^2}$$

$$= -\frac{(a+b\log(c(d+ex)^n))^2}{3fx^3} + \frac{g(d+ex)(a+b\log(c(d+ex)^n))^2}{df^2x} + \frac{g^2\int\left(\right.}{}$$

$$= -\frac{2begn\log\left(-\frac{ex}{d}\right)(a+b\log(c(d+ex)^n))}{df^2} - \frac{(a+b\log(c(d+ex)^n))^2}{3fx^3} + \frac{g}{}$$

$$= -\frac{2begn\log\left(-\frac{ex}{d}\right)(a+b\log(c(d+ex)^n))}{df^2} - \frac{(a+b\log(c(d+ex)^n))^2}{3fx^3} + \frac{g}{}$$

$$= -\frac{ben(a+b\log(c(d+ex)^n))}{3dfx^2} - \frac{2begn\log\left(-\frac{ex}{d}\right)(a+b\log(c(d+ex)^n))}{df^2} -$$

$$= -\frac{ben(a+b\log(c(d+ex)^n))}{3dfx^2} + \frac{2be^2n(d+ex)(a+b\log(c(d+ex)^n))}{3d^3fx} - \frac{2}{}$$

$$= -\frac{b^2e^2n^2}{3d^2fx} - \frac{b^2e^3n^2\log(x)}{d^3f} + \frac{b^2e^3n^2\log(d+ex)}{3d^3f} - \frac{ben(a+b\log(c(d+ex)}{3dfx^2}$$

$$= -\frac{b^2e^2n^2}{3d^2fx} - \frac{b^2e^3n^2\log(x)}{d^3f} + \frac{b^2e^3n^2\log(d+ex)}{3d^3f} - \frac{ben(a+b\log(c(d+ex)}{3dfx^2}$$

Mathematica [C] Result contains complex when optimal does not.
time = 0.50, size = 930, normalized size = 1.34

[illegible]

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^2/(x^4*(f + g*x^2)),x]
```

```
[Out] (-2*d^3*f^(3/2)*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2 + 6*d^3*Sqr
t[f]*g*x^2*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2 + 6*d^3*g^(3/2)*
x^3*ArcTan[(Sqrt[g]*x)/Sqrt[f]]*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n
])^2 + (2*I)*b*n*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])*((6*I)*d^2*S
qrt[f]*g*x^2*(e*x*Log[x] - (d + e*x)*Log[d + e*x]) + I*f^(3/2)*(d*e*x*(d -
2*e*x) - 2*e^3*x^3*Log[x] + 2*(d^3 + e^3*x^3)*Log[d + e*x]) - 3*d^3*g^(3/2)
*x^3*(Log[d + e*x]*Log[(e*(Sqrt[f] + I*Sqrt[g]*x))/(e*Sqrt[f] - I*d*Sqrt[g]
)] + PolyLog[2, ((-I)*Sqrt[g]*(d + e*x))/(e*Sqrt[f] - I*d*Sqrt[g])]) + 3*d^
3*g^(3/2)*x^3*(Log[d + e*x]*Log[(e*(Sqrt[f] - I*Sqrt[g]*x))/(e*Sqrt[f] + I*
d*Sqrt[g])] + PolyLog[2, (I*Sqrt[g]*(d + e*x))/(e*Sqrt[f] + I*d*Sqrt[g])]))
 + I*b^2*n^2*((6*I)*d^2*Sqrt[f]*g*x^2*(2*e*x*Log[-((e*x)/d)]*Log[d + e*x] -
 (d + e*x)*Log[d + e*x]^2 + 2*e*x*PolyLog[2, 1 + (e*x)/d]) + (2*I)*f^(3/2)*
(d*e^2*x^2 + 3*e^3*x^3*Log[x] + d^2*e*x*Log[d + e*x] - 2*d*e^2*x^2*Log[d +
e*x] - 3*e^3*x^3*Log[d + e*x] - 2*e^3*x^3*Log[-((e*x)/d)]*Log[d + e*x] + d^
3*Log[d + e*x]^2 + e^3*x^3*Log[d + e*x]^2 - 2*e^3*x^3*PolyLog[2, 1 + (e*x)/
d]) + 3*d^3*g^(3/2)*x^3*(Log[d + e*x]^2*Log[1 - (Sqrt[g]*(d + e*x))/((-I)*e
*Sqrt[f] + d*Sqrt[g])] + 2*Log[d + e*x]*PolyLog[2, (Sqrt[g]*(d + e*x))/((-I
)*e*Sqrt[f] + d*Sqrt[g])] - 2*PolyLog[3, (Sqrt[g]*(d + e*x))/((-I)*e*Sqrt[f
] + d*Sqrt[g])]) - 3*d^3*g^(3/2)*x^3*(Log[d + e*x]^2*Log[1 - (Sqrt[g]*(d +
e*x))/(I*e*Sqrt[f] + d*Sqrt[g])] + 2*Log[d + e*x]*PolyLog[2, (Sqrt[g]*(d +
e*x))/(I*e*Sqrt[f] + d*Sqrt[g])] - 2*PolyLog[3, (Sqrt[g]*(d + e*x))/(I*e*Sq
rt[f] + d*Sqrt[g])])))/(6*d^3*f^(5/2)*x^3)
```

Maple [F]
time = 0.19, size = 0, normalized size = 0.00

$$\int \frac{\left(a+b\ln\left(c(ex+d)^{n}\right)\right)^{2}}{x^{4}\left(g\,x^{2}+f\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))^2/x^4/(g*x^2+f),x)
```

```
[Out] int((a+b*ln(c*(e*x+d)^n))^2/x^4/(g*x^2+f),x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/x^4/(g*x^2+f),x, algorithm="maxima")
```

```
[Out] 1/3*a^2*(3*g^2*arctan(g*x/sqrt(f*g))/(sqrt(f*g)*f^2) + (3*g*x^2 - f)/(f^2*x
^3)) + integrate((b^2*log((x*e + d)^n)^2 + b^2*log(c)^2 + 2*a*b*log(c) + 2*
(b^2*log(c) + a*b)*log((x*e + d)^n))/(g*x^6 + f*x^4), x)
```

Fricas [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/x^4/(g*x^2+f),x, algorithm="fricas")
```

```
[Out] integral((b^2*log((x*e + d)^n*c)^2 + 2*a*b*log((x*e + d)^n*c) + a^2)/(g*x^6
 + f*x^4), x)
```

Sympy [**F(-1)**] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**2/x**4/(g*x**2+f),x)
```

```
[Out] Timed out
```

Giac [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/x^4/(g*x^2+f),x, algorithm="giac")
```

```
[Out] integrate((b*log((x*e + d)^n*c) + a)^2/((g*x^2 + f)*x^4), x)
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)^2}{x^4\,\left(g\,x^2+f\right)} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))^2/(x^4*(f + g*x^2)),x)
```

```
[Out] int((a + b*log(c*(d + e*x)^n))^2/(x^4*(f + g*x^2)), x)
```

3.320 $\int \frac{x^5(a+b\log(c(d+ex)^n))^2}{(f+gx^2)^2}\,dx$

Optimal. Leaf size=936

$$\frac{2abdnx}{eg^2}-\frac{2b^2dn^2x}{eg^2}+\frac{b^2n^2(d+ex)^2}{4e^2g^2}+\frac{2b^2dn(d+ex)\log\left(c(d+ex)^n\right)}{e^2g^2}-\frac{bn(d+ex)^2\left(a+b\log\left(c(d+ex)^n\right)\right)}{2e^2g^2}+\frac{e^2}{}$$

```
[Out] 2*a*b*d*n*x/e/g^2-2*b^2*d*n^2*x/e/g^2+1/4*b^2*n^2*(e*x+d)^2/e^2/g^2+2*b^2*d
*n*(e*x+d)*ln(c*(e*x+d)^n)/e^2/g^2-1/2*b*n*(e*x+d)^2*(a+b*ln(c*(e*x+d)^n))/
e^2/g^2+1/2*e^2*f^2*(a+b*ln(c*(e*x+d)^n))^2/g^3/(d^2*g+e^2*f)-d*(e*x+d)*(a+
b*ln(c*(e*x+d)^n))^2/e^2/g^2+1/2*(e*x+d)^2*(a+b*ln(c*(e*x+d)^n))^2/e^2/g^2-
1/2*f^2*(a+b*ln(c*(e*x+d)^n))^2/g^3/(g*x^2+f)-f*(a+b*ln(c*(e*x+d)^n))^2*ln(
e*((-f)^(1/2)-x*g^(1/2))/(e*(-f)^(1/2)+d*g^(1/2)))/g^3-f*(a+b*ln(c*(e*x+d)^
n))^2*ln(e*((-f)^(1/2)+x*g^(1/2))/(e*(-f)^(1/2)-d*g^(1/2)))/g^3-2*b*f*n*(a+
b*ln(c*(e*x+d)^n))*polylog(2,-(e*x+d)*g^(1/2)/(e*(-f)^(1/2)-d*g^(1/2)))/g^3
-2*b*f*n*(a+b*ln(c*(e*x+d)^n))*polylog(2,(e*x+d)*g^(1/2)/(e*(-f)^(1/2)+d*g^
(1/2)))/g^3+2*b^2*f*n^2*polylog(3,-(e*x+d)*g^(1/2)/(e*(-f)^(1/2)-d*g^(1/2))
)/g^3+2*b^2*f*n^2*polylog(3,(e*x+d)*g^(1/2)/(e*(-f)^(1/2)+d*g^(1/2)))/g^3-1
/2*b^2*e*(-f)^(3/2)*n^2*polylog(2,(e*x+d)*g^(1/2)/(e*(-f)^(1/2)+d*g^(1/2)))
*(e*(-f)^(1/2)-d*g^(1/2))/g^3/(d^2*g+e^2*f)-1/2*b*e*(-f)^(3/2)*n*(a+b*ln(c*
(e*x+d)^n))*ln(e*((-f)^(1/2)+x*g^(1/2))/(e*(-f)^(1/2)-d*g^(1/2)))*(e*(-f)^(
1/2)+d*g^(1/2))/g^3/(d^2*g+e^2*f)-1/2*b^2*e*(-f)^(3/2)*n^2*polylog(2,-(e*x+
d)*g^(1/2)/(e*(-f)^(1/2)-d*g^(1/2)))*(e*(-f)^(1/2)+d*g^(1/2))/g^3/(d^2*g+e^
2*f)-1/2*b*e*f*n*(a+b*ln(c*(e*x+d)^n))*ln(e*((-f)^(1/2)-x*g^(1/2))/(e*(-f)^
(1/2)+d*g^(1/2)))*(e*f+d*(-f)^(1/2)*g^(1/2))/g^3/(d^2*g+e^2*f)
```

Rubi [A]
time = 1.09, antiderivative size = 936, normalized size of antiderivative = 1.00, number of steps used = 34, number of rules used = 18, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.621$, Rules used = {2463, 2448, 2436, 2333, 2332, 2437, 2342, 2341, 2460, 2465, 2338, 2441, 2440, 2438, 2443, 2481, 2421, 6724}

Antiderivative was successfully verified.

```
[In] Int[(x^5*(a + b*Log[c*(d + e*x)^n])^2)/(f + g*x^2)^2,x]
```

```
[Out] (2*a*b*d*n*x)/(e*g^2) - (2*b^2*d*n^2*x)/(e*g^2) + (b^2*n^2*(d + e*x)^2)/(4*
e^2*g^2) + (2*b^2*d*n*(d + e*x)*Log[c*(d + e*x)^n])/(e^2*g^2) - (b*n*(d + e
*x)^2*(a + b*Log[c*(d + e*x)^n]))/(2*e^2*g^2) + (e^2*f^2*(a + b*Log[c*(d +
e*x)^n])^2)/(2*g^3*(e^2*f + d^2*g)) - (d*(d + e*x)*(a + b*Log[c*(d + e*x)^n
])^2)/(e^2*g^2) + ((d + e*x)^2*(a + b*Log[c*(d + e*x)^n])^2)/(2*e^2*g^2) -
```

```
(f^2*(a + b*Log[c*(d + e*x)^n])^2)/(2*g^3*(f + g*x^2)) - (b*e*f*(e*f + d*Sq
rt[-f]*Sqrt[g])*n*(a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] - Sqrt[g]*x))
/(e*Sqrt[-f] + d*Sqrt[g])])/(2*g^3*(e^2*f + d^2*g)) - (f*(a + b*Log[c*(d +
e*x)^n])^2*Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[-f] + d*Sqrt[g])])/g^3 -
(b*e*(-f)^(3/2)*(e*Sqrt[-f] + d*Sqrt[g])*n*(a + b*Log[c*(d + e*x)^n])*Log[(
e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g])])/(2*g^3*(e^2*f + d^2*g)
) - (f*(a + b*Log[c*(d + e*x)^n])^2*Log[(e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sqrt[
-f] - d*Sqrt[g])])/g^3 - (b^2*e*(-f)^(3/2)*(e*Sqrt[-f] + d*Sqrt[g])*n^2*Pol
yLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/(2*g^3*(e^2*f + d
^2*g)) - (2*b*f*n*(a + b*Log[c*(d + e*x)^n])*PolyLog[2, -((Sqrt[g]*(d + e*x
))/(e*Sqrt[-f] - d*Sqrt[g]))])/g^3 - (b^2*e*(-f)^(3/2)*(e*Sqrt[-f] - d*Sqrt
[g])*n^2*PolyLog[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(2*g^3*(
e^2*f + d^2*g)) - (2*b*f*n*(a + b*Log[c*(d + e*x)^n])*PolyLog[2, (Sqrt[g]*(
d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/g^3 + (2*b^2*f*n^2*PolyLog[3, -((Sqrt[
g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/g^3 + (2*b^2*f*n^2*PolyLog[3, (Sq
rt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/g^3
```

Rule 2332

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2333

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2338

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2341

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_.)*(x_))^(m_.), x_Symbol] :>
Simp[(d*x)^(m + 1)*((a + b*Log[c*x^n])/(d*(m + 1))), x] - Simp[b*n*((d*x)^(
m + 1)/(d*(m + 1)^2)), x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[m, -1]
```

Rule 2342

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_.)*(x_))^(m_.), x_Symbo
l] :> Simp[(d*x)^(m + 1)*((a + b*Log[c*x^n])^p/(d*(m + 1))), x] - Dist[b*n*
(p/(m + 1)), Int[(d*x)^m*(a + b*Log[c*x^n])^(p - 1), x], x] /; FreeQ[{a, b,
 c, d, m, n}, x] && NeQ[m, -1] && GtQ[p, 0]
```

Rule 2421

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> Simp[(-PolyLog[2, (-d)*f*x^m])*((a + b*Log[c
*x^n])^p/m), x] + Dist[b*n*(p/m), Int[PolyLog[2, (-d)*f*x^m]*((a + b*Log[c*
x^n])^(p - 1)/x), x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0
] && EqQ[d*e, 1]
```

Rule 2436

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2437

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[(f*(x/d))^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + c*e*(x/g)])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2441

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d + e*x
)^n])/g), x] - Dist[b*e*(n/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2443

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d
+ e*x)^n])^p/g), x] - Dist[b*e*n*(p/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]*
((a + b*Log[c*(d + e*x)^n])^(p - 1)/(d + e*x)), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2448

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q*(a + b*Log[c*(d
 + e*x)^n])^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f -
 d*g, 0] && IGtQ[q, 0]
```

Rule 2460

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(x_)^(m_.)*(
(f_.) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Simp[(f + g*x^r)^(q + 1)*((a
+ b*Log[c*(d + e*x)^n])^p/(g*r*(q + 1))), x] - Dist[b*e*n*(p/(g*r*(q + 1)))
, Int[(f + g*x^r)^(q + 1)*((a + b*Log[c*(d + e*x)^n])^(p - 1)/(d + e*x)), x
], x] /; FreeQ[{a, b, c, d, e, f, g, m, n, q, r}, x] && EqQ[m, r - 1] && Ne
Q[q, -1] && IGtQ[p, 0]
```

Rule 2463

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rule 2465

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2481

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[(k*(x/d))^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + j*(x/e))^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 6724

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{x^5(a+b\log(c(d+ex)^n))^2}{(f+gx^2)^2}\,dx = \int \left(\frac{x(a+b\log(c(d+ex)^n))^2}{g^2} + \frac{f^2x(a+b\log(c(d+ex)^n))^2}{g^2(f+gx^2)^2} - \frac{2fx(a+$$

$$= \frac{\int x(a+b\log(c(d+ex)^n))^2\,dx}{g^2} - \frac{(2f)\int \frac{x(a+b\log(c(d+ex)^n))^2}{f+gx^2}\,dx}{g^2} + \frac{f^2\int \frac{x(a}{}}{}$$

$$= -\frac{f^2(a+b\log(c(d+ex)^n))^2}{2g^3(f+gx^2)} + \frac{\int \left(-\frac{d(a+b\log(c(d+ex)^n))^2}{e} + \frac{(d+ex)(a+b\log(c(d+}{e}\right.}{g^2}$$

$$= -\frac{f^2(a+b\log(c(d+ex)^n))^2}{2g^3(f+gx^2)} + \frac{f\int \frac{(a+b\log(c(d+ex)^n))^2}{\sqrt{-f}-\sqrt{g}\,x}\,dx}{g^{5/2}} - \frac{f\int \frac{(a+b\log(c(d+}{\sqrt{-f}+}}{g^{5/2}}$$

$$= -\frac{f^2(a+b\log(c(d+ex)^n))^2}{2g^3(f+gx^2)} - \frac{f(a+b\log(c(d+ex)^n))^2\log\left(\frac{e\left(\sqrt{-f}\right.}{e\sqrt{-f}}\right.}{g^3}$$

$$= -\frac{d(d+ex)(a+b\log(c(d+ex)^n))^2}{e^2g^2} + \frac{(d+ex)^2(a+b\log(c(d+ex)^n))^2}{2e^2g^2}$$

$$= \frac{2abdnx}{eg^2} + \frac{b^2n^2(d+ex)^2}{4e^2g^2} - \frac{bn(d+ex)^2(a+b\log(c(d+ex)^n))}{2e^2g^2} + \frac{e^2f^2(}{}$$

$$= \frac{2abdnx}{eg^2} - \frac{2b^2dn^2x}{eg^2} + \frac{b^2n^2(d+ex)^2}{4e^2g^2} + \frac{2b^2dn(d+ex)\log(c(d+ex)^n)}{e^2g^2} -$$

$$= \frac{2abdnx}{eg^2} - \frac{2b^2dn^2x}{eg^2} + \frac{b^2n^2(d+ex)^2}{4e^2g^2} + \frac{2b^2dn(d+ex)\log(c(d+ex)^n)}{e^2g^2} -$$

$$= \frac{2abdnx}{eg^2} - \frac{2b^2dn^2x}{eg^2} + \frac{b^2n^2(d+ex)^2}{4e^2g^2} + \frac{2b^2dn(d+ex)\log(c(d+ex)^n)}{e^2g^2} -$$

Mathematica [C] Result contains complex when optimal does not.
time = 1.99, size = 1254, normalized size = 1.34

[illegible]

Antiderivative was successfully verified.

```
[In] Integrate[(x^5*(a + b*Log[c*(d + e*x)^n])^2)/(f + g*x^2)^2,x]
```

```
[Out] (2*g*x^2*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2 - (2*f^2*(a - b*n*
Log[d + e*x] + b*Log[c*(d + e*x)^n])^2)/(f + g*x^2) - 4*f*(a - b*n*Log[d +
e*x] + b*Log[c*(d + e*x)^n])^2*Log[f + g*x^2] + 2*b*n*(a - b*n*Log[d + e*x]
 + b*Log[c*(d + e*x)^n])*((g*(e*x*(2*d - e*x) - 2*(d^2 - e^2*x^2)*Log[d + e
*x]))/e^2 + (f^(3/2)*(I*Sqrt[g]*(d + e*x)*Log[d + e*x] - e*(Sqrt[f] + I*Sqr
t[g]*x)*Log[I*Sqrt[f] - Sqrt[g]*x]))/((e*Sqrt[f] - I*d*Sqrt[g])*(Sqrt[f] +
I*Sqrt[g]*x)) + (I*f^(3/2)*(-(Sqrt[g]*(d + e*x)*Log[d + e*x]) + e*(I*Sqrt[f
] + Sqrt[g]*x)*Log[I*Sqrt[f] + Sqrt[g]*x]))/((e*Sqrt[f] + I*d*Sqrt[g])*(Sqr
t[f] - I*Sqrt[g]*x)) - 4*f*(Log[d + e*x]*Log[(e*(Sqrt[f] + I*Sqrt[g]*x))/(e
*Sqrt[f] - I*d*Sqrt[g])] + PolyLog[2, ((-I)*Sqrt[g]*(d + e*x))/(e*Sqrt[f] -
 I*d*Sqrt[g])]) - 4*f*(Log[d + e*x]*Log[(e*(Sqrt[f] - I*Sqrt[g]*x))/(e*Sqrt
[f] + I*d*Sqrt[g])] + PolyLog[2, (I*Sqrt[g]*(d + e*x))/(e*Sqrt[f] + I*d*Sqr
t[g])])) + b^2*n^2*((g*(e*x*(-6*d + e*x) + (6*d^2 + 4*d*e*x - 2*e^2*x^2)*Lo
g[d + e*x] - 2*(d^2 - e^2*x^2)*Log[d + e*x]^2))/e^2 + (I*f^(3/2)*(-(Sqrt[g]
*(d + e*x)*Log[d + e*x]^2) + 2*e*(I*Sqrt[f] + Sqrt[g]*x)*Log[d + e*x]*Log[(
e*(Sqrt[f] - I*Sqrt[g]*x))/(e*Sqrt[f] + I*d*Sqrt[g])] + 2*e*(I*Sqrt[f] + Sq
rt[g]*x)*PolyLog[2, (I*Sqrt[g]*(d + e*x))/(e*Sqrt[f] + I*d*Sqrt[g])]))/((e*
Sqrt[f] + I*d*Sqrt[g])*(Sqrt[f] - I*Sqrt[g]*x)) - (f^(3/2)*(Log[d + e*x]*((
-I)*Sqrt[g]*(d + e*x)*Log[d + e*x] + 2*e*(Sqrt[f] + I*Sqrt[g]*x)*Log[(e*(Sq
rt[f] + I*Sqrt[g]*x))/(e*Sqrt[f] - I*d*Sqrt[g])]) + 2*e*(Sqrt[f] + I*Sqrt[g
]*x)*PolyLog[2, (Sqrt[g]*(d + e*x))/(I*e*Sqrt[f] + d*Sqrt[g])]))/((e*Sqrt[f
] - I*d*Sqrt[g])*(Sqrt[f] + I*Sqrt[g]*x)) - 4*f*(Log[d + e*x]^2*Log[1 - (Sq
rt[g]*(d + e*x))/((-I)*e*Sqrt[f] + d*Sqrt[g])] + 2*Log[d + e*x]*PolyLog[2,
(Sqrt[g]*(d + e*x))/((-I)*e*Sqrt[f] + d*Sqrt[g])] - 2*PolyLog[3, (Sqrt[g]*(
d + e*x))/((-I)*e*Sqrt[f] + d*Sqrt[g])]) - 4*f*(Log[d + e*x]^2*Log[1 - (Sqr
t[g]*(d + e*x))/(I*e*Sqrt[f] + d*Sqrt[g])] + 2*Log[d + e*x]*PolyLog[2, (Sqr
t[g]*(d + e*x))/(I*e*Sqrt[f] + d*Sqrt[g])] - 2*PolyLog[3, (Sqrt[g]*(d + e*x
))/(I*e*Sqrt[f] + d*Sqrt[g])])))/(4*g^3)
```

Maple [F]
time = 0.17, size = 0, normalized size = 0.00

$$\int \frac{x^5 (a + b \ln (c (e x + d)^n))^2}{(g x^2 + f)^2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^5*(a+b*ln(c*(e*x+d)^n))^2/(g*x^2+f)^2,x)
```

```
[Out] int(x^5*(a+b*ln(c*(e*x+d)^n))^2/(g*x^2+f)^2,x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(a+b*log(c*(e*x+d)^n))^2/(g*x^2+f)^2,x, algorithm="maxima")
```

```
[Out] -1/2*a^2*(f^2/(g^4*x^2 + f*g^3) - x^2/g^2 + 2*f*log(g*x^2 + f)/g^3) + integ
rate((b^2*x^5*log((x*e + d)^n)^2 + 2*(b^2*log(c) + a*b)*x^5*log((x*e + d)^n
) + (b^2*log(c)^2 + 2*a*b*log(c))*x^5)/(g^2*x^4 + 2*f*g*x^2 + f^2), x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(a+b*log(c*(e*x+d)^n))^2/(g*x^2+f)^2,x, algorithm="fricas")
```

```
[Out] integral((b^2*x^5*log((x*e + d)^n*c)^2 + 2*a*b*x^5*log((x*e + d)^n*c) + a^2
*x^5)/(g^2*x^4 + 2*f*g*x^2 + f^2), x)
```

Sympy [F(-1)] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**5*(a+b*ln(c*(e*x+d)**n))**2/(g*x**2+f)**2,x)
```

```
[Out] Timed out
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(a+b*log(c*(e*x+d)^n))^2/(g*x^2+f)^2,x, algorithm="giac")
```

```
[Out] integrate((b*log((x*e + d)^n*c) + a)^2*x^5/(g*x^2 + f)^2, x)
```

Mupad [F]

time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x^5 \left(a+b \ln \left(c \left(d+e x\right)^n\right)\right)^2}{\left(g x^2+f\right)^2} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^5*(a + b*log(c*(d + e*x)^n))^2)/(f + g*x^2)^2,x)
[Out] int((x^5*(a + b*log(c*(d + e*x)^n))^2)/(f + g*x^2)^2, x)
```

3.321 $\int \frac{x^3(a+b\log(c(d+ex)^n))^2}{\left(f+gx^2\right)^2}\,dx$

Optimal. Leaf size=739

$$-\frac{e^2f(a+b\log\left(c(d+ex)^n\right))^2}{2g^2\left(e^2f+d^2g\right)}+\frac{f(a+b\log\left(c(d+ex)^n\right))^2}{2g^2\left(f+gx^2\right)}+\frac{be\left(ef+d\sqrt{-f}\,\sqrt{g}\,\right)n(a+b\log\left(c(d+ex)^n\right))\,\mathrm{l}}{2g^2\left(e^2f+d^2g\right)}$$

```
[Out] -1/2*e^2*f*(a+b*ln(c*(e*x+d)^n))^2/g^2/(d^2*g+e^2*f)+1/2*f*(a+b*ln(c*(e*x+d
)^n))^2/g^2/(g*x^2+f)+1/2*(a+b*ln(c*(e*x+d)^n))^2*ln(e*((-f)^(1/2)-x*g^(1/2
))/(e*(-f)^(1/2)+d*g^(1/2)))/g^2+1/2*(a+b*ln(c*(e*x+d)^n))^2*ln(e*((-f)^(1/
2)+x*g^(1/2))/(e*(-f)^(1/2)-d*g^(1/2)))/g^2+b*n*(a+b*ln(c*(e*x+d)^n))*polyl
og(2,-(e*x+d)*g^(1/2)/(e*(-f)^(1/2)-d*g^(1/2)))/g^2+b*n*(a+b*ln(c*(e*x+d)^n
))*polylog(2,(e*x+d)*g^(1/2)/(e*(-f)^(1/2)+d*g^(1/2)))/g^2-b^2*n^2*polylog(
3,-(e*x+d)*g^(1/2)/(e*(-f)^(1/2)-d*g^(1/2)))/g^2-b^2*n^2*polylog(3,(e*x+d)*
g^(1/2)/(e*(-f)^(1/2)+d*g^(1/2)))/g^2-1/2*b^2*e*n^2*polylog(2,-(e*x+d)*g^(1
/2)/(e*(-f)^(1/2)-d*g^(1/2)))*(-f)^(1/2)*(e*(-f)^(1/2)+d*g^(1/2))/g^2/(d^2*
g+e^2*f)+1/2*b*e*n*(a+b*ln(c*(e*x+d)^n))*ln(e*((-f)^(1/2)+x*g^(1/2))/(e*(-f
)^(1/2)-d*g^(1/2)))*(e*f-d*(-f)^(1/2)*g^(1/2))/g^2/(d^2*g+e^2*f)+1/2*b*e*n*
(a+b*ln(c*(e*x+d)^n))*ln(e*((-f)^(1/2)-x*g^(1/2))/(e*(-f)^(1/2)+d*g^(1/2)))
*(e*f+d*(-f)^(1/2)*g^(1/2))/g^2/(d^2*g+e^2*f)+1/2*b^2*e*n^2*polylog(2,(e*x+
d)*g^(1/2)/(e*(-f)^(1/2)+d*g^(1/2)))*(e*f+d*(-f)^(1/2)*g^(1/2))/g^2/(d^2*g+
e^2*f)
```

Rubi [A]
time = 0.88, antiderivative size = 739, normalized size of antiderivative = 1.00, number of steps used = 25, number of rules used = 12, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.414$, Rules used = {2463, 2460, 2465, 2437, 2338, 2441, 2440, 2438, 2443, 2481, 2421, 6724}

$$\frac{bn\,\mathrm{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)(a+b\log\left(c(d+ex)^n\right))}{g^2}+\frac{bn\,\mathrm{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+e\sqrt{-f}}\right)(a+b\log\left(c(d+ex)^n\right))}{g^2}-\frac{b^2e\sqrt{-f}\,n^2\left(d\sqrt{g}+e\sqrt{-f}\right)\mathrm{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)}{2g^2\left(d^2g+e^2f\right)}+\frac{b^2en^2\left(d\sqrt{-f}\,\sqrt{g}+ef\right)\mathrm{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+e\sqrt{-f}}\right)}{2g^2\left(d^2g+e^2f\right)}-\frac{b^2n^2\,\mathrm{PolyLog}\left(3,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)}{g^2}-\frac{b^2n^2\,\mathrm{PolyLog}\left(3,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+e\sqrt{-f}}\right)}{g^2}+\frac{ben\left(d\sqrt{-f}\,\sqrt{g}+ef\right)\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}\,x\right)}{d\sqrt{g}+e\sqrt{-f}}\right)(a+b\log\left(c(d+ex)^n\right))}{2g^2\left(d^2g+e^2f\right)}+\frac{ben\left(ef-d\sqrt{-f}\,\sqrt{g}\right)\log\left(\frac{e\left(\sqrt{-f}+\sqrt{g}\,x\right)}{e\sqrt{-f}-d\sqrt{g}}\right)(a+b\log\left(c(d+ex)^n\right))}{2g^2\left(d^2g+e^2f\right)}-\frac{e^2f(a+b\log\left(c(d+ex)^n\right))^2}{2g^2\left(d^2g+e^2f\right)}+\frac{f(a+b\log\left(c(d+ex)^n\right))^2}{2g^2\left(f+gx^2\right)}+\frac{\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}\,x\right)}{d\sqrt{g}+e\sqrt{-f}}\right)(a+b\log\left(c(d+ex)^n\right))^2}{2g^2}+\frac{\log\left(\frac{e\left(\sqrt{-f}+\sqrt{g}\,x\right)}{e\sqrt{-f}-d\sqrt{g}}\right)(a+b\log\left(c(d+ex)^n\right))^2}{2g^2}$$

Antiderivative was successfully verified.

```
[In] Int[(x^3*(a + b*Log[c*(d + e*x)^n])^2)/(f + g*x^2)^2,x]
```

```
[Out] -1/2*(e^2*f*(a + b*Log[c*(d + e*x)^n])^2)/(g^2*(e^2*f + d^2*g)) + (f*(a + b
*Log[c*(d + e*x)^n])^2)/(2*g^2*(f + g*x^2)) + (b*e*(e*f + d*Sqrt[-f]*Sqrt[g
])*n*(a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[-f]
+ d*Sqrt[g])])/(2*g^2*(e^2*f + d^2*g)) + ((a + b*Log[c*(d + e*x)^n])^2*Log[
(e*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(2*g^2) + (b*e*(e*f -
 d*Sqrt[-f]*Sqrt[g])*n*(a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] + Sqrt[g
]*x))/(e*Sqrt[-f] - d*Sqrt[g])])/(2*g^2*(e^2*f + d^2*g)) + ((a + b*Log[c*(d
 + e*x)^n])^2*Log[(e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g])])/(2*
g^2) - (b^2*e*Sqrt[-f]*(e*Sqrt[-f] + d*Sqrt[g])*n^2*PolyLog[2, -((Sqrt[g]*(
```

```
d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/(2*g^2*(e^2*f + d^2*g)) + (b*n*(a + b
*Log[c*(d + e*x)^n])*PolyLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[
g]))])/g^2 + (b^2*e*(e*f + d*Sqrt[-f]*Sqrt[g])*n^2*PolyLog[2, (Sqrt[g]*(d +
 e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(2*g^2*(e^2*f + d^2*g)) + (b*n*(a + b*Log
[c*(d + e*x)^n])*PolyLog[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/
g^2 - (b^2*n^2*PolyLog[3, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])
/g^2 - (b^2*n^2*PolyLog[3, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/g
^2
```

Rule 2338

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2421

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> Simp[(-PolyLog[2, (-d)*f*x^m])*((a + b*Log[c
*x^n])^p/m), x] + Dist[b*n*(p/m), Int[PolyLog[2, (-d)*f*x^m]*((a + b*Log[c*
x^n])^(p - 1)/x), x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0
] && EqQ[d*e, 1]
```

Rule 2437

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[(f*(x/d))^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + c*e*(x/g)])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2441

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d + e*x
)^n])/g), x] - Dist[b*e*(n/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2443

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d
+ e*x)^n])^p/g), x] - Dist[b*e*n*(p/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]*
((a + b*Log[c*(d + e*x)^n])^(p - 1)/(d + e*x)), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2460

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(x_)^(m_.)*(
(f_.) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Simp[(f + g*x^r)^(q + 1)*((a
+ b*Log[c*(d + e*x)^n])^p/(g*r*(q + 1))), x] - Dist[b*e*n*(p/(g*r*(q + 1)))
, Int[(f + g*x^r)^(q + 1)*((a + b*Log[c*(d + e*x)^n])^(p - 1)/(d + e*x)), x
], x] /; FreeQ[{a, b, c, d, e, f, g, m, n, q, r}, x] && EqQ[m, r - 1] && Ne
Q[q, -1] && IGtQ[p, 0]
```

Rule 2463

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rule 2465

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2481

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[(k*(x/d))^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + j*(x/e))^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 6724

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{x^3(a+b\log(c(d+ex)^n))^2}{(f+gx^2)^2}\,dx = \int \left(-\frac{fx(a+b\log(c(d+ex)^n))^2}{g(f+gx^2)^2} + \frac{x(a+b\log(c(d+ex)^n))^2}{g(f+gx^2)}\right)dx$$

$$= \frac{\int \frac{x(a+b\log(c(d+ex)^n))^2}{f+gx^2}\,dx}{g} - \frac{f\int \frac{x(a+b\log(c(d+ex)^n))^2}{(f+gx^2)^2}\,dx}{g}$$

$$= \frac{f(a+b\log(c(d+ex)^n))^2}{2g^2(f+gx^2)} + \frac{\int \left(-\frac{(a+b\log(c(d+ex)^n))^2}{2\sqrt{g}\left(\sqrt{-f}-\sqrt{g}x\right)} + \frac{(a+b\log(c(d+\cdots}{2\sqrt{g}\left(\sqrt{-f}\cdots\right.}\right.}{g}$$

$$= \frac{f(a+b\log(c(d+ex)^n))^2}{2g^2(f+gx^2)} - \frac{\int \frac{(a+b\log(c(d+ex)^n))^2}{\sqrt{-f}-\sqrt{g}x}\,dx}{2g^{3/2}} + \frac{\int \frac{(a+b\log(c(d+ex)^n))\cdots}{\sqrt{-f}+\sqrt{g}x}}{2g^{3/2}}$$

$$= \frac{f(a+b\log(c(d+ex)^n))^2}{2g^2(f+gx^2)} + \frac{(a+b\log(c(d+ex)^n))^2\log\left(\frac{e\left(\sqrt{-f}-\sqrt{\cdots}\right.}{e\sqrt{-f}+d\sqrt{\cdots}}\right.}{2g^2}$$

$$= \frac{f(a+b\log(c(d+ex)^n))^2}{2g^2(f+gx^2)} + \frac{(a+b\log(c(d+ex)^n))^2\log\left(\frac{e\left(\sqrt{-f}-\sqrt{\cdots}\right.}{e\sqrt{-f}+d\sqrt{\cdots}}\right.}{2g^2}$$

$$= -\frac{e^2f(a+b\log(c(d+ex)^n))^2}{2g^2(e^2f+d^2g)} + \frac{f(a+b\log(c(d+ex)^n))^2}{2g^2(f+gx^2)} + \frac{(a+b\log\cdots}{\cdots}$$

$$= -\frac{e^2f(a+b\log(c(d+ex)^n))^2}{2g^2(e^2f+d^2g)} + \frac{f(a+b\log(c(d+ex)^n))^2}{2g^2(f+gx^2)} + \frac{be\left(ef+\cdots\right.}{\cdots}$$

$$= -\frac{e^2f(a+b\log(c(d+ex)^n))^2}{2g^2(e^2f+d^2g)} + \frac{f(a+b\log(c(d+ex)^n))^2}{2g^2(f+gx^2)} + \frac{be\left(ef+\cdots\right.}{\cdots}$$

$$= -\frac{e^2f(a+b\log(c(d+ex)^n))^2}{2g^2(e^2f+d^2g)} + \frac{f(a+b\log(c(d+ex)^n))^2}{2g^2(f+gx^2)} + \frac{be\left(ef+\cdots\right.}{\cdots}$$

Mathematica [C] Result contains complex when optimal does not.
time = 1.70, size = 1103, normalized size = 1.49

[illegible]

Antiderivative was successfully verified.

```
[In] Integrate[(x^3*(a + b*Log[c*(d + e*x)^n])^2)/(f + g*x^2)^2,x]
```

```
[Out] ((2*f*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2)/(f + g*x^2) + 2*(a -
 b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2*Log[f + g*x^2] + 2*b*n*(a - b*n
*Log[d + e*x] + b*Log[c*(d + e*x)^n])*((Sqrt[f]*((-I)*Sqrt[g]*(d + e*x)*Log
[d + e*x] + e*(Sqrt[f] + I*Sqrt[g]*x)*Log[I*Sqrt[f] - Sqrt[g]*x]))/((e*Sqrt
[f] - I*d*Sqrt[g])*(Sqrt[f] + I*Sqrt[g]*x)) + (Sqrt[f]*(I*Sqrt[g]*(d + e*x)
*Log[d + e*x] + e*(Sqrt[f] - I*Sqrt[g]*x)*Log[I*Sqrt[f] + Sqrt[g]*x]))/((e*
Sqrt[f] + I*d*Sqrt[g])*(Sqrt[f] - I*Sqrt[g]*x)) + 2*(Log[d + e*x]*Log[(e*(S
qrt[f] + I*Sqrt[g]*x))/(e*Sqrt[f] - I*d*Sqrt[g])] + PolyLog[2, ((-I)*Sqrt[g
]*(d + e*x))/(e*Sqrt[f] - I*d*Sqrt[g])]) + 2*(Log[d + e*x]*Log[(e*(Sqrt[f]
- I*Sqrt[g]*x))/(e*Sqrt[f] + I*d*Sqrt[g])] + PolyLog[2, (I*Sqrt[g]*(d + e*x
))/(e*Sqrt[f] + I*d*Sqrt[g])])) + b^2*n^2*(2*Log[d + e*x]^2*Log[1 - (Sqrt[g
]*(d + e*x))/((-I)*e*Sqrt[f] + d*Sqrt[g])] + 2*Log[d + e*x]^2*Log[1 - (Sqrt
[g]*(d + e*x))/(I*e*Sqrt[f] + d*Sqrt[g])] + (Sqrt[f]*(Log[d + e*x]*(I*Sqrt[
g]*(d + e*x)*Log[d + e*x] + 2*e*(Sqrt[f] - I*Sqrt[g]*x)*Log[(e*(Sqrt[f] - I
*Sqrt[g]*x))/(e*Sqrt[f] + I*d*Sqrt[g])]) + 2*e*(Sqrt[f] - I*Sqrt[g]*x)*Poly
Log[2, (I*Sqrt[g]*(d + e*x))/(e*Sqrt[f] + I*d*Sqrt[g])]))/((e*Sqrt[f] + I*d
*Sqrt[g])*(Sqrt[f] - I*Sqrt[g]*x)) + 4*Log[d + e*x]*PolyLog[2, (Sqrt[g]*(d
+ e*x))/((-I)*e*Sqrt[f] + d*Sqrt[g])] + 4*Log[d + e*x]*PolyLog[2, (Sqrt[g]*
(d + e*x))/(I*e*Sqrt[f] + d*Sqrt[g])] + (Sqrt[f]*(Log[d + e*x]*((-I)*Sqrt[g
]*(d + e*x)*Log[d + e*x] + 2*e*(Sqrt[f] + I*Sqrt[g]*x)*Log[(e*(Sqrt[f] + I*
Sqrt[g]*x))/(e*Sqrt[f] - I*d*Sqrt[g])]) + 2*e*(Sqrt[f] + I*Sqrt[g]*x)*PolyL
og[2, (Sqrt[g]*(d + e*x))/(I*e*Sqrt[f] + d*Sqrt[g])]))/((e*Sqrt[f] - I*d*Sq
rt[g])*(Sqrt[f] + I*Sqrt[g]*x)) - 4*PolyLog[3, (Sqrt[g]*(d + e*x))/((-I)*e*
Sqrt[f] + d*Sqrt[g])] - 4*PolyLog[3, (Sqrt[g]*(d + e*x))/(I*e*Sqrt[f] + d*S
qrt[g])]))/(4*g^2)
```

Maple [F]
time = 0.20, size = 0, normalized size = 0.00

$$\int \frac{x^{3} \left(a +b \ln \left(c \left(e x +d \right)^{n}\right)\right)^{2}}{\left(g \,x^{2}+f \right)^{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(a+b*ln(c*(e*x+d)^n))^2/(g*x^2+f)^2,x)
```

```
[Out] int(x^3*(a+b*ln(c*(e*x+d)^n))^2/(g*x^2+f)^2,x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(a+b*log(c*(e*x+d)^n))^2/(g*x^2+f)^2,x, algorithm="maxima")
```

```
[Out] 1/2*a^2*(f/(g^3*x^2 + f*g^2) + log(g*x^2 + f)/g^2) + integrate((b^2*x^3*log
((x*e + d)^n)^2 + 2*(b^2*log(c) + a*b)*x^3*log((x*e + d)^n) + (b^2*log(c)^2
 + 2*a*b*log(c))*x^3)/(g^2*x^4 + 2*f*g*x^2 + f^2), x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(a+b*log(c*(e*x+d)^n))^2/(g*x^2+f)^2,x, algorithm="fricas")
```

```
[Out] integral((b^2*x^3*log((x*e + d)^n*c)^2 + 2*a*b*x^3*log((x*e + d)^n*c) + a^2
*x^3)/(g^2*x^4 + 2*f*g*x^2 + f^2), x)
```

Sympy [F(-1)] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(a+b*ln(c*(e*x+d)**n))**2/(g*x**2+f)**2,x)
```

```
[Out] Timed out
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(a+b*log(c*(e*x+d)^n))^2/(g*x^2+f)^2,x, algorithm="giac")
```

```
[Out] integrate((b*log((x*e + d)^n*c) + a)^2*x^3/(g*x^2 + f)^2, x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x^3\,{\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)}^2}{{\left(g\,x^2+f\right)}^2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^3*(a + b*log(c*(d + e*x)^n))^2)/(f + g*x^2)^2,x)
[Out] int((x^3*(a + b*log(c*(d + e*x)^n))^2)/(f + g*x^2)^2, x)
```

3.322 $\int \frac{x(a+b\log(c(d+ex)^n))^2}{(f+gx^2)^2}\,dx$

Optimal. Leaf size=430

$$\frac{e^2(a+b\log(c(d+ex)^n))^2}{2g(e^2f+d^2g)}-\frac{(a+b\log(c(d+ex)^n))^2}{2g(f+gx^2)}-\frac{be\left(ef+d\sqrt{-f}\,\sqrt{g}\right)n(a+b\log(c(d+ex)^n))\log}{2fg(e^2f+d^2g)}$$

```
[Out] 1/2*e^2*(a+b*ln(c*(e*x+d)^n))^2/g/(d^2*g+e^2*f)-1/2*(a+b*ln(c*(e*x+d)^n))^2
/g/(g*x^2+f)-1/2*b^2*e*n^2*polylog(2,-(e*x+d)*g^(1/2)/(e*(-f)^(1/2)-d*g^(1/
2)))*(e*(-f)^(1/2)+d*g^(1/2))/g/(d^2*g+e^2*f)/(-f)^(1/2)-1/2*b*e*n*(a+b*ln(
c*(e*x+d)^n))*ln(e*((-f)^(1/2)+x*g^(1/2))/(e*(-f)^(1/2)-d*g^(1/2)))*(e*f-d*
(-f)^(1/2)*g^(1/2))/f/g/(d^2*g+e^2*f)-1/2*b*e*n*(a+b*ln(c*(e*x+d)^n))*ln(e*
((-f)^(1/2)-x*g^(1/2))/(e*(-f)^(1/2)+d*g^(1/2)))*(e*f+d*(-f)^(1/2)*g^(1/2))
/f/g/(d^2*g+e^2*f)-1/2*b^2*e*n^2*polylog(2,(e*x+d)*g^(1/2)/(e*(-f)^(1/2)+d*
g^(1/2)))*(e*f+d*(-f)^(1/2)*g^(1/2))/f/g/(d^2*g+e^2*f)
```

Rubi [A]
time = 0.41, antiderivative size = 430, normalized size of antiderivative = 1.00, number of steps used = 13, number of rules used = 7, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.259$, Rules used = {2460, 2465, 2437, 2338, 2441, 2440, 2438}

$$-\frac{b^2en^2\left(d\sqrt{g}+e\sqrt{-f}\right)\text{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)}{2\sqrt{-f}\,g(d^2g+e^2f)}-\frac{b^2en^2\left(d\sqrt{-f}\,\sqrt{g}+ef\right)\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+e\sqrt{-f}}\right)}{2fg(d^2g+e^2f)}-\frac{ben\left(d\sqrt{-f}\,\sqrt{g}+ef\right)\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}x\right)}{d\sqrt{g}+e\sqrt{-f}}\right)(a+b\log(c(d+ex)^n))}{2fg(d^2g+e^2f)}-\frac{ben\left(ef-d\sqrt{-f}\,\sqrt{g}\right)\log\left(\frac{e\left(\sqrt{-f}+\sqrt{g}x\right)}{e\sqrt{-f}-d\sqrt{g}}\right)(a+b\log(c(d+ex)^n))}{2fg(d^2g+e^2f)}+\frac{e^2(a+b\log(c(d+ex)^n))^2}{2g(d^2g+e^2f)}-\frac{(a+b\log(c(d+ex)^n))^2}{2g(f+gx^2)}$$

Antiderivative was successfully verified.

```
[In] Int[(x*(a + b*Log[c*(d + e*x)^n])^2)/(f + g*x^2)^2,x]
```

```
[Out] (e^2*(a + b*Log[c*(d + e*x)^n])^2)/(2*g*(e^2*f + d^2*g)) - (a + b*Log[c*(d
+ e*x)^n])^2/(2*g*(f + g*x^2)) - (b*e*(e*f + d*Sqrt[-f]*Sqrt[g])*n*(a + b*L
og[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[-f] + d*Sqrt[g])]
)/(2*f*g*(e^2*f + d^2*g)) - (b*e*(e*f - d*Sqrt[-f]*Sqrt[g])*n*(a + b*Log[c*
(d + e*x)^n])*Log[(e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g])])/(2*
f*g*(e^2*f + d^2*g)) - (b^2*e*(e*Sqrt[-f] + d*Sqrt[g])*n^2*PolyLog[2, -((Sq
rt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/(2*Sqrt[-f]*g*(e^2*f + d^2*g))
 - (b^2*e*(e*f + d*Sqrt[-f]*Sqrt[g])*n^2*PolyLog[2, (Sqrt[g]*(d + e*x))/(e*
Sqrt[-f] + d*Sqrt[g])])/(2*f*g*(e^2*f + d^2*g))
```

Rule 2338

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2437

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[(f*(x/d))^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + c*e*(x/g)])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2441

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d + e*x
)^n])/g), x] - Dist[b*e*(n/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2460

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(x_)^(m_.)*(
(f_.) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Simp[(f + g*x^r)^(q + 1)*((a
+ b*Log[c*(d + e*x)^n])^p/(g*r*(q + 1))), x] - Dist[b*e*n*(p/(g*r*(q + 1)))
, Int[(f + g*x^r)^(q + 1)*((a + b*Log[c*(d + e*x)^n])^(p - 1)/(d + e*x)), x
], x] /; FreeQ[{a, b, c, d, e, f, g, m, n, q, r}, x] && EqQ[m, r - 1] && Ne
Q[q, -1] && IGtQ[p, 0]
```

Rule 2465

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rubi steps

$$\int \frac{x(a+b\log(c(d+ex)^n))^2}{(f+gx^2)^2}\,dx = -\frac{(a+b\log(c(d+ex)^n))^2}{2g(f+gx^2)} + \frac{(ben)\int \frac{a+b\log(c(d+ex)^n)}{(d+ex)(f+gx^2)}\,dx}{g}$$

$$= -\frac{(a+b\log(c(d+ex)^n))^2}{2g(f+gx^2)} + \frac{(ben)\int \left(\frac{e^2(a+b\log(c(d+ex)^n))}{(e^2f+d^2g)(d+ex)} - \frac{g(-d+ex)(a+b\log}{(e^2f+d^2g)(}\right.}{g}$$

$$= -\frac{(a+b\log(c(d+ex)^n))^2}{2g(f+gx^2)} - \frac{(ben)\int \frac{(-d+ex)(a+b\log(c(d+ex)^n))}{f+gx^2}\,dx}{e^2f+d^2g} + \frac{(be^3n)}{}$$

$$= -\frac{(a+b\log(c(d+ex)^n))^2}{2g(f+gx^2)} - \frac{(ben)\int \left(\frac{\left(-d\sqrt{-f}-\frac{ef}{\sqrt{g}}\right)(a+b\log(c(d+ex)^n))}{2f\left(\sqrt{-f}-\sqrt{g}\,x\right)}\right.}{e^2f+}$$

$$= \frac{e^2(a+b\log(c(d+ex)^n))^2}{2g(e^2f+d^2g)} - \frac{(a+b\log(c(d+ex)^n))^2}{2g(f+gx^2)} - \frac{\left(be\left(\frac{d}{\sqrt{-f}}+\right.\right.}{}$$

$$= \frac{e^2(a+b\log(c(d+ex)^n))^2}{2g(e^2f+d^2g)} - \frac{(a+b\log(c(d+ex)^n))^2}{2g(f+gx^2)} - \frac{be\left(\frac{df}{(-f)^{3/2}}+\right.}{}$$

$$= \frac{e^2(a+b\log(c(d+ex)^n))^2}{2g(e^2f+d^2g)} - \frac{(a+b\log(c(d+ex)^n))^2}{2g(f+gx^2)} - \frac{be\left(\frac{df}{(-f)^{3/2}}+\right.}{}$$

$$= \frac{e^2(a+b\log(c(d+ex)^n))^2}{2g(e^2f+d^2g)} - \frac{(a+b\log(c(d+ex)^n))^2}{2g(f+gx^2)} - \frac{be\left(\frac{df}{(-f)^{3/2}}+\right.}{}$$

Mathematica [C] Result contains complex when optimal does not.
time = 0.43, size = 590, normalized size = 1.37

$$\frac{-\frac{2(a-bn\log(d+ex)+b\log(c(d+ex)^n))^2}{f+gx^2} + \frac{2bn(-a+bn\log(d+ex)-b\log(c(d+ex)^n))\left(2\sqrt{f}\,g(d^2-e^2x^2)\log(d+ex)+e(f+gx^2)\left(\left(e\sqrt{f}+id\sqrt{g}\right)\log\left(i\sqrt{f}-\sqrt{g}\,x\right)+\left(e\sqrt{f}-id\sqrt{g}\right)\log\left(i\sqrt{f}+\sqrt{g}\,x\right)\right)\right)}{\sqrt{f}\,(e^2f+d^2g)(f+gx^2)} + \frac{ib^2n^2\left(\frac{-\sqrt{g}(d+ex)\log^2(d+ex)+2e\left(i\sqrt{f}+\sqrt{g}\,x\right)\log(d+ex)\log\left(\frac{e\left(\sqrt{f}-i\sqrt{g}\,x\right)}{e\sqrt{f}+id\sqrt{g}}\right)+2e\left(i\sqrt{f}+\sqrt{g}\,x\right)\mathrm{Li}_2\left(\frac{i\sqrt{g}(d+ex)}{e\sqrt{f}+id\sqrt{g}}\right)}{\left(e\sqrt{f}+id\sqrt{g}\right)\left(\sqrt{f}-i\sqrt{g}\,x\right)} + \frac{\log(d+ex)\left(\sqrt{g}(d+ex)\log(d+ex)+2ie\left(\sqrt{f}+i\sqrt{g}\,x\right)\log\left(\frac{e\left(\sqrt{f}+i\sqrt{g}\,x\right)}{e\sqrt{f}-id\sqrt{g}}\right)\right)+2ie\left(\sqrt{f}+i\sqrt{g}\,x\right)\mathrm{Li}_2\left(\frac{\sqrt{g}(d+ex)}{ie\sqrt{f}+d\sqrt{g}}\right)}{\left(e\sqrt{f}-id\sqrt{g}\right)\left(\sqrt{f}+i\sqrt{g}\,x\right)}\right)}{\sqrt{f}}}{4g}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x*(a + b*Log[c*(d + e*x)^n])^2)/(f + g*x^2)^2,x]
```

```
[Out] ((-2*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2)/(f + g*x^2) + (2*b*n*
(-a + b*n*Log[d + e*x] - b*Log[c*(d + e*x)^n])*(2*Sqrt[f]*g*(d^2 - e^2*x^2)
*Log[d + e*x] + e*(f + g*x^2)*((e*Sqrt[f] + I*d*Sqrt[g])*Log[I*Sqrt[f] - Sq
rt[g]*x] + (e*Sqrt[f] - I*d*Sqrt[g])*Log[I*Sqrt[f] + Sqrt[g]*x])))/(Sqrt[f]
*(e^2*f + d^2*g)*(f + g*x^2)) + (I*b^2*n^2*((-(Sqrt[g]*(d + e*x)*Log[d + e*
x]^2) + 2*e*(I*Sqrt[f] + Sqrt[g]*x)*Log[d + e*x]*Log[(e*(Sqrt[f] - I*Sqrt[g
]*x))/(e*Sqrt[f] + I*d*Sqrt[g])] + 2*e*(I*Sqrt[f] + Sqrt[g]*x)*PolyLog[2, (
I*Sqrt[g]*(d + e*x))/(e*Sqrt[f] + I*d*Sqrt[g])])/((e*Sqrt[f] + I*d*Sqrt[g])
*(Sqrt[f] - I*Sqrt[g]*x)) + (Log[d + e*x]*(Sqrt[g]*(d + e*x)*Log[d + e*x] +
 (2*I)*e*(Sqrt[f] + I*Sqrt[g]*x)*Log[(e*(Sqrt[f] + I*Sqrt[g]*x))/(e*Sqrt[f]
 - I*d*Sqrt[g])]) + (2*I)*e*(Sqrt[f] + I*Sqrt[g]*x)*PolyLog[2, (Sqrt[g]*(d
+ e*x))/(I*e*Sqrt[f] + d*Sqrt[g])])/((e*Sqrt[f] - I*d*Sqrt[g])*(Sqrt[f] + I
*Sqrt[g]*x))))/Sqrt[f])/(4*g)
```

Maple [C] Result contains higher order function than in optimal. Order 9 vs. order 4.
time = 0.68, size = 2134, normalized size = 4.96

method	result	size
risch	Expression too large to display	2134

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(a+b*ln(c*(e*x+d)^n))^2/(g*x^2+f)^2,x,method=_RETURNVERBOSE)
```

```
[Out] -b^2*n^2*e/(d^2*g+e^2*f)*d/(f*g)^(1/2)*arctan(1/2*(2*g*(e*x+d)-2*d*g)/e/(f*
g)^(1/2))*ln(e*x+d)+1/2*I*n*e/(d^2*g+e^2*f)*d/(f*g)^(1/2)*arctan(x*g/(f*g)^
(1/2))*b^2*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+1/2*I*n*e/(d^2*g+e^2*f)*d/(f*
g)^(1/2)*arctan(x*g/(f*g)^(1/2))*b^2*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^
n)^2-1/2*I/g*n*e^2/(d^2*g+e^2*f)*ln(e*x+d)*b^2*Pi*csgn(I*c)*csgn(I*(e*x+d)^
n)*csgn(I*c*(e*x+d)^n)+1/4*I/g*n*e^2/(d^2*g+e^2*f)*ln(g*x^2+f)*b^2*Pi*csgn(
I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-b/g/(g*x^2+f)*ln((e*x+d)^n)*a-1/
2*b^2/g/(g*x^2+f)*ln((e*x+d)^n)^2+b*n*e/(d^2*g+e^2*f)*d/(f*g)^(1/2)*arctan(
x*g/(f*g)^(1/2))*a+1/2*b^2*n^2*e/(d^2*g+e^2*f)*ln(e*x+d)/(-f*g)^(1/2)*ln((e
*(-f*g)^(1/2)-g*(e*x+d)+d*g)/(e*(-f*g)^(1/2)+d*g))*d-1/2*b^2*n^2*e/(d^2*g+e
^2*f)*ln(e*x+d)/(-f*g)^(1/2)*ln((e*(-f*g)^(1/2)+g*(e*x+d)-d*g)/(e*(-f*g)^(1
/2)-d*g))*d-1/2*I/g/(g*x^2+f)*ln((e*x+d)^n)*b^2*Pi*csgn(I*(e*x+d)^n)*csgn(I
*c*(e*x+d)^n)^2+b/g*n*e^2/(d^2*g+e^2*f)*ln(e*x+d)*a-1/2/g*n*e^2/(d^2*g+e^2*
f)*ln(g*x^2+f)*b^2*ln(c)+1/g*n*e^2/(d^2*g+e^2*f)*ln(e*x+d)*b^2*ln(c)+b^2*n*
e/(d^2*g+e^2*f)*d/(f*g)^(1/2)*arctan(1/2*(2*g*(e*x+d)-2*d*g)/e/(f*g)^(1/2))
*ln((e*x+d)^n)-1/2*I/g/(g*x^2+f)*ln((e*x+d)^n)*b^2*Pi*csgn(I*c)*csgn(I*c*(e
*x+d)^n)^2+n*e/(d^2*g+e^2*f)*d/(f*g)^(1/2)*arctan(x*g/(f*g)^(1/2))*b^2*ln(c
)-1/2*I/g*n*e^2/(d^2*g+e^2*f)*ln(e*x+d)*b^2*Pi*csgn(I*c*(e*x+d)^n)^3-1/4*I/
g*n*e^2/(d^2*g+e^2*f)*ln(g*x^2+f)*b^2*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)
^n)^2-1/8*(-I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+I*b*Pi*c
sgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)
^2-I*b*Pi*csgn(I*c*(e*x+d)^n)^3+2*b*ln(c)+2*a)^2/g/(g*x^2+f)+1/4*I/g*n*e^2/
```

```
(d^2*g+e^2*f)*ln(g*x^2+f)*b^2*Pi*csgn(I*c*(e*x+d)^n)^3-1/2*b^2/g*n^2*e^2/(d
^2*g+e^2*f)*ln(e*x+d)*ln((e*(-f*g)^(1/2)-g*(e*x+d)+d*g)/(e*(-f*g)^(1/2)+d*g
))-1/2*b^2/g*n*e^2/(d^2*g+e^2*f)*ln(g*(e*x+d)^2-2*d*g*(e*x+d)+d^2*g+f*e^2)*
ln((e*x+d)^n)+1/2*I/g/(g*x^2+f)*ln((e*x+d)^n)*b^2*Pi*csgn(I*c*(e*x+d)^n)^3-
1/g/(g*x^2+f)*ln((e*x+d)^n)*b^2*ln(c)+1/2*b^2/g*n^2*e^2/(d^2*g+e^2*f)*ln(g*
(e*x+d)^2-2*d*g*(e*x+d)+d^2*g+f*e^2)*ln(e*x+d)+1/2*I/g*n*e^2/(d^2*g+e^2*f)*
ln(e*x+d)*b^2*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-1/2*b^2/g*n^2*e^2*
ln(e*x+d)^2/(d^2*g+e^2*f)-1/2*b^2/g*n^2*e^2/(d^2*g+e^2*f)*dilog((e*(-f*g)^(
1/2)-g*(e*x+d)+d*g)/(e*(-f*g)^(1/2)+d*g))-1/2*b^2/g*n^2*e^2/(d^2*g+e^2*f)*d
ilog((e*(-f*g)^(1/2)+g*(e*x+d)-d*g)/(e*(-f*g)^(1/2)-d*g))-1/2*b/g*n*e^2/(d^
2*g+e^2*f)*ln(g*x^2+f)*a+b^2/g*n*e^2/(d^2*g+e^2*f)*ln(e*x+d)*ln((e*x+d)^n)-
1/2*I*n*e/(d^2*g+e^2*f)*d/(f*g)^(1/2)*arctan(x*g/(f*g)^(1/2))*b^2*Pi*csgn(I
*c*(e*x+d)^n)^3+1/2*I/g*n*e^2/(d^2*g+e^2*f)*ln(e*x+d)*b^2*Pi*csgn(I*c)*csgn
(I*c*(e*x+d)^n)^2-1/2*b^2/g*n^2*e^2/(d^2*g+e^2*f)*ln(e*x+d)*ln((e*(-f*g)^(1
/2)+g*(e*x+d)-d*g)/(e*(-f*g)^(1/2)-d*g))+1/2*b^2*n^2*e/(d^2*g+e^2*f)/(-f*g)
^(1/2)*dilog((e*(-f*g)^(1/2)-g*(e*x+d)+d*g)/(e*(-f*g)^(1/2)+d*g))*d-1/2*b^2
*n^2*e/(d^2*g+e^2*f)/(-f*g)^(1/2)*dilog((e*(-f*g)^(1/2)+g*(e*x+d)-d*g)/(e*(
-f*g)^(1/2)-d*g))*d-1/2*I*n*e/(d^2*g+e^2*f)*d/(f*g)^(1/2)*arctan(x*g/(f*g)^
(1/2))*b^2*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-1/4*I/g*n*e^2
/(d^2*g+e^2*f)*ln(g*x^2+f)*b^2*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+1/2*I/g/(
g*x^2+f)*ln((e*x+d)^n)*b^2*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^
n)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*log(c*(e*x+d)^n))^2/(g*x^2+f)^2,x, algorithm="maxima")
```

```
[Out] -1/2*a*b*n*(e*log(g*x^2 + f)/(d^2*g^2 + f*g*e^2) - 2*e*log(x*e + d)/(d^2*g^
2 + f*g*e^2) - 2*d*arctan(g*x/sqrt(f*g))/((d^2*g + f*e^2)*sqrt(f*g)))*e - 1
/2*b^2*(log((x*e + d)^n)^2/(g^2*x^2 + f*g) - 2*integrate((g*x^2*e*log(c)^2
+ d*g*x*log(c)^2 + ((g*n + 2*g*log(c))*x^2*e + 2*d*g*x*log(c) + f*n*e)*log(
(x*e + d)^n))/(g^3*x^5*e + d*g^3*x^4 + 2*f*g^2*x^3*e + 2*d*f*g^2*x^2 + f^2*
g*x*e + d*f^2*g), x)) - a*b*log((x*e + d)^n*c)/(g^2*x^2 + f*g) - 1/2*a^2/(g
^2*x^2 + f*g)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*log(c*(e*x+d)^n))^2/(g*x^2+f)^2,x, algorithm="fricas")
```

```
[Out] integral((b^2*x*log((x*e + d)^n*c)^2 + 2*a*b*x*log((x*e + d)^n*c) + a^2*x)/
(g^2*x^4 + 2*f*g*x^2 + f^2), x)
```

Sympy [**F(-1)**] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*ln(c*(e*x+d)**n))**2/(g*x**2+f)**2,x)
```

```
[Out] Timed out
```

Giac [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*log(c*(e*x+d)^n))^2/(g*x^2+f)^2,x, algorithm="giac")
```

```
[Out] integrate((b*log((x*e + d)^n*c) + a)^2*x/(g*x^2 + f)^2, x)
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x\,{\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)}^2}{{\left(g\,x^2+f\right)}^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x*(a + b*log(c*(d + e*x)^n))^2)/(f + g*x^2)^2,x)
```

```
[Out] int((x*(a + b*log(c*(d + e*x)^n))^2)/(f + g*x^2)^2, x)
```

3.323 $\int \frac{(a+b\log(c(d+ex)^n))^2}{x(f+gx^2)^2}\,dx$

Optimal. Leaf size=814

$$-\frac{e^2(a+b\log(c(d+ex)^n))^2}{2f(e^2f+d^2g)}+\frac{(a+b\log(c(d+ex)^n))^2}{2f(f+gx^2)}+\frac{\log\left(-\frac{ex}{d}\right)(a+b\log(c(d+ex)^n))^2}{f^2}+\frac{be\left(ef+d\sqrt{-\right.}}{}$$

```
[Out] -1/2*e^2*(a+b*ln(c*(e*x+d)^n))^2/f/(d^2*g+e^2*f)+1/2*(a+b*ln(c*(e*x+d)^n))^
2/f/(g*x^2+f)+ln(-e*x/d)*(a+b*ln(c*(e*x+d)^n))^2/f^2-1/2*(a+b*ln(c*(e*x+d)^
n))^2*ln(e*((-f)^(1/2)-x*g^(1/2))/(e*(-f)^(1/2)+d*g^(1/2)))/f^2-1/2*(a+b*ln
(c*(e*x+d)^n))^2*ln(e*((-f)^(1/2)+x*g^(1/2))/(e*(-f)^(1/2)-d*g^(1/2)))/f^2+
2*b*n*(a+b*ln(c*(e*x+d)^n))*polylog(2,1+e*x/d)/f^2-b*n*(a+b*ln(c*(e*x+d)^n)
)*polylog(2,-(e*x+d)*g^(1/2)/(e*(-f)^(1/2)-d*g^(1/2)))/f^2-b*n*(a+b*ln(c*(e
*x+d)^n))*polylog(2,(e*x+d)*g^(1/2)/(e*(-f)^(1/2)+d*g^(1/2)))/f^2-2*b^2*n^2
*polylog(3,1+e*x/d)/f^2+b^2*n^2*polylog(3,-(e*x+d)*g^(1/2)/(e*(-f)^(1/2)-d*
g^(1/2)))/f^2+b^2*n^2*polylog(3,(e*x+d)*g^(1/2)/(e*(-f)^(1/2)+d*g^(1/2)))/f
^2-1/2*b^2*e*n^2*polylog(2,-(e*x+d)*g^(1/2)/(e*(-f)^(1/2)-d*g^(1/2)))*(e*(-
f)^(1/2)+d*g^(1/2))/(-f)^(3/2)/(d^2*g+e^2*f)+1/2*b*e*n*(a+b*ln(c*(e*x+d)^n)
)*ln(e*((-f)^(1/2)+x*g^(1/2))/(e*(-f)^(1/2)-d*g^(1/2)))*(e*f-d*(-f)^(1/2)*g
^(1/2))/f^2/(d^2*g+e^2*f)+1/2*b*e*n*(a+b*ln(c*(e*x+d)^n))*ln(e*((-f)^(1/2)-
x*g^(1/2))/(e*(-f)^(1/2)+d*g^(1/2)))*(e*f+d*(-f)^(1/2)*g^(1/2))/f^2/(d^2*g+
e^2*f)+1/2*b^2*e*n^2*polylog(2,(e*x+d)*g^(1/2)/(e*(-f)^(1/2)+d*g^(1/2)))*(e
*f+d*(-f)^(1/2)*g^(1/2))/f^2/(d^2*g+e^2*f)
```

Rubi [A]
time = 0.96, antiderivative size = 814, normalized size of antiderivative = 1.00, number of steps used = 29, number of rules used = 12, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.414$, Rules used = {2463, 2443, 2481, 2421, 6724, 2460, 2465, 2437, 2338, 2441, 2440, 2438}

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^2/(x*(f + g*x^2)^2),x]
```

```
[Out] -1/2*(e^2*(a + b*Log[c*(d + e*x)^n])^2)/(f*(e^2*f + d^2*g)) + (a + b*Log[c*
(d + e*x)^n])^2/(2*f*(f + g*x^2)) + (Log[-((e*x)/d)]*(a + b*Log[c*(d + e*x)
^n])^2)/f^2 + (b*e*(e*f + d*Sqrt[-f]*Sqrt[g])*n*(a + b*Log[c*(d + e*x)^n])*
Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(2*f^2*(e^2*f + d
^2*g)) - ((a + b*Log[c*(d + e*x)^n])^2*Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*Sq
rt[-f] + d*Sqrt[g])])/(2*f^2) + (b*e*(e*f - d*Sqrt[-f]*Sqrt[g])*n*(a + b*Lo
g[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g])])
/(2*f^2*(e^2*f + d^2*g)) - ((a + b*Log[c*(d + e*x)^n])^2*Log[(e*(Sqrt[-f] +
```

```
 Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g])])/(2*f^2) - (b^2*e*(e*Sqrt[-f] + d*Sq
rt[g])*n^2*PolyLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/(2*
(-f)^(3/2)*(e^2*f + d^2*g)) - (b*n*(a + b*Log[c*(d + e*x)^n])*PolyLog[2, -(
(Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/f^2 + (b^2*e*(e*f + d*Sqrt[
-f]*Sqrt[g])*n^2*PolyLog[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/
(2*f^2*(e^2*f + d^2*g)) - (b*n*(a + b*Log[c*(d + e*x)^n])*PolyLog[2, (Sqrt[
g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/f^2 + (2*b*n*(a + b*Log[c*(d + e*x
)^n])*PolyLog[2, 1 + (e*x)/d])/f^2 + (b^2*n^2*PolyLog[3, -((Sqrt[g]*(d + e*
x))/(e*Sqrt[-f] - d*Sqrt[g]))])/f^2 + (b^2*n^2*PolyLog[3, (Sqrt[g]*(d + e*x
))/(e*Sqrt[-f] + d*Sqrt[g])])/f^2 - (2*b^2*n^2*PolyLog[3, 1 + (e*x)/d])/f^2
```

Rule 2338

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2421

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> Simp[(-PolyLog[2, (-d)*f*x^m])*((a + b*Log[c
*x^n])^p/m), x] + Dist[b*n*(p/m), Int[PolyLog[2, (-d)*f*x^m]*((a + b*Log[c*
x^n])^(p - 1)/x), x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0
] && EqQ[d*e, 1]
```

Rule 2437

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[(f*(x/d))^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + c*e*(x/g)])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2441

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d + e*x
```

```
)^n])/g), x] - Dist[b*e*(n/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2443

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d
+ e*x)^n])^p/g), x] - Dist[b*e*n*(p/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]*
((a + b*Log[c*(d + e*x)^n])^(p - 1)/(d + e*x)), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2460

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(x_)^(m_.)*(
(f_.) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Simp[(f + g*x^r)^(q + 1)*((a
+ b*Log[c*(d + e*x)^n])^p/(g*r*(q + 1))), x] - Dist[b*e*n*(p/(g*r*(q + 1)))
, Int[(f + g*x^r)^(q + 1)*((a + b*Log[c*(d + e*x)^n])^(p - 1)/(d + e*x)), x
], x] /; FreeQ[{a, b, c, d, e, f, g, m, n, q, r}, x] && EqQ[m, r - 1] && Ne
Q[q, -1] && IGtQ[p, 0]
```

Rule 2463

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rule 2465

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2481

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[(k*(x/d))^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + j*(x/e))^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 6724

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
```

```
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(a+b\log(c(d+ex)^n))^2}{x(f+gx^2)^2}\,dx = \int \left(\frac{(a+b\log(c(d+ex)^n))^2}{f^2x} - \frac{gx(a+b\log(c(d+ex)^n))^2}{f(f+gx^2)^2} - \frac{gx(a+b\log}{f^2(}\right.$$

$$= \frac{\int \frac{(a+b\log(c(d+ex)^n))^2}{x}\,dx}{f^2} - \frac{g\int \frac{x(a+b\log(c(d+ex)^n))^2}{f+gx^2}\,dx}{f^2} - \frac{g\int \frac{x(a+b\log(c(d+ex)^n))^2}{(f+gx^2)^2}}{f}$$

$$= \frac{(a+b\log(c(d+ex)^n))^2}{2f(f+gx^2)} + \frac{\log\left(-\frac{ex}{d}\right)(a+b\log(c(d+ex)^n))^2}{f^2} - \frac{g\int\left(-\right.}{}$$

$$= \frac{(a+b\log(c(d+ex)^n))^2}{2f(f+gx^2)} + \frac{\log\left(-\frac{ex}{d}\right)(a+b\log(c(d+ex)^n))^2}{f^2} + \frac{\sqrt{g}\int \frac{(a}{}}{}$$

$$= \frac{(a+b\log(c(d+ex)^n))^2}{2f(f+gx^2)} + \frac{\log\left(-\frac{ex}{d}\right)(a+b\log(c(d+ex)^n))^2}{f^2} - \frac{(a+b\log}{}$$

$$= \frac{(a+b\log(c(d+ex)^n))^2}{2f(f+gx^2)} + \frac{\log\left(-\frac{ex}{d}\right)(a+b\log(c(d+ex)^n))^2}{f^2} - \frac{(a+b\log}{}$$

$$= -\frac{e^2(a+b\log(c(d+ex)^n))^2}{2f(e^2f+d^2g)} + \frac{(a+b\log(c(d+ex)^n))^2}{2f(f+gx^2)} + \frac{\log\left(-\frac{ex}{d}\right)(a+}{}$$

$$= -\frac{e^2(a+b\log(c(d+ex)^n))^2}{2f(e^2f+d^2g)} + \frac{(a+b\log(c(d+ex)^n))^2}{2f(f+gx^2)} + \frac{\log\left(-\frac{ex}{d}\right)(a+}{}$$

$$= -\frac{e^2(a+b\log(c(d+ex)^n))^2}{2f(e^2f+d^2g)} + \frac{(a+b\log(c(d+ex)^n))^2}{2f(f+gx^2)} + \frac{\log\left(-\frac{ex}{d}\right)(a+}{}$$

$$-\frac{e^2(a+b\log(c(d+ex)^n))^2}{} + \frac{(a+b\log(c(d+ex)^n))^2}{} + \frac{\log\left(-\frac{ex}{d}\right)(a+}{}$$

Mathematica [C] Result contains complex when optimal does not.
time = 1.56, size = 1209, normalized size = 1.49

[illegible]

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^2/(x*(f + g*x^2)^2),x]
```

```
[Out] ((2*f*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2)/(f + g*x^2) + 4*Log[
x]*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2 - 2*(a - b*n*Log[d + e*x
] + b*Log[c*(d + e*x)^n])^2*Log[f + g*x^2] + 2*b*n*(a - b*n*Log[d + e*x] +
b*Log[c*(d + e*x)^n])*((Sqrt[f]*((-I)*Sqrt[g]*(d + e*x)*Log[d + e*x] + e*(S
qrt[f] + I*Sqrt[g]*x)*Log[I*Sqrt[f] - Sqrt[g]*x]))/((e*Sqrt[f] - I*d*Sqrt[g
])*(Sqrt[f] + I*Sqrt[g]*x)) + (Sqrt[f]*(I*Sqrt[g]*(d + e*x)*Log[d + e*x] +
e*(Sqrt[f] - I*Sqrt[g]*x)*Log[I*Sqrt[f] + Sqrt[g]*x]))/((e*Sqrt[f] + I*d*Sq
rt[g])*(Sqrt[f] - I*Sqrt[g]*x)) - 2*(Log[d + e*x]*Log[(e*(Sqrt[f] + I*Sqrt[
g]*x))/(e*Sqrt[f] - I*d*Sqrt[g])] + PolyLog[2, ((-I)*Sqrt[g]*(d + e*x))/(e*
Sqrt[f] - I*d*Sqrt[g])]) - 2*(Log[d + e*x]*Log[(e*(Sqrt[f] - I*Sqrt[g]*x))/
(e*Sqrt[f] + I*d*Sqrt[g])] + PolyLog[2, (I*Sqrt[g]*(d + e*x))/(e*Sqrt[f] +
I*d*Sqrt[g])]) + 4*(Log[-((e*x)/d)]*Log[d + e*x] + PolyLog[2, 1 + (e*x)/d])
) + b^2*n^2*(4*Log[-((e*x)/d)]*Log[d + e*x]^2 - 2*Log[d + e*x]^2*Log[1 - (S
qrt[g]*(d + e*x))/((-I)*e*Sqrt[f] + d*Sqrt[g])] - 2*Log[d + e*x]^2*Log[1 -
(Sqrt[g]*(d + e*x))/(I*e*Sqrt[f] + d*Sqrt[g])] + (Sqrt[f]*(Log[d + e*x]*(I*
Sqrt[g]*(d + e*x)*Log[d + e*x] + 2*e*(Sqrt[f] - I*Sqrt[g]*x)*Log[(e*(Sqrt[f
] - I*Sqrt[g]*x))/(e*Sqrt[f] + I*d*Sqrt[g])]) + 2*e*(Sqrt[f] - I*Sqrt[g]*x)
*PolyLog[2, (I*Sqrt[g]*(d + e*x))/(e*Sqrt[f] + I*d*Sqrt[g])]))/((e*Sqrt[f]
+ I*d*Sqrt[g])*(Sqrt[f] - I*Sqrt[g]*x)) - 4*Log[d + e*x]*PolyLog[2, (Sqrt[g
]*(d + e*x))/((-I)*e*Sqrt[f] + d*Sqrt[g])] - 4*Log[d + e*x]*PolyLog[2, (Sqr
t[g]*(d + e*x))/(I*e*Sqrt[f] + d*Sqrt[g])] + (Sqrt[f]*(Log[d + e*x]*((-I)*S
qrt[g]*(d + e*x)*Log[d + e*x] + 2*e*(Sqrt[f] + I*Sqrt[g]*x)*Log[(e*(Sqrt[f]
 + I*Sqrt[g]*x))/(e*Sqrt[f] - I*d*Sqrt[g])]) + 2*e*(Sqrt[f] + I*Sqrt[g]*x)*
PolyLog[2, (Sqrt[g]*(d + e*x))/(I*e*Sqrt[f] + d*Sqrt[g])]))/((e*Sqrt[f] - I
*d*Sqrt[g])*(Sqrt[f] + I*Sqrt[g]*x)) + 8*Log[d + e*x]*PolyLog[2, 1 + (e*x)/
d] + 4*PolyLog[3, (Sqrt[g]*(d + e*x))/((-I)*e*Sqrt[f] + d*Sqrt[g])] + 4*Pol
yLog[3, (Sqrt[g]*(d + e*x))/(I*e*Sqrt[f] + d*Sqrt[g])] - 8*PolyLog[3, 1 + (
e*x)/d]))/(4*f^2)
```

Maple [F]
time = 0.19, size = 0, normalized size = 0.00

$$\int \frac{\left(a+b\ln\left(c(ex+d)^{n}\right)\right)^{2}}{x\left(g\,x^{2}+f\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))^2/x/(g*x^2+f)^2,x)
```

```
[Out] int((a+b*ln(c*(e*x+d)^n))^2/x/(g*x^2+f)^2,x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/x/(g*x^2+f)^2,x, algorithm="maxima")
```

```
[Out] 1/2*a^2*(1/(f*g*x^2 + f^2) - log(g*x^2 + f)/f^2 + 2*log(x)/f^2) + integrate
((b^2*log((x*e + d)^n)^2 + b^2*log(c)^2 + 2*a*b*log(c) + 2*(b^2*log(c) + a*
b)*log((x*e + d)^n))/(g^2*x^5 + 2*f*g*x^3 + f^2*x), x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/x/(g*x^2+f)^2,x, algorithm="fricas")
```

```
[Out] integral((b^2*log((x*e + d)^n*c)^2 + 2*a*b*log((x*e + d)^n*c) + a^2)/(g^2*x
^5 + 2*f*g*x^3 + f^2*x), x)
```

Sympy [F(-1)] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**2/x/(g*x**2+f)**2,x)
```

```
[Out] Timed out
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/x/(g*x^2+f)^2,x, algorithm="giac")
```

```
[Out] integrate((b*log((x*e + d)^n*c) + a)^2/((g*x^2 + f)^2*x), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(a+b\,\ln \left(c\,{\left(d+e\,x\right)}^n\right)\right)}^2}{x\,{\left(g\,x^2+f\right)}^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))^2/(x*(f + g*x^2)^2),x)
[Out] int((a + b*log(c*(d + e*x)^n))^2/(x*(f + g*x^2)^2), x)
```

3.324 $\int \frac{(a+b\log(c(d+ex)^n))^2}{x^3(f+gx^2)^2}\,dx$

Optimal. Leaf size=970

$$\frac{b^2e^2n^2\log(x)}{d^2f^2}-\frac{ben(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)}{d^2f^2x}+\frac{e^2g(a+b\log\left(c(d+ex)^n\right))^2}{2f^2\left(e^2f+d^2g\right)}-\frac{(a+b\log\left(c(d+ex)^n\right))^2}{2f^2x^2}$$

```
[Out] b^2*e^2*n^2*ln(x)/d^2/f^2-b*e*n*(e*x+d)*(a+b*ln(c*(e*x+d)^n))/d^2/f^2/x+1/2
*e^2*g*(a+b*ln(c*(e*x+d)^n))^2/f^2/(d^2*g+e^2*f)-1/2*(a+b*ln(c*(e*x+d)^n))^
2/f^2/x^2-1/2*g*(a+b*ln(c*(e*x+d)^n))^2/f^2/(g*x^2+f)-2*g*ln(-e*x/d)*(a+b*l
n(c*(e*x+d)^n))^2/f^3-b*e^2*n*(a+b*ln(c*(e*x+d)^n))*ln(1-d/(e*x+d))/d^2/f^2
+g*(a+b*ln(c*(e*x+d)^n))^2*ln(e*((-f)^(1/2)-x*g^(1/2))/(e*(-f)^(1/2)+d*g^(1
/2)))/f^3+g*(a+b*ln(c*(e*x+d)^n))^2*ln(e*((-f)^(1/2)+x*g^(1/2))/(e*(-f)^(1/
2)-d*g^(1/2)))/f^3+b^2*e^2*n^2*polylog(2,d/(e*x+d))/d^2/f^2-4*b*g*n*(a+b*ln
(c*(e*x+d)^n))*polylog(2,1+e*x/d)/f^3+2*b*g*n*(a+b*ln(c*(e*x+d)^n))*polylog
(2,-(e*x+d)*g^(1/2)/(e*(-f)^(1/2)-d*g^(1/2)))/f^3+2*b*g*n*(a+b*ln(c*(e*x+d)
^n))*polylog(2,(e*x+d)*g^(1/2)/(e*(-f)^(1/2)+d*g^(1/2)))/f^3+4*b^2*g*n^2*po
lylog(3,1+e*x/d)/f^3-2*b^2*g*n^2*polylog(3,-(e*x+d)*g^(1/2)/(e*(-f)^(1/2)-d
*g^(1/2)))/f^3-2*b^2*g*n^2*polylog(3,(e*x+d)*g^(1/2)/(e*(-f)^(1/2)+d*g^(1/2
)))/f^3-1/2*b^2*e*g*n^2*polylog(2,-(e*x+d)*g^(1/2)/(e*(-f)^(1/2)-d*g^(1/2))
)*(e*(-f)^(1/2)+d*g^(1/2))/(-f)^(5/2)/(d^2*g+e^2*f)-1/2*b*e*g*n*(a+b*ln(c*(
e*x+d)^n))*ln(e*((-f)^(1/2)+x*g^(1/2))/(e*(-f)^(1/2)-d*g^(1/2)))*(e*f-d*(-f
)^(1/2)*g^(1/2))/f^3/(d^2*g+e^2*f)-1/2*b*e*g*n*(a+b*ln(c*(e*x+d)^n))*ln(e*(
(-f)^(1/2)-x*g^(1/2))/(e*(-f)^(1/2)+d*g^(1/2)))*(e*f+d*(-f)^(1/2)*g^(1/2))/
f^3/(d^2*g+e^2*f)-1/2*b^2*e*g*n^2*polylog(2,(e*x+d)*g^(1/2)/(e*(-f)^(1/2)+d
*g^(1/2)))*(e*f+d*(-f)^(1/2)*g^(1/2))/f^3/(d^2*g+e^2*f)
```

Rubi [A]
time = 1.17, antiderivative size = 970, normalized size of antiderivative = 1.00, number of steps used = 36, number of rules used = 18, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.621$, Rules used = {2463, 2445, 2458, 2389, 2379, 2438, 2351, 31, 2443, 2481, 2421, 6724, 2460, 2465, 2437, 2338, 2441, 2440}

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^2/(x^3*(f + g*x^2)^2),x]
```

```
[Out] (b^2*e^2*n^2*Log[x])/(d^2*f^2) - (b*e*n*(d + e*x)*(a + b*Log[c*(d + e*x)^n]
))/(d^2*f^2*x) + (e^2*g*(a + b*Log[c*(d + e*x)^n])^2)/(2*f^2*(e^2*f + d^2*g
)) - (a + b*Log[c*(d + e*x)^n])^2/(2*f^2*x^2) - (g*(a + b*Log[c*(d + e*x)^n
])^2)/(2*f^2*(f + g*x^2)) - (2*g*Log[-((e*x)/d)]*(a + b*Log[c*(d + e*x)^n])
```

```
^2)/f^3 - (b*e*(e*f + d*Sqrt[-f]*Sqrt[g])*g*n*(a + b*Log[c*(d + e*x)^n])*Lo
g[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(2*f^3*(e^2*f + d^2
*g)) + (g*(a + b*Log[c*(d + e*x)^n])^2*Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*Sq
rt[-f] + d*Sqrt[g])])/f^3 - (b*e*(e*f - d*Sqrt[-f]*Sqrt[g])*g*n*(a + b*Log[
c*(d + e*x)^n])*Log[(e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g])])/(
2*f^3*(e^2*f + d^2*g)) + (g*(a + b*Log[c*(d + e*x)^n])^2*Log[(e*(Sqrt[-f] +
 Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g])])/f^3 - (b*e^2*n*(a + b*Log[c*(d + e*
x)^n])*Log[1 - d/(d + e*x)])/(d^2*f^2) + (b^2*e^2*n^2*PolyLog[2, d/(d + e*x
)])/(d^2*f^2) - (b^2*e*(e*Sqrt[-f] + d*Sqrt[g])*g*n^2*PolyLog[2, -((Sqrt[g]
*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/(2*(-f)^(5/2)*(e^2*f + d^2*g)) + (2
*b*g*n*(a + b*Log[c*(d + e*x)^n])*PolyLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[
-f] - d*Sqrt[g]))])/f^3 - (b^2*e*(e*f + d*Sqrt[-f]*Sqrt[g])*g*n^2*PolyLog[2
, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(2*f^3*(e^2*f + d^2*g)) +
(2*b*g*n*(a + b*Log[c*(d + e*x)^n])*PolyLog[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[
-f] + d*Sqrt[g])])/f^3 - (4*b*g*n*(a + b*Log[c*(d + e*x)^n])*PolyLog[2, 1 +
 (e*x)/d])/f^3 - (2*b^2*g*n^2*PolyLog[3, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f]
- d*Sqrt[g]))])/f^3 - (2*b^2*g*n^2*PolyLog[3, (Sqrt[g]*(d + e*x))/(e*Sqrt[-
f] + d*Sqrt[g])])/f^3 + (4*b^2*g*n^2*PolyLog[3, 1 + (e*x)/d])/f^3
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 2338

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2351

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_) + (e_.)*(x_)^(r_.))^(q_), x
_Symbol] :> Simp[x*(d + e*x^r)^(q + 1)*((a + b*Log[c*x^n])/d), x] - Dist[b*
(n/d), Int[(d + e*x^r)^(q + 1), x], x] /; FreeQ[{a, b, c, d, e, n, q, r}, x
] && EqQ[r*(q + 1) + 1, 0]
```

Rule 2379

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((x_)*((d_) + (e_.)*(x_)^(r
_.))), x_Symbol] :> Simp[(-Log[1 + d/(e*x^r)])*((a + b*Log[c*x^n])^p/(d*r))
, x] + Dist[b*n*(p/(d*r)), Int[Log[1 + d/(e*x^r)]*((a + b*Log[c*x^n])^(p -
1)/x), x], x] /; FreeQ[{a, b, c, d, e, n, r}, x] && IGtQ[p, 0]
```

Rule 2389

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_))/
(x_), x_Symbol] :> Dist[1/d, Int[(d + e*x)^(q + 1)*((a + b*Log[c*x^n])^p/x)
```

```
, x], x] - Dist[e/d, Int[(d + e*x)^q*(a + b*Log[c*x^n])^p, x], x] /; FreeQ[
{a, b, c, d, e, n}, x] && IGtQ[p, 0] && LtQ[q, -1] && IntegerQ[2*q]
```

Rule 2421

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> Simp[(-PolyLog[2, (-d)*f*x^m])*((a + b*Log[c
*x^n])^p/m), x] + Dist[b*n*(p/m), Int[PolyLog[2, (-d)*f*x^m]*((a + b*Log[c*
x^n])^(p - 1)/x), x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0
] && EqQ[d*e, 1]
```

Rule 2437

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[(f*(x/d))^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + c*e*(x/g)])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2441

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d + e*x
)^n])/g), x] - Dist[b*e*(n/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2443

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d
+ e*x)^n])^p/g), x] - Dist[b*e*n*(p/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]*
((a + b*Log[c*(d + e*x)^n])^(p - 1)/(d + e*x)), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[(f + g*x)^(q + 1)*((a + b*Log[c*(d + e*x)^
n])^p/(g*(q + 1))), x] - Dist[b*e*n*(p/(g*(q + 1))), Int[(f + g*x)^(q + 1)*
((a + b*Log[c*(d + e*x)^n])^(p - 1)/(d + e*x)), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && GtQ[p, 0] && NeQ[q, -1] && Int
egersQ[2*p, 2*q] && ( !IGtQ[q, 0] || (EqQ[p, 2] && NeQ[q, 1]))
```

Rule 2458

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[(g*(x/e))^q*((e*h - d*i)/e + i*(x/e))^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2460

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(x_)^(m_.)*(
(f_.) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Simp[(f + g*x^r)^(q + 1)*((a
+ b*Log[c*(d + e*x)^n])^p/(g*r*(q + 1))), x] - Dist[b*e*n*(p/(g*r*(q + 1)))
, Int[(f + g*x^r)^(q + 1)*((a + b*Log[c*(d + e*x)^n])^(p - 1)/(d + e*x)), x
], x] /; FreeQ[{a, b, c, d, e, f, g, m, n, q, r}, x] && EqQ[m, r - 1] && Ne
Q[q, -1] && IGtQ[p, 0]
```

Rule 2463

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rule 2465

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2481

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[(k*(x/d))^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + j*(x/e))^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 6724

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(a+b\log(c(d+ex)^n))^2}{x^3(f+gx^2)^2}\,dx = \int \left(\frac{(a+b\log(c(d+ex)^n))^2}{f^2x^3} - \frac{2g(a+b\log(c(d+ex)^n))^2}{f^3x} + \frac{g^2x(a+b\log}{f^2(f}\right.$$

$$= \frac{\int \frac{(a+b\log(c(d+ex)^n))^2}{x^3}\,dx}{f^2} - \frac{(2g)\int \frac{(a+b\log(c(d+ex)^n))^2}{x}\,dx}{f^3} + \frac{(2g^2)\int \frac{x(a+b\log(c(d+ex}{f+gx^2}}{f^3}$$

$$= -\frac{(a+b\log(c(d+ex)^n))^2}{2f^2x^2} - \frac{g(a+b\log(c(d+ex)^n))^2}{2f^2(f+gx^2)} - \frac{2g\log\left(-\frac{ex}{d}\right)(a+}{}$$

$$= -\frac{(a+b\log(c(d+ex)^n))^2}{2f^2x^2} - \frac{g(a+b\log(c(d+ex)^n))^2}{2f^2(f+gx^2)} - \frac{2g\log\left(-\frac{ex}{d}\right)(a+}{}$$

$$= -\frac{(a+b\log(c(d+ex)^n))^2}{2f^2x^2} - \frac{g(a+b\log(c(d+ex)^n))^2}{2f^2(f+gx^2)} - \frac{2g\log\left(-\frac{ex}{d}\right)(a+}{}$$

$$= -\frac{ben(d+ex)(a+b\log(c(d+ex)^n))}{d^2f^2x} - \frac{(a+b\log(c(d+ex)^n))^2}{2f^2x^2} - \frac{g(a+}{2}$$

$$= \frac{b^2e^2n^2\log(x)}{d^2f^2} - \frac{ben(d+ex)(a+b\log(c(d+ex)^n))}{d^2f^2x} - \frac{be^2n\log\left(-\frac{ex}{d}\right)(a+}{d^2f}$$

$$= \frac{b^2e^2n^2\log(x)}{d^2f^2} - \frac{ben(d+ex)(a+b\log(c(d+ex)^n))}{d^2f^2x} - \frac{be^2n\log\left(-\frac{ex}{d}\right)(a+}{d^2f}$$

$$= \frac{b^2e^2n^2\log(x)}{d^2f^2} - \frac{ben(d+ex)(a+b\log(c(d+ex)^n))}{d^2f^2x} - \frac{be^2n\log\left(-\frac{ex}{d}\right)(a+}{d^2f}$$

$$\frac{b^2e^2n^2\log(x)}{} \quad \frac{ben(d+ex)(a+b\log(c(d+ex)^n))}{} \quad \frac{be^2n\log\left(-\frac{ex}{d}\right)(a+}{}$$

Mathematica [C] Result contains complex when optimal does not.
time = 1.99, size = 1391, normalized size = 1.43

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^2/(x^3*(f + g*x^2)^2),x]
```

```
[Out] ((-2*f*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2)/x^2 - (2*f*g*(a - b
*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2)/(f + g*x^2) - 8*g*Log[x]*(a - b*
n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2 + 4*g*(a - b*n*Log[d + e*x] + b*Lo
g[c*(d + e*x)^n])^2*Log[f + g*x^2] + 2*b*n*(a - b*n*Log[d + e*x] + b*Log[c*
(d + e*x)^n])*((-2*f*(d*e*x + e^2*x^2*Log[x] + (d^2 - e^2*x^2)*Log[d + e*x]
))/(d^2*x^2) + (I*Sqrt[f]*g*(Sqrt[g]*(d + e*x)*Log[d + e*x] + I*e*(Sqrt[f]
+ I*Sqrt[g]*x)*Log[I*Sqrt[f] - Sqrt[g]*x]))/((e*Sqrt[f] - I*d*Sqrt[g])*(Sqr
t[f] + I*Sqrt[g]*x)) + (I*Sqrt[f]*g*(-(Sqrt[g]*(d + e*x)*Log[d + e*x]) + e*
(I*Sqrt[f] + Sqrt[g]*x)*Log[I*Sqrt[f] + Sqrt[g]*x]))/((e*Sqrt[f] + I*d*Sqrt
[g])*(Sqrt[f] - I*Sqrt[g]*x)) + 4*g*(Log[d + e*x]*Log[(e*(Sqrt[f] + I*Sqrt[
g]*x))/(e*Sqrt[f] - I*d*Sqrt[g])] + PolyLog[2, ((-I)*Sqrt[g]*(d + e*x))/(e*
Sqrt[f] - I*d*Sqrt[g])]) + 4*g*(Log[d + e*x]*Log[(e*(Sqrt[f] - I*Sqrt[g]*x)
)/(e*Sqrt[f] + I*d*Sqrt[g])] + PolyLog[2, (I*Sqrt[g]*(d + e*x))/(e*Sqrt[f]
+ I*d*Sqrt[g])]) - 8*g*(Log[-((e*x)/d)]*Log[d + e*x] + PolyLog[2, 1 + (e*x)
/d])) + b^2*n^2*((I*Sqrt[f]*g*(-(Sqrt[g]*(d + e*x)*Log[d + e*x]^2) + 2*e*(I
*Sqrt[f] + Sqrt[g]*x)*Log[d + e*x]*Log[(e*(Sqrt[f] - I*Sqrt[g]*x))/(e*Sqrt[
f] + I*d*Sqrt[g])] + 2*e*(I*Sqrt[f] + Sqrt[g]*x)*PolyLog[2, (I*Sqrt[g]*(d +
 e*x))/(e*Sqrt[f] + I*d*Sqrt[g])]))/((e*Sqrt[f] + I*d*Sqrt[g])*(Sqrt[f] - I
*Sqrt[g]*x)) - (Sqrt[f]*g*(Log[d + e*x]*((-I)*Sqrt[g]*(d + e*x)*Log[d + e*x
] + 2*e*(Sqrt[f] + I*Sqrt[g]*x)*Log[(e*(Sqrt[f] + I*Sqrt[g]*x))/(e*Sqrt[f]
- I*d*Sqrt[g])]) + 2*e*(Sqrt[f] + I*Sqrt[g]*x)*PolyLog[2, (Sqrt[g]*(d + e*x
))/(I*e*Sqrt[f] + d*Sqrt[g])]))/((e*Sqrt[f] - I*d*Sqrt[g])*(Sqrt[f] + I*Sqr
t[g]*x)) - (2*f*(-2*e^2*Log[x] + (Log[d + e*x]*(2*e^2*x^2*Log[-((e*x)/d)] +
 (d + e*x)*(2*e*x + (d - e*x)*Log[d + e*x])))/x^2 + 2*e^2*PolyLog[2, 1 + (e
*x)/d]))/d^2 + 4*g*(Log[d + e*x]^2*Log[1 - (Sqrt[g]*(d + e*x))/((-I)*e*Sqrt
[f] + d*Sqrt[g])] + 2*Log[d + e*x]*PolyLog[2, (Sqrt[g]*(d + e*x))/((-I)*e*S
qrt[f] + d*Sqrt[g])] - 2*PolyLog[3, (Sqrt[g]*(d + e*x))/((-I)*e*Sqrt[f] + d
*Sqrt[g])]) + 4*g*(Log[d + e*x]^2*Log[1 - (Sqrt[g]*(d + e*x))/(I*e*Sqrt[f]
+ d*Sqrt[g])] + 2*Log[d + e*x]*PolyLog[2, (Sqrt[g]*(d + e*x))/(I*e*Sqrt[f]
+ d*Sqrt[g])] - 2*PolyLog[3, (Sqrt[g]*(d + e*x))/(I*e*Sqrt[f] + d*Sqrt[g])]
) - 8*g*(Log[-((e*x)/d)]*Log[d + e*x]^2 + 2*Log[d + e*x]*PolyLog[2, 1 + (e*
x)/d] - 2*PolyLog[3, 1 + (e*x)/d])))/(4*f^3)
```

Maple [F]
time = 0.18, size = 0, normalized size = 0.00

$$\int \frac{\left(a+b\ln\left(c(ex+d)^{n}\right)\right)^{2}}{x^{3}\left(g\,x^{2}+f\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))^2/x^3/(g*x^2+f)^2,x)
```

```
[Out] int((a+b*ln(c*(e*x+d)^n))^2/x^3/(g*x^2+f)^2,x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/x^3/(g*x^2+f)^2,x, algorithm="maxima")
```

```
[Out] -1/2*a^2*((2*g*x^2 + f)/(f^2*g*x^4 + f^3*x^2) - 2*g*log(g*x^2 + f)/f^3 + 4*
g*log(x)/f^3) + integrate((b^2*log((x*e + d)^n)^2 + b^2*log(c)^2 + 2*a*b*lo
g(c) + 2*(b^2*log(c) + a*b)*log((x*e + d)^n))/(g^2*x^7 + 2*f*g*x^5 + f^2*x^
3), x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/x^3/(g*x^2+f)^2,x, algorithm="fricas")
```

```
[Out] integral((b^2*log((x*e + d)^n*c)^2 + 2*a*b*log((x*e + d)^n*c) + a^2)/(g^2*x
^7 + 2*f*g*x^5 + f^2*x^3), x)
```

Sympy [F(-1)] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**2/x**3/(g*x**2+f)**2,x)
```

```
[Out] Timed out
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/x^3/(g*x^2+f)^2,x, algorithm="giac")
```

```
[Out] integrate((b*log((x*e + d)^n*c) + a)^2/((g*x^2 + f)^2*x^3), x)
```

Mupad [**F**]

time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)^2}{x^3\,{\left(g\,x^2+f\right)}^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))^2/(x^3*(f + g*x^2)^2),x)
[Out] int((a + b*log(c*(d + e*x)^n))^2/(x^3*(f + g*x^2)^2), x)
```

3.325 $\int \frac{x^4(a+b\log(c(d+ex)^n))^2}{(f+gx^2)^2}\,dx$

Optimal. Leaf size=897

$$-\frac{2abnx}{g^2}+\frac{2b^2n^2x}{g^2}-\frac{2b^2n(d+ex)\log\left(c(d+ex)^n\right)}{eg^2}+\frac{(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{eg^2}-\frac{f(d+ex)\left(a+b\log\right.}{4\left(e\sqrt{-f}+d\sqrt{g}\right)g}$$

```
[Out] -2*a*b*n*x/g^2+2*b^2*n^2*x/g^2-2*b^2*n*(e*x+d)*ln(c*(e*x+d)^n)/e/g^2+(e*x+d
)*(a+b*ln(c*(e*x+d)^n))^2/e/g^2+3/4*(a+b*ln(c*(e*x+d)^n))^2*ln(e*((-f)^(1/2
)-x*g^(1/2))/(e*(-f)^(1/2)+d*g^(1/2)))*(-f)^(1/2)/g^(5/2)-3/4*(a+b*ln(c*(e*
x+d)^n))^2*ln(e*((-f)^(1/2)+x*g^(1/2))/(e*(-f)^(1/2)-d*g^(1/2)))*(-f)^(1/2)
/g^(5/2)-3/2*b*n*(a+b*ln(c*(e*x+d)^n))*polylog(2,-(e*x+d)*g^(1/2)/(e*(-f)^(
1/2)-d*g^(1/2)))*(-f)^(1/2)/g^(5/2)+3/2*b*n*(a+b*ln(c*(e*x+d)^n))*polylog(2
,(e*x+d)*g^(1/2)/(e*(-f)^(1/2)+d*g^(1/2)))*(-f)^(1/2)/g^(5/2)+3/2*b^2*n^2*p
olylog(3,-(e*x+d)*g^(1/2)/(e*(-f)^(1/2)-d*g^(1/2)))*(-f)^(1/2)/g^(5/2)-3/2*
b^2*n^2*polylog(3,(e*x+d)*g^(1/2)/(e*(-f)^(1/2)+d*g^(1/2)))*(-f)^(1/2)/g^(5
/2)+1/2*b*e*f*n*(a+b*ln(c*(e*x+d)^n))*ln(e*((-f)^(1/2)+x*g^(1/2))/(e*(-f)^(
1/2)-d*g^(1/2)))/g^(5/2)/(e*(-f)^(1/2)-d*g^(1/2))+1/2*b^2*e*f*n^2*polylog(2
,-(e*x+d)*g^(1/2)/(e*(-f)^(1/2)-d*g^(1/2)))/g^(5/2)/(e*(-f)^(1/2)-d*g^(1/2)
)-1/2*b*e*f*n*(a+b*ln(c*(e*x+d)^n))*ln(e*((-f)^(1/2)-x*g^(1/2))/(e*(-f)^(1/
2)+d*g^(1/2)))/g^(5/2)/(e*(-f)^(1/2)+d*g^(1/2))-1/2*b^2*e*f*n^2*polylog(2,(
e*x+d)*g^(1/2)/(e*(-f)^(1/2)+d*g^(1/2)))/g^(5/2)/(e*(-f)^(1/2)+d*g^(1/2))-1
/4*f*(e*x+d)*(a+b*ln(c*(e*x+d)^n))^2/g^2/(e*(-f)^(1/2)+d*g^(1/2))/((-f)^(1/
2)-x*g^(1/2))-1/4*f*(e*x+d)*(a+b*ln(c*(e*x+d)^n))^2/g^2/(e*(-f)^(1/2)-d*g^(
1/2))/((-f)^(1/2)+x*g^(1/2))
```

Rubi [A]

time = 1.36, antiderivative size = 897, normalized size of antiderivative = 1.00, number of steps used = 36, number of rules used = 13, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.448$, Rules used = {2463, 2436, 2333, 2332, 2456, 2444, 2441, 2440, 2438, 2443, 2481, 2421, 6724}

[illegible]

Antiderivative was successfully verified.

```
[In] Int[(x^4*(a + b*Log[c*(d + e*x)^n])^2)/(f + g*x^2)^2,x]
```

```
[Out] (-2*a*b*n*x)/g^2 + (2*b^2*n^2*x)/g^2 - (2*b^2*n*(d + e*x)*Log[c*(d + e*x)^n
])/(e*g^2) + ((d + e*x)*(a + b*Log[c*(d + e*x)^n])^2)/(e*g^2) - (f*(d + e*x
)*(a + b*Log[c*(d + e*x)^n])^2)/(4*(e*Sqrt[-f] + d*Sqrt[g])*g^2*(Sqrt[-f] -
 Sqrt[g]*x)) - (f*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^2)/(4*(e*Sqrt[-f] -
d*Sqrt[g])*g^2*(Sqrt[-f] + Sqrt[g]*x)) - (b*e*f*n*(a + b*Log[c*(d + e*x)^n]
```

```
)*Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(2*(e*Sqrt[-f]
+ d*Sqrt[g])*g^(5/2)) + (3*Sqrt[-f]*(a + b*Log[c*(d + e*x)^n])^2*Log[(e*(Sq
rt[-f] - Sqrt[g]*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(4*g^(5/2)) + (b*e*f*n*(a +
 b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[
g])])/(2*(e*Sqrt[-f] - d*Sqrt[g])*g^(5/2)) - (3*Sqrt[-f]*(a + b*Log[c*(d +
e*x)^n])^2*Log[(e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g])])/(4*g^(
5/2)) + (b^2*e*f*n^2*PolyLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[
g]))])/(2*(e*Sqrt[-f] - d*Sqrt[g])*g^(5/2)) - (3*b*Sqrt[-f]*n*(a + b*Log[c*
(d + e*x)^n])*PolyLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/
(2*g^(5/2)) - (b^2*e*f*n^2*PolyLog[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*S
qrt[g])])/(2*(e*Sqrt[-f] + d*Sqrt[g])*g^(5/2)) + (3*b*Sqrt[-f]*n*(a + b*Log
[c*(d + e*x)^n])*PolyLog[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/
(2*g^(5/2)) + (3*b^2*Sqrt[-f]*n^2*PolyLog[3, -((Sqrt[g]*(d + e*x))/(e*Sqrt[
-f] - d*Sqrt[g]))])/(2*g^(5/2)) - (3*b^2*Sqrt[-f]*n^2*PolyLog[3, (Sqrt[g]*(
d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(2*g^(5/2))
```

Rule 2332

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2333

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2421

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> Simp[(-PolyLog[2, (-d)*f*x^m])*((a + b*Log[c
*x^n])^p/m), x] + Dist[b*n*(p/m), Int[PolyLog[2, (-d)*f*x^m]*((a + b*Log[c*
x^n])^(p - 1)/x), x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0
] && EqQ[d*e, 1]
```

Rule 2436

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + c*e*(x/g)])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2441

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d + e*x
)^n])/g), x] - Dist[b*e*(n/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2443

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d
+ e*x)^n])^p/g), x] - Dist[b*e*n*(p/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]*
((a + b*Log[c*(d + e*x)^n])^(p - 1)/(d + e*x)), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2444

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_))^2, x_Symbol] :> Simp[(d + e*x)*((a + b*Log[c*(d + e*x)^n])^p/((e*f
- d*g)*(f + g*x))), x] - Dist[b*e*n*(p/(e*f - d*g)), Int[(a + b*Log[c*(d +
e*x)^n])^(p - 1)/(f + g*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] &&
 NeQ[e*f - d*g, 0] && GtQ[p, 0]
```

Rule 2456

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_)^(r_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a + b*Log[c*(d + e*x)
^n])^p, (f + g*x^r)^q, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, r}, x] && I
GtQ[p, 0] && IntegerQ[q] && (GtQ[q, 0] || (IntegerQ[r] && NeQ[r, 1]))
```

Rule 2463

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rule 2481

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
```

```
bol] :> Dist[1/e, Subst[Int[(k*(x/d))^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + j*(x/e))^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 6724

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{x^4 (a+b\log(c(d+ex)^n))^2}{(f+gx^2)^2}\,dx = \int \left(\frac{(a+b\log(c(d+ex)^n))^2}{g^2} + \frac{f^2 (a+b\log(c(d+ex)^n))^2}{g^2 (f+gx^2)^2} - \frac{2f(a+b\,\mathrm{lo}\ldots}{g^2(\ldots} \right.$$

$$= \frac{\int (a+b\log(c(d+ex)^n))^2\,dx}{g^2} - \frac{(2f)\int \frac{(a+b\log(c(d+ex)^n))^2}{f+gx^2}\,dx}{g^2} + \frac{f^2 \int \frac{(a+b\,\mathrm{lo}\ldots}{(\ldots}}{\ldots}$$

$$= \frac{\mathrm{Subst}\left(\int (a+b\log(cx^n))^2\,dx, x, d+ex\right)}{eg^2} - \frac{(2f)\int \left(\frac{\sqrt{-f}\,(a+b\log(c(d+ex)\ldots}{2f\left(\sqrt{-f}-\sqrt{g}\,x\right)\ldots} \right.}{\ldots}$$

$$= \frac{(d+ex)(a+b\log(c(d+ex)^n))^2}{eg^2} - \frac{\sqrt{-f}\int \frac{(a+b\log(c(d+ex)^n))^2}{\sqrt{-f}-\sqrt{g}\,x}\,dx}{g^2} - \frac{\sqrt{-\ldots}}{\ldots}$$

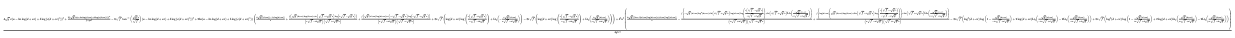
$$= -\frac{2abnx}{g^2} + \frac{(d+ex)(a+b\log(c(d+ex)^n))^2}{eg^2} - \frac{f(d+ex)(a+b\log(\ldots}{4\left(e\sqrt{-f}+d\sqrt{g}\right)g^2\left(\ldots\right.}$$

$$= -\frac{2abnx}{g^2} + \frac{2b^2n^2x}{g^2} - \frac{2b^2n(d+ex)\log(c(d+ex)^n)}{eg^2} + \frac{(d+ex)(a+b\log\ldots}{eg^2}$$

$$= -\frac{2abnx}{g^2} + \frac{2b^2n^2x}{g^2} - \frac{2b^2n(d+ex)\log(c(d+ex)^n)}{eg^2} + \frac{(d+ex)(a+b\log\ldots}{eg^2}$$

$$= -\frac{2abnx}{g^2} + \frac{2b^2n^2x}{g^2} - \frac{2b^2n(d+ex)\log(c(d+ex)^n)}{eg^2} + \frac{(d+ex)(a+b\log\ldots}{eg^2}$$

Mathematica [C] Result contains complex when optimal does not.
time = 2.30, size = 1237, normalized size = 1.38



Antiderivative was successfully verified.

```
[In] Integrate[(x^4*(a + b*Log[c*(d + e*x)^n])^2)/(f + g*x^2)^2,x]
```

```
[Out] (4*Sqrt[g]*x*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2 + (2*f*Sqrt[g]
*x*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2)/(f + g*x^2) - 6*Sqrt[f]
*ArcTan[(Sqrt[g]*x)/Sqrt[f]]*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^
2 + 2*b*n*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])*((4*Sqrt[g]*(d + e*
x)*(-1 + Log[d + e*x]))/e + (f*(Sqrt[g]*(d + e*x)*Log[d + e*x] + I*e*(Sqrt[
f] + I*Sqrt[g]*x)*Log[I*Sqrt[f] - Sqrt[g]*x]))/((e*Sqrt[f] - I*d*Sqrt[g])*(
Sqrt[f] + I*Sqrt[g]*x)) + (f*(Sqrt[g]*(d + e*x)*Log[d + e*x] + e*((-I)*Sqrt
[f] - Sqrt[g]*x)*Log[I*Sqrt[f] + Sqrt[g]*x]))/((e*Sqrt[f] + I*d*Sqrt[g])*(S
qrt[f] - I*Sqrt[g]*x)) + (3*I)*Sqrt[f]*(Log[d + e*x]*Log[(e*(Sqrt[f] + I*Sq
rt[g]*x))/(e*Sqrt[f] - I*d*Sqrt[g])] + PolyLog[2, ((-I)*Sqrt[g]*(d + e*x))/
(e*Sqrt[f] - I*d*Sqrt[g])]) - (3*I)*Sqrt[f]*(Log[d + e*x]*Log[(e*(Sqrt[f] -
 I*Sqrt[g]*x))/(e*Sqrt[f] + I*d*Sqrt[g])] + PolyLog[2, (I*Sqrt[g]*(d + e*x)
)/(e*Sqrt[f] + I*d*Sqrt[g])])) + b^2*n^2*((4*Sqrt[g]*(2*e*x - 2*(d + e*x)*L
og[d + e*x] + (d + e*x)*Log[d + e*x]^2))/e - (f*(-(Sqrt[g]*(d + e*x)*Log[d
+ e*x]^2) + 2*e*(I*Sqrt[f] + Sqrt[g]*x)*Log[d + e*x]*Log[(e*(Sqrt[f] - I*Sq
rt[g]*x))/(e*Sqrt[f] + I*d*Sqrt[g])] + 2*e*(I*Sqrt[f] + Sqrt[g]*x)*PolyLog[
2, (I*Sqrt[g]*(d + e*x))/(e*Sqrt[f] + I*d*Sqrt[g])]))/((e*Sqrt[f] + I*d*Sqr
t[g])*(Sqrt[f] - I*Sqrt[g]*x)) + (f*(Log[d + e*x]*(Sqrt[g]*(d + e*x)*Log[d
+ e*x] + (2*I)*e*(Sqrt[f] + I*Sqrt[g]*x)*Log[(e*(Sqrt[f] + I*Sqrt[g]*x))/(e
*Sqrt[f] - I*d*Sqrt[g])]) + (2*I)*e*(Sqrt[f] + I*Sqrt[g]*x)*PolyLog[2, (Sqr
t[g]*(d + e*x))/(I*e*Sqrt[f] + d*Sqrt[g])]))/((e*Sqrt[f] - I*d*Sqrt[g])*(Sq
rt[f] + I*Sqrt[g]*x)) - (3*I)*Sqrt[f]*(Log[d + e*x]^2*Log[1 - (Sqrt[g]*(d +
 e*x))/((-I)*e*Sqrt[f] + d*Sqrt[g])] + 2*Log[d + e*x]*PolyLog[2, (Sqrt[g]*(
d + e*x))/((-I)*e*Sqrt[f] + d*Sqrt[g])] - 2*PolyLog[3, (Sqrt[g]*(d + e*x))/
((-I)*e*Sqrt[f] + d*Sqrt[g])]) + (3*I)*Sqrt[f]*(Log[d + e*x]^2*Log[1 - (Sqr
t[g]*(d + e*x))/(I*e*Sqrt[f] + d*Sqrt[g])] + 2*Log[d + e*x]*PolyLog[2, (Sqr
t[g]*(d + e*x))/(I*e*Sqrt[f] + d*Sqrt[g])] - 2*PolyLog[3, (Sqrt[g]*(d + e*x
))/(I*e*Sqrt[f] + d*Sqrt[g])])))/(4*g^(5/2))
```

Maple [F]
time = 0.71, size = 0, normalized size = 0.00

$$\int \frac{x^{4} \left(a +b \ln \left(c \left(e x +d \right)^{n}\right)\right)^{2}}{\left(g \,x^{2}+f \right)^{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(a+b*ln(c*(e*x+d)^n))^2/(g*x^2+f)^2,x)
```

```
[Out] int(x^4*(a+b*ln(c*(e*x+d)^n))^2/(g*x^2+f)^2,x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(a+b*log(c*(e*x+d)^n))^2/(g*x^2+f)^2,x, algorithm="maxima")
```

```
[Out] 1/2*a^2*(f*x/(g^3*x^2 + f*g^2) - 3*f*arctan(g*x/sqrt(f*g))/(sqrt(f*g)*g^2)
+ 2*x/g^2) + integrate((b^2*x^4*log((x*e + d)^n)^2 + 2*(b^2*log(c) + a*b)*x
^4*log((x*e + d)^n) + (b^2*log(c)^2 + 2*a*b*log(c))*x^4)/(g^2*x^4 + 2*f*g*x
^2 + f^2), x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(a+b*log(c*(e*x+d)^n))^2/(g*x^2+f)^2,x, algorithm="fricas")
```

```
[Out] integral((b^2*x^4*log((x*e + d)^n*c)^2 + 2*a*b*x^4*log((x*e + d)^n*c) + a^2
*x^4)/(g^2*x^4 + 2*f*g*x^2 + f^2), x)
```

Sympy [F(-1)] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**4*(a+b*ln(c*(e*x+d)**n))**2/(g*x**2+f)**2,x)
```

```
[Out] Timed out
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(a+b*log(c*(e*x+d)^n))^2/(g*x^2+f)^2,x, algorithm="giac")
```

```
[Out] integrate((b*log((x*e + d)^n*c) + a)^2*x^4/(g*x^2 + f)^2, x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x^4 \left(a+b \ln \left(c \left(d+e x\right)^n\right)\right)^2}{\left(g x^2+f\right)^2} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^4*(a + b*log(c*(d + e*x)^n))^2)/(f + g*x^2)^2,x)
[Out] int((x^4*(a + b*log(c*(d + e*x)^n))^2)/(f + g*x^2)^2, x)
```

3.326 $\int \frac{x^2(a+b\log(c(d+ex)^n))^2}{(f+gx^2)^2}\,dx$

Optimal. Leaf size=815

$$\frac{(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{4\left(e\sqrt{-f}+d\sqrt{g}\right)g\left(\sqrt{-f}-\sqrt{g}\,x\right)}+\frac{(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{4\left(e\sqrt{-f}-d\sqrt{g}\right)g\left(\sqrt{-f}+\sqrt{g}\,x\right)}+\frac{ben(a+b\log(c(d+ex}{2\left(e\sqrt{-f}\right.}$$

```
[Out] 1/4*(a+b*ln(c*(e*x+d)^n))^2*ln(e*((-f)^(1/2)-x*g^(1/2))/(e*(-f)^(1/2)+d*g^(
1/2)))/g^(3/2)/(-f)^(1/2)-1/4*(a+b*ln(c*(e*x+d)^n))^2*ln(e*((-f)^(1/2)+x*g^
(1/2))/(e*(-f)^(1/2)-d*g^(1/2)))/g^(3/2)/(-f)^(1/2)-1/2*b*n*(a+b*ln(c*(e*x+
d)^n))*polylog(2,-(e*x+d)*g^(1/2)/(e*(-f)^(1/2)-d*g^(1/2)))/g^(3/2)/(-f)^(1
/2)+1/2*b*n*(a+b*ln(c*(e*x+d)^n))*polylog(2,(e*x+d)*g^(1/2)/(e*(-f)^(1/2)+d
*g^(1/2)))/g^(3/2)/(-f)^(1/2)+1/2*b^2*n^2*polylog(3,-(e*x+d)*g^(1/2)/(e*(-f
)^(1/2)-d*g^(1/2)))/g^(3/2)/(-f)^(1/2)-1/2*b^2*n^2*polylog(3,(e*x+d)*g^(1/2
)/(e*(-f)^(1/2)+d*g^(1/2)))/g^(3/2)/(-f)^(1/2)-1/2*b*e*n*(a+b*ln(c*(e*x+d)^
n))*ln(e*((-f)^(1/2)+x*g^(1/2))/(e*(-f)^(1/2)-d*g^(1/2)))/g^(3/2)/(e*(-f)^(
1/2)-d*g^(1/2))-1/2*b^2*e*n^2*polylog(2,-(e*x+d)*g^(1/2)/(e*(-f)^(1/2)-d*g^
(1/2)))/g^(3/2)/(e*(-f)^(1/2)-d*g^(1/2))+1/2*b*e*n*(a+b*ln(c*(e*x+d)^n))*ln
(e*((-f)^(1/2)-x*g^(1/2))/(e*(-f)^(1/2)+d*g^(1/2)))/g^(3/2)/(e*(-f)^(1/2)+d
*g^(1/2))+1/2*b^2*e*n^2*polylog(2,(e*x+d)*g^(1/2)/(e*(-f)^(1/2)+d*g^(1/2)))
/g^(3/2)/(e*(-f)^(1/2)+d*g^(1/2))+1/4*(e*x+d)*(a+b*ln(c*(e*x+d)^n))^2/g/(e*
(-f)^(1/2)+d*g^(1/2))/((-f)^(1/2)-x*g^(1/2))+1/4*(e*x+d)*(a+b*ln(c*(e*x+d)^
n))^2/g/(e*(-f)^(1/2)-d*g^(1/2))/((-f)^(1/2)+x*g^(1/2))
```

Rubi [A]
time = 1.21, antiderivative size = 815, normalized size of antiderivative = 1.00, number of steps used = 32, number of rules used = 10, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.345$, Rules used = {2463, 2456, 2444, 2441, 2440, 2438, 2443, 2481, 2421, 6724}

$$-\frac{b^2 e\,\text{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)n^2}{2\left(e\sqrt{-f}-d\sqrt{g}\right)g^{3/2}}+\frac{b^2 e\,\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{\sqrt{g}d+e\sqrt{-f}}\right)n^2}{2\left(\sqrt{g}d+e\sqrt{-f}\right)g^{3/2}}+\frac{b^2\text{PolyLog}\left(3,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)n^2}{2\sqrt{-f}\,g^{3/2}}-\frac{b^2\text{PolyLog}\left(3,\frac{\sqrt{g}(d+ex)}{\sqrt{g}d+e\sqrt{-f}}\right)n^2}{2\sqrt{-f}\,g^{3/2}}+\frac{be(a+b\log(c(d+ex)^n))\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}x\right)}{\sqrt{g}d+e\sqrt{-f}}\right)n}{2\left(\sqrt{g}d+e\sqrt{-f}\right)g^{3/2}}-\frac{be(a+b\log(c(d+ex)^n))\log\left(\frac{e\left(\sqrt{g}x+\sqrt{-f}\right)}{e\sqrt{-f}-d\sqrt{g}}\right)n}{2\left(e\sqrt{-f}-d\sqrt{g}\right)g^{3/2}}-\frac{b(a+b\log(c(d+ex)^n))\,\text{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)n}{2\sqrt{-f}\,g^{3/2}}+\frac{b(a+b\log(c(d+ex)^n))\,\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{\sqrt{g}d+e\sqrt{-f}}\right)n}{2\sqrt{-f}\,g^{3/2}}+\frac{(d+ex)(a+b\log(c(d+ex)^n))^2}{4\left(\sqrt{g}d+e\sqrt{-f}\right)g\left(\sqrt{-f}-\sqrt{g}x\right)}+\frac{(d+ex)(a+b\log(c(d+ex)^n))^2}{4\left(e\sqrt{-f}-d\sqrt{g}\right)g\left(\sqrt{g}x+\sqrt{-f}\right)}+\frac{(a+b\log(c(d+ex)^n))^2\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}x\right)}{\sqrt{g}d+e\sqrt{-f}}\right)}{4\sqrt{-f}\,g^{3/2}}-\frac{(a+b\log(c(d+ex)^n))^2\log\left(\frac{e\left(\sqrt{g}x+\sqrt{-f}\right)}{e\sqrt{-f}-d\sqrt{g}}\right)}{4\sqrt{-f}\,g^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(x^2*(a + b*Log[c*(d + e*x)^n])^2)/(f + g*x^2)^2,x]
```

```
[Out] ((d + e*x)*(a + b*Log[c*(d + e*x)^n])^2)/(4*(e*Sqrt[-f] + d*Sqrt[g])*g*(Sqr
t[-f] - Sqrt[g]*x)) + ((d + e*x)*(a + b*Log[c*(d + e*x)^n])^2)/(4*(e*Sqrt[-
f] - d*Sqrt[g])*g*(Sqrt[-f] + Sqrt[g]*x)) + (b*e*n*(a + b*Log[c*(d + e*x)^n
])*Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(2*(e*Sqrt[-f]
 + d*Sqrt[g])*g^(3/2)) + ((a + b*Log[c*(d + e*x)^n])^2*Log[(e*(Sqrt[-f] - S
qrt[g]*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(4*Sqrt[-f]*g^(3/2)) - (b*e*n*(a + b*
Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g])
```

```
])/(2*(e*Sqrt[-f] - d*Sqrt[g])*g^(3/2)) - ((a + b*Log[c*(d + e*x)^n])^2*Log
[(e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g])])/(4*Sqrt[-f]*g^(3/2))
 - (b^2*e*n^2*PolyLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/
(2*(e*Sqrt[-f] - d*Sqrt[g])*g^(3/2)) - (b*n*(a + b*Log[c*(d + e*x)^n])*Poly
Log[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/(2*Sqrt[-f]*g^(3/2
)) + (b^2*e*n^2*PolyLog[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(
2*(e*Sqrt[-f] + d*Sqrt[g])*g^(3/2)) + (b*n*(a + b*Log[c*(d + e*x)^n])*PolyL
og[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(2*Sqrt[-f]*g^(3/2)) +
 (b^2*n^2*PolyLog[3, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/(2*S
qrt[-f]*g^(3/2)) - (b^2*n^2*PolyLog[3, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*
Sqrt[g])])/(2*Sqrt[-f]*g^(3/2))
```

Rule 2421

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> Simp[(-PolyLog[2, (-d)*f*x^m])*((a + b*Log[c
*x^n])^p/m), x] + Dist[b*n*(p/m), Int[PolyLog[2, (-d)*f*x^m]*((a + b*Log[c*
x^n])^(p - 1)/x), x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0
] && EqQ[d*e, 1]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + c*e*(x/g)])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2441

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d + e*x
)^n])/g), x] - Dist[b*e*(n/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2443

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d
+ e*x)^n])^p/g), x] - Dist[b*e*n*(p/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]*
((a + b*Log[c*(d + e*x)^n])^(p - 1)/(d + e*x)), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2444

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_))^2, x_Symbol] :> Simp[(d + e*x)*((a + b*Log[c*(d + e*x)^n])^p/((e*f
- d*g)*(f + g*x))), x] - Dist[b*e*n*(p/(e*f - d*g)), Int[(a + b*Log[c*(d +
e*x)^n])^(p - 1)/(f + g*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] &&
 NeQ[e*f - d*g, 0] && GtQ[p, 0]
```

Rule 2456

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_)^(r_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a + b*Log[c*(d + e*x)
^n])^p, (f + g*x^r)^q, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, r}, x] && I
GtQ[p, 0] && IntegerQ[q] && (GtQ[q, 0] || (IntegerQ[r] && NeQ[r, 1]))
```

Rule 2463

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rule 2481

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[(k*(x/d))^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + j*(x/e))^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 6724

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{x^2(a+b\log(c(d+ex)^n))^2}{(f+gx^2)^2}\,dx = \int \left(-\frac{f(a+b\log(c(d+ex)^n))^2}{g(f+gx^2)^2}+\frac{(a+b\log(c(d+ex)^n))^2}{g(f+gx^2)}\right)dx$$

$$= \frac{\int \frac{(a+b\log(c(d+ex)^n))^2}{f+gx^2}\,dx}{g} - \frac{f\int \frac{(a+b\log(c(d+ex)^n))^2}{(f+gx^2)^2}\,dx}{g}$$

$$= \frac{\int \left(\frac{\sqrt{-f}\,(a+b\log(c(d+ex)^n))^2}{2f\left(\sqrt{-f}-\sqrt{g}\,x\right)}+\frac{\sqrt{-f}\,(a+b\log(c(d+ex)^n))^2}{2f\left(\sqrt{-f}+\sqrt{g}\,x\right)}\right)dx}{g} - \frac{f\int \left(-\cdots\right.}{\cdots}$$

$$= \frac{1}{4}\int \frac{(a+b\log(c(d+ex)^n))^2}{\left(\sqrt{-f}\,\sqrt{g}-gx\right)^2}\,dx + \frac{1}{4}\int \frac{(a+b\log(c(d+ex)^n))^2}{\left(\sqrt{-f}\,\sqrt{g}+gx\right)^2}\,dx + \cdots$$

$$= \frac{(d+ex)(a+b\log(c(d+ex)^n))^2}{4\left(e\sqrt{-f}+d\sqrt{g}\right)g\left(\sqrt{-f}-\sqrt{g}\,x\right)} + \frac{(d+ex)(a+b\log(c(d\cdots}{4\left(e\sqrt{-f}-d\sqrt{g}\right)g\left(\sqrt{\cdots}\right.}$$

$$= \frac{(d+ex)(a+b\log(c(d+ex)^n))^2}{4\left(e\sqrt{-f}+d\sqrt{g}\right)g\left(\sqrt{-f}-\sqrt{g}\,x\right)} + \frac{(d+ex)(a+b\log(c(d\cdots}{4\left(e\sqrt{-f}-d\sqrt{g}\right)g\left(\sqrt{\cdots}\right.}$$

$$= \frac{(d+ex)(a+b\log(c(d+ex)^n))^2}{4\left(e\sqrt{-f}+d\sqrt{g}\right)g\left(\sqrt{-f}-\sqrt{g}\,x\right)} + \frac{(d+ex)(a+b\log(c(d\cdots}{4\left(e\sqrt{-f}-d\sqrt{g}\right)g\left(\sqrt{\cdots}\right.}$$

$$= \frac{(d+ex)(a+b\log(c(d+ex)^n))^2}{4\left(e\sqrt{-f}+d\sqrt{g}\right)g\left(\sqrt{-f}-\sqrt{g}\,x\right)} + \frac{(d+ex)(a+b\log(c(d\cdots}{4\left(e\sqrt{-f}-d\sqrt{g}\right)g\left(\sqrt{\cdots}\right.}$$

Mathematica [C] Result contains complex when optimal does not.
time = 1.71, size = 1132, normalized size = 1.39

[illegible]

Antiderivative was successfully verified.

```
[In] Integrate[(x^2*(a + b*Log[c*(d + e*x)^n])^2)/(f + g*x^2)^2,x]
```

```
[Out] ((-2*Sqrt[g]*x*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2)/(f + g*x^2)
 + (2*ArcTan[(Sqrt[g]*x)/Sqrt[f]]*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)
^n])^2)/Sqrt[f] + 2*b*n*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])*((-(S
qrt[g]*(d + e*x)*Log[d + e*x]) + e*((-I)*Sqrt[f] + Sqrt[g]*x)*Log[I*Sqrt[f]
 - Sqrt[g]*x])/((e*Sqrt[f] - I*d*Sqrt[g])*(Sqrt[f] + I*Sqrt[g]*x)) + (-(Sqr
t[g]*(d + e*x)*Log[d + e*x]) + e*(I*Sqrt[f] + Sqrt[g]*x)*Log[I*Sqrt[f] + Sq
rt[g]*x])/((e*Sqrt[f] + I*d*Sqrt[g])*(Sqrt[f] - I*Sqrt[g]*x)) - (I*(Log[d +
 e*x]*Log[(e*(Sqrt[f] + I*Sqrt[g]*x))/(e*Sqrt[f] - I*d*Sqrt[g])] + PolyLog[
2, ((-I)*Sqrt[g]*(d + e*x))/(e*Sqrt[f] - I*d*Sqrt[g])]))/Sqrt[f] + (I*(Log[
d + e*x]*Log[(e*(Sqrt[f] - I*Sqrt[g]*x))/(e*Sqrt[f] + I*d*Sqrt[g])] + PolyL
og[2, (I*Sqrt[g]*(d + e*x))/(e*Sqrt[f] + I*d*Sqrt[g])]))/Sqrt[f]) + b^2*n^2
*((-(Sqrt[g]*(d + e*x)*Log[d + e*x]^2) + 2*e*(I*Sqrt[f] + Sqrt[g]*x)*Log[d
+ e*x]*Log[(e*(Sqrt[f] - I*Sqrt[g]*x))/(e*Sqrt[f] + I*d*Sqrt[g])] + 2*e*(I*
Sqrt[f] + Sqrt[g]*x)*PolyLog[2, (I*Sqrt[g]*(d + e*x))/(e*Sqrt[f] + I*d*Sqrt
[g])])/((e*Sqrt[f] + I*d*Sqrt[g])*(Sqrt[f] - I*Sqrt[g]*x)) - (Log[d + e*x]*
(Sqrt[g]*(d + e*x)*Log[d + e*x] + (2*I)*e*(Sqrt[f] + I*Sqrt[g]*x)*Log[(e*(S
qrt[f] + I*Sqrt[g]*x))/(e*Sqrt[f] - I*d*Sqrt[g])]) + (2*I)*e*(Sqrt[f] + I*S
qrt[g]*x)*PolyLog[2, (Sqrt[g]*(d + e*x))/(I*e*Sqrt[f] + d*Sqrt[g])])/((e*Sq
rt[f] - I*d*Sqrt[g])*(Sqrt[f] + I*Sqrt[g]*x)) + (I*(Log[d + e*x]^2*Log[1 -
(Sqrt[g]*(d + e*x))/((-I)*e*Sqrt[f] + d*Sqrt[g])] + 2*Log[d + e*x]*PolyLog[
2, (Sqrt[g]*(d + e*x))/((-I)*e*Sqrt[f] + d*Sqrt[g])] - 2*PolyLog[3, (Sqrt[g
]*(d + e*x))/((-I)*e*Sqrt[f] + d*Sqrt[g])]))/Sqrt[f] - (I*(Log[d + e*x]^2*L
og[1 - (Sqrt[g]*(d + e*x))/(I*e*Sqrt[f] + d*Sqrt[g])] + 2*Log[d + e*x]*Poly
Log[2, (Sqrt[g]*(d + e*x))/(I*e*Sqrt[f] + d*Sqrt[g])] - 2*PolyLog[3, (Sqrt[
g]*(d + e*x))/(I*e*Sqrt[f] + d*Sqrt[g])]))/Sqrt[f]))/(4*g^(3/2))
```

Maple [F]
time = 0.23, size = 0, normalized size = 0.00

$$\int \frac{x^{2} \left(a +b \ln \left(c \left(e x +d \right)^{n}\right)\right)^{2}}{\left(g \,x^{2}+f \right)^{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(a+b*ln(c*(e*x+d)^n))^2/(g*x^2+f)^2,x)
```

```
[Out] int(x^2*(a+b*ln(c*(e*x+d)^n))^2/(g*x^2+f)^2,x)
```

Maxima [**F**]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*log(c*(e*x+d)^n))^2/(g*x^2+f)^2,x, algorithm="maxima")
```

```
[Out] -1/2*a^2*(x/(g^2*x^2 + f*g) - arctan(g*x/sqrt(f*g))/(sqrt(f*g)*g)) + integr
ate((b^2*x^2*log((x*e + d)^n)^2 + 2*(b^2*log(c) + a*b)*x^2*log((x*e + d)^n)
 + (b^2*log(c)^2 + 2*a*b*log(c))*x^2)/(g^2*x^4 + 2*f*g*x^2 + f^2), x)
```

Fricas [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*log(c*(e*x+d)^n))^2/(g*x^2+f)^2,x, algorithm="fricas")
```

```
[Out] integral((b^2*x^2*log((x*e + d)^n*c)^2 + 2*a*b*x^2*log((x*e + d)^n*c) + a^2
*x^2)/(g^2*x^4 + 2*f*g*x^2 + f^2), x)
```

Sympy [**F(-1)**] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(a+b*ln(c*(e*x+d)**n))**2/(g*x**2+f)**2,x)
```

```
[Out] Timed out
```

Giac [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*log(c*(e*x+d)^n))^2/(g*x^2+f)^2,x, algorithm="giac")
```

```
[Out] integrate((b*log((x*e + d)^n*c) + a)^2*x^2/(g*x^2 + f)^2, x)
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x^2\,{\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)}^2}{{\left(g\,x^2+f\right)}^2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^2*(a + b*log(c*(d + e*x)^n))^2)/(f + g*x^2)^2,x)
[Out] int((x^2*(a + b*log(c*(d + e*x)^n))^2)/(f + g*x^2)^2, x)
```

3.327 $\int \frac{(a+b\log(c(d+ex)^n))^2}{(f+gx^2)^2}\,dx$

Optimal. Leaf size=821

$$-\frac{(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{4f\left(e\sqrt{-f}+d\sqrt{g}\right)\left(\sqrt{-f}-\sqrt{g}\,x\right)}-\frac{(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{4f\left(e\sqrt{-f}-d\sqrt{g}\right)\left(\sqrt{-f}+\sqrt{g}\,x\right)}-\frac{ben(a+b\log(c(d+}{2f\left(e\sqrt{\right.}}$$

```
[Out] -1/4*(a+b*ln(c*(e*x+d)^n))^2*ln(e*((-f)^(1/2)-x*g^(1/2))/(e*(-f)^(1/2)+d*g^(1/2)))/(-f)^(3/2)/g^(1/2)+1/4*(a+b*ln(c*(e*x+d)^n))^2*ln(e*((-f)^(1/2)+x*g^(1/2))/(e*(-f)^(1/2)-d*g^(1/2)))/(-f)^(3/2)/g^(1/2)+1/2*b*n*(a+b*ln(c*(e*x+d)^n))*polylog(2,-(e*x+d)*g^(1/2)/(e*(-f)^(1/2)-d*g^(1/2)))/(-f)^(3/2)/g^(1/2)-1/2*b*n*(a+b*ln(c*(e*x+d)^n))*polylog(2,(e*x+d)*g^(1/2)/(e*(-f)^(1/2)+d*g^(1/2)))/(-f)^(3/2)/g^(1/2)-1/2*b^2*n^2*polylog(3,-(e*x+d)*g^(1/2)/(e*(-f)^(1/2)-d*g^(1/2)))/(-f)^(3/2)/g^(1/2)+1/2*b^2*n^2*polylog(3,(e*x+d)*g^(1/2)/(e*(-f)^(1/2)+d*g^(1/2)))/(-f)^(3/2)/g^(1/2)-1/2*b*e*n*(a+b*ln(c*(e*x+d)^n))*ln(e*((-f)^(1/2)-x*g^(1/2))/(e*(-f)^(1/2)+d*g^(1/2)))/f/g^(1/2)/(e*(-f)^(1/2)+d*g^(1/2))-1/2*b^2*e*n^2*polylog(2,(e*x+d)*g^(1/2)/(e*(-f)^(1/2)+d*g^(1/2)))/f/g^(1/2)/(e*(-f)^(1/2)+d*g^(1/2))-1/2*b*e*n*(a+b*ln(c*(e*x+d)^n))*ln(e*((-f)^(1/2)+x*g^(1/2))/(e*(-f)^(1/2)-d*g^(1/2)))/g^(1/2)/(e*(-f)^(3/2)+d*f*g^(1/2))-1/2*b^2*e*n^2*polylog(2,-(e*x+d)*g^(1/2)/(e*(-f)^(1/2)-d*g^(1/2)))/g^(1/2)/(e*(-f)^(3/2)+d*f*g^(1/2))-1/4*(e*x+d)*(a+b*ln(c*(e*x+d)^n))^2/f/(e*(-f)^(1/2)+d*g^(1/2))/((-f)^(1/2)-x*g^(1/2))-1/4*(e*x+d)*(a+b*ln(c*(e*x+d)^n))^2/f/(e*(-f)^(1/2)-d*g^(1/2))/((-f)^(1/2)+x*g^(1/2))
```

Rubi [A]
time = 0.65, antiderivative size = 821, normalized size of antiderivative = 1.00, number of steps used = 20, number of rules used = 9, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.346$, Rules used = {2456, 2444, 2441, 2440, 2438, 2443, 2481, 2421, 6724}

$$-\frac{b^2 e\,\text{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)n^2}{2\left(e(-f)^{3/2}+df\sqrt{g}\right)\sqrt{g}}-\frac{b^2 e\,\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{\sqrt{g}d+e\sqrt{-f}}\right)n^2}{2f\left(\sqrt{g}d+e\sqrt{-f}\right)\sqrt{g}}-\frac{b^2\text{PolyLog}\left(3,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)n^2}{2(-f)^{3/2}\sqrt{g}}+\frac{b^2\text{PolyLog}\left(3,\frac{\sqrt{g}(d+ex)}{\sqrt{g}d+e\sqrt{-f}}\right)n^2}{2(-f)^{3/2}\sqrt{g}}-\frac{be\left(a+b\log\left(c(d+ex)^n\right)\right)\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}x\right)}{\sqrt{g}d+e\sqrt{-f}}\right)n}{2f\left(\sqrt{g}d+e\sqrt{-f}\right)\sqrt{g}}-\frac{be\left(a+b\log\left(c(d+ex)^n\right)\right)\log\left(\frac{e\left(\sqrt{g}x+\sqrt{-f}\right)}{e\sqrt{-f}-d\sqrt{g}}\right)n}{2\left(e(-f)^{3/2}+df\sqrt{g}\right)\sqrt{g}}+\frac{b\left(a+b\log\left(c(d+ex)^n\right)\right)\text{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)n}{2(-f)^{3/2}\sqrt{g}}-\frac{b\left(a+b\log\left(c(d+ex)^n\right)\right)\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{\sqrt{g}d+e\sqrt{-f}}\right)n}{2(-f)^{3/2}\sqrt{g}}-\frac{(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{4f\left(\sqrt{g}d+e\sqrt{-f}\right)\left(\sqrt{-f}-\sqrt{g}x\right)}-\frac{(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{4f\left(e\sqrt{-f}-d\sqrt{g}\right)\left(\sqrt{g}x+\sqrt{-f}\right)}-\frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^2\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}x\right)}{\sqrt{g}d+e\sqrt{-f}}\right)}{4(-f)^{3/2}\sqrt{g}}+\frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^2\log\left(\frac{e\left(\sqrt{g}x+\sqrt{-f}\right)}{e\sqrt{-f}-d\sqrt{g}}\right)}{4(-f)^{3/2}\sqrt{g}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^2/(f + g*x^2)^2,x]
```

```
[Out] -1/4*((d + e*x)*(a + b*Log[c*(d + e*x)^n])^2)/(f*(e*Sqrt[-f] + d*Sqrt[g])*(Sqrt[-f] - Sqrt[g]*x)) - ((d + e*x)*(a + b*Log[c*(d + e*x)^n])^2)/(4*f*(e*Sqrt[-f] - d*Sqrt[g])*(Sqrt[-f] + Sqrt[g]*x)) - (b*e*n*(a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(2*f*(e*Sqrt[-f] + d*Sqrt[g])*Sqrt[g]) - ((a + b*Log[c*(d + e*x)^n])^2*Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(4*(-f)^(3/2)*Sqrt[g]) - (b*e*n*(a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d*S
```

```
qrt[g])])/(2*(e*(-f)^(3/2) + d*f*Sqrt[g])*Sqrt[g]) + ((a + b*Log[c*(d + e*x
)^n])^2*Log[(e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g])])/(4*(-f)^(
3/2)*Sqrt[g]) - (b^2*e*n^2*PolyLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d
*Sqrt[g]))])/(2*(e*(-f)^(3/2) + d*f*Sqrt[g])*Sqrt[g]) + (b*n*(a + b*Log[c*(
d + e*x)^n])*PolyLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/(
2*(-f)^(3/2)*Sqrt[g]) - (b^2*e*n^2*PolyLog[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[-
f] + d*Sqrt[g])])/(2*f*(e*Sqrt[-f] + d*Sqrt[g])*Sqrt[g]) - (b*n*(a + b*Log[
c*(d + e*x)^n])*PolyLog[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(
2*(-f)^(3/2)*Sqrt[g]) - (b^2*n^2*PolyLog[3, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-
f] - d*Sqrt[g]))])/(2*(-f)^(3/2)*Sqrt[g]) + (b^2*n^2*PolyLog[3, (Sqrt[g]*(d
 + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(2*(-f)^(3/2)*Sqrt[g])
```

Rule 2421

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> Simp[(-PolyLog[2, (-d)*f*x^m])*((a + b*Log[c
*x^n])^p/m), x] + Dist[b*n*(p/m), Int[PolyLog[2, (-d)*f*x^m]*((a + b*Log[c*
x^n])^(p - 1)/x), x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0
] && EqQ[d*e, 1]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + c*e*(x/g)])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2441

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d + e*x
)^n])/g), x] - Dist[b*e*(n/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2443

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d
+ e*x)^n])^p/g), x] - Dist[b*e*n*(p/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]*
((a + b*Log[c*(d + e*x)^n])^(p - 1)/(d + e*x)), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2444

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_))^2, x_Symbol] :> Simp[(d + e*x)*((a + b*Log[c*(d + e*x)^n])^p/((e*f
- d*g)*(f + g*x))), x] - Dist[b*e*n*(p/(e*f - d*g)), Int[(a + b*Log[c*(d +
e*x)^n])^(p - 1)/(f + g*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] &&
 NeQ[e*f - d*g, 0] && GtQ[p, 0]
```

Rule 2456

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_)^(r_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a + b*Log[c*(d + e*x)
^n])^p, (f + g*x^r)^q, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, r}, x] && I
GtQ[p, 0] && IntegerQ[q] && (GtQ[q, 0] || (IntegerQ[r] && NeQ[r, 1]))
```

Rule 2481

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[(k*(x/d))^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + j*(x/e))^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 6724

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(a+b\log(c(d+ex)^n))^2}{(f+gx^2)^2}\,dx = \int \left(-\frac{g(a+b\log(c(d+ex)^n))^2}{4f\left(\sqrt{-f}\,\sqrt{g}-gx\right)^2} - \frac{g(a+b\log(c(d+ex)^n))^2}{4f\left(\sqrt{-f}\,\sqrt{g}+gx\right)^2} - \frac{g(a+b\log}{2f\,(-}\right.$$

$$= -\frac{g\int \frac{(a+b\log(c(d+ex)^n))^2}{\left(\sqrt{-f}\,\sqrt{g}-gx\right)^2}\,dx}{4f} - \frac{g\int \frac{(a+b\log(c(d+ex)^n))^2}{\left(\sqrt{-f}\,\sqrt{g}+gx\right)^2}\,dx}{4f} - \frac{g\int \frac{(a+b\log(c(d+ex)^n}{-fg-g^2x^2}}{2f}$$

$$= -\frac{(d+ex)(a+b\log(c(d+ex)^n))^2}{4f\left(e\sqrt{-f}+d\sqrt{g}\right)\left(\sqrt{-f}-\sqrt{g}\,x\right)} - \frac{(d+ex)(a+b\log(c(d+}{4f\left(e\sqrt{-f}-d\sqrt{g}\right)\left(\sqrt{-f}\right.}$$

$$= -\frac{(d+ex)(a+b\log(c(d+ex)^n))^2}{4f\left(e\sqrt{-f}+d\sqrt{g}\right)\left(\sqrt{-f}-\sqrt{g}\,x\right)} - \frac{(d+ex)(a+b\log(c(d+}{4f\left(e\sqrt{-f}-d\sqrt{g}\right)\left(\sqrt{-f}\right.}$$

$$= -\frac{(d+ex)(a+b\log(c(d+ex)^n))^2}{4f\left(e\sqrt{-f}+d\sqrt{g}\right)\left(\sqrt{-f}-\sqrt{g}\,x\right)} - \frac{(d+ex)(a+b\log(c(d+}{4f\left(e\sqrt{-f}-d\sqrt{g}\right)\left(\sqrt{-f}\right.}$$

$$= -\frac{(d+ex)(a+b\log(c(d+ex)^n))^2}{4f\left(e\sqrt{-f}+d\sqrt{g}\right)\left(\sqrt{-f}-\sqrt{g}\,x\right)} - \frac{(d+ex)(a+b\log(c(d+}{4f\left(e\sqrt{-f}-d\sqrt{g}\right)\left(\sqrt{-f}\right.}$$

$$= -\frac{(d+ex)(a+b\log(c(d+ex)^n))^2}{4f\left(e\sqrt{-f}+d\sqrt{g}\right)\left(\sqrt{-f}-\sqrt{g}\,x\right)} - \frac{(d+ex)(a+b\log(c(d+}{4f\left(e\sqrt{-f}-d\sqrt{g}\right)\left(\sqrt{-f}\right.}$$

$$= -\frac{(d+ex)(a+b\log(c(d+ex)^n))^2}{4f\left(e\sqrt{-f}+d\sqrt{g}\right)\left(\sqrt{-f}-\sqrt{g}\,x\right)} - \frac{(d+ex)(a+b\log(c(d+}{4f\left(e\sqrt{-f}-d\sqrt{g}\right)\left(\sqrt{-f}\right.}$$

Mathematica [C] Result contains complex when optimal does not.
time = 1.91, size = 1143, normalized size = 1.39

$$[illegible]$$

Antiderivative was successfully verified.

[In] Integrate[(a + b*Log[c*(d + e*x)^n])^2/(f + g*x^2)^2,x]

[Out] ((2*Sqrt[f]*x*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2)/(f + g*x^2) + (2*ArcTan[(Sqrt[g]*x)/Sqrt[f]]*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2)/Sqrt[g] + (2*b*n*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])*((Sqrt[f]*(Sqrt[g]*(d + e*x)*Log[d + e*x] + I*e*(Sqrt[f] + I*Sqrt[g]*x)*Log[I*Sqrt[f] - Sqrt[g]*x]))/((e*Sqrt[f] - I*d*Sqrt[g])*(Sqrt[f] + I*Sqrt[g]*x)) + (Sqrt[f]*(Sqrt[g]*(d + e*x)*Log[d + e*x] + e*((-I)*Sqrt[f] - Sqrt[g]*x)*Log[I*Sqrt[f] + Sqrt[g]*x]))/((e*Sqrt[f] + I*d*Sqrt[g])*(Sqrt[f] - I*Sqrt[g]*x)) - I*(Log[d + e*x]*Log[(e*(Sqrt[f] + I*Sqrt[g]*x))/(e*Sqrt[f] - I*d*Sqrt[g])] + PolyLog[2, ((-I)*Sqrt[g]*(d + e*x))/(e*Sqrt[f] - I*d*Sqrt[g])]) + I*(Log[d + e*x]*Log[(e*(Sqrt[f] - I*Sqrt[g]*x))/(e*Sqrt[f] + I*d*Sqrt[g])] + PolyLog[2, (I*Sqrt[g]*(d + e*x))/(e*Sqrt[f] + I*d*Sqrt[g])])))/Sqrt[g] + (b^2*n^2*(-((Sqrt[f]*(-(Sqrt[g]*(d + e*x)*Log[d + e*x]^2) + 2*e*(I*Sqrt[f] + Sqrt[g]*x)*Log[d + e*x]*Log[(e*(Sqrt[f] - I*Sqrt[g]*x))/(e*Sqrt[f] + I*d*Sqrt[g])] + 2*e*(I*Sqrt[f] + Sqrt[g]*x)*PolyLog[2, (I*Sqrt[g]*(d + e*x))/(e*Sqrt[f] + I*d*Sqrt[g])]))/((e*Sqrt[f] + I*d*Sqrt[g])*(Sqrt[f] - I*Sqrt[g]*x))) + (Sqrt[f]*(Log[d + e*x]*(Sqrt[g]*(d + e*x)*Log[d + e*x] + (2*I)*e*(Sqrt[f] + I*Sqrt[g]*x)*Log[(e*(Sqrt[f] + I*Sqrt[g]*x))/(e*Sqrt[f] - I*d*Sqrt[g])]) + (2*I)*e*(Sqrt[f] + I*Sqrt[g]*x)*PolyLog[2, (Sqrt[g]*(d + e*x))/(I*e*Sqrt[f] + d*Sqrt[g])]))/((e*Sqrt[f] - I*d*Sqrt[g])*(Sqrt[f] + I*Sqrt[g]*x)) + I*(Log[d + e*x]^2*Log[1 - (Sqrt[g]*(d + e*x))/((-I)*e*Sqrt[f] + d*Sqrt[g])] + 2*Log[d + e*x]*PolyLog[2, (Sqrt[g]*(d + e*x))/((-I)*e*Sqrt[f] + d*Sqrt[g])] - 2*PolyLog[3, (Sqrt[g]*(d + e*x))/((-I)*e*Sqrt[f] + d*Sqrt[g])]) - I*(Log[d + e*x]^2*Log[1 - (Sqrt[g]*(d + e*x))/(I*e*Sqrt[f] + d*Sqrt[g])] + 2*Log[d + e*x]*PolyLog[2, (Sqrt[g]*(d + e*x))/(I*e*Sqrt[f] + d*Sqrt[g])] - 2*PolyLog[3, (Sqrt[g]*(d + e*x))/(I*e*Sqrt[f] + d*Sqrt[g])])))/Sqrt[g])/(4*f^(3/2))

Maple [F]
time = 0.22, size = 0, normalized size = 0.00

$$\int \frac{\left(a+b\ln\left(c\left(ex+d\right)^{n}\right)\right)^{2}}{\left(g\,x^{2}+f\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((a+b*ln(c*(e*x+d)^n))^2/(g*x^2+f)^2,x)

[Out] int((a+b*ln(c*(e*x+d)^n))^2/(g*x^2+f)^2,x)

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/(g*x^2+f)^2,x, algorithm="maxima")
```

```
[Out] 1/2*a^2*(x/(f*g*x^2 + f^2) + arctan(g*x/sqrt(f*g))/(sqrt(f*g)*f)) + integra
te((b^2*log((x*e + d)^n)^2 + b^2*log(c)^2 + 2*a*b*log(c) + 2*(b^2*log(c) +
a*b)*log((x*e + d)^n))/(g^2*x^4 + 2*f*g*x^2 + f^2), x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/(g*x^2+f)^2,x, algorithm="fricas")
```

```
[Out] integral((b^2*log((x*e + d)^n*c)^2 + 2*a*b*log((x*e + d)^n*c) + a^2)/(g^2*x
^4 + 2*f*g*x^2 + f^2), x)
```

Sympy [F(-1)] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**2/(g*x**2+f)**2,x)
```

```
[Out] Timed out
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/(g*x^2+f)^2,x, algorithm="giac")
```

```
[Out] integrate((b*log((x*e + d)^n*c) + a)^2/(g*x^2 + f)^2, x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)^2}{{\left(g\,x^2+f\right)}^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))^2/(f + g*x^2)^2,x)
[Out] int((a + b*log(c*(d + e*x)^n))^2/(f + g*x^2)^2, x)
```

3.328 $\int \frac{(a+b\log(c(d+ex)^n))^2}{x^2\left(f+gx^2\right)^2}\,dx$

Optimal. Leaf size=919

$$\frac{2ben\log\left(-\frac{ex}{d}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{df^2}-\frac{(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{df^2x}+\frac{g(d+ex)\left(a+b\log\left(c(d+ex\right.\right.}{4f^2\left(e\sqrt{-f}+d\sqrt{g}\right)\left(\sqrt{-f}\right.}$$

```
[Out] 2*b*e*n*ln(-e*x/d)*(a+b*ln(c*(e*x+d)^n))/d/f^2-(e*x+d)*(a+b*ln(c*(e*x+d)^n)
)^2/d/f^2/x+2*b^2*e*n^2*polylog(2,1+e*x/d)/d/f^2-3/4*(a+b*ln(c*(e*x+d)^n))^
2*ln(e*((-f)^(1/2)-x*g^(1/2))/(e*(-f)^(1/2)+d*g^(1/2)))*g^(1/2)/(-f)^(5/2)+
3/4*(a+b*ln(c*(e*x+d)^n))^2*ln(e*((-f)^(1/2)+x*g^(1/2))/(e*(-f)^(1/2)-d*g^(
1/2)))*g^(1/2)/(-f)^(5/2)+3/2*b*n*(a+b*ln(c*(e*x+d)^n))*polylog(2,-(e*x+d)*
g^(1/2)/(e*(-f)^(1/2)-d*g^(1/2)))*g^(1/2)/(-f)^(5/2)-3/2*b*n*(a+b*ln(c*(e*x
+d)^n))*polylog(2,(e*x+d)*g^(1/2)/(e*(-f)^(1/2)+d*g^(1/2)))*g^(1/2)/(-f)^(5
/2)-3/2*b^2*n^2*polylog(3,-(e*x+d)*g^(1/2)/(e*(-f)^(1/2)-d*g^(1/2)))*g^(1/2
)/(-f)^(5/2)+3/2*b^2*n^2*polylog(3,(e*x+d)*g^(1/2)/(e*(-f)^(1/2)+d*g^(1/2))
)*g^(1/2)/(-f)^(5/2)+1/2*b*e*n*(a+b*ln(c*(e*x+d)^n))*ln(e*((-f)^(1/2)-x*g^(
1/2))/(e*(-f)^(1/2)+d*g^(1/2)))*g^(1/2)/f^2/(e*(-f)^(1/2)+d*g^(1/2))+1/2*b^
2*e*n^2*polylog(2,(e*x+d)*g^(1/2)/(e*(-f)^(1/2)+d*g^(1/2)))*g^(1/2)/f^2/(e*
(-f)^(1/2)+d*g^(1/2))+1/2*b*e*n*(a+b*ln(c*(e*x+d)^n))*ln(e*((-f)^(1/2)+x*g^
(1/2))/(e*(-f)^(1/2)-d*g^(1/2)))*g^(1/2)/f/(e*(-f)^(3/2)+d*f*g^(1/2))+1/2*b
^2*e*n^2*polylog(2,-(e*x+d)*g^(1/2)/(e*(-f)^(1/2)-d*g^(1/2)))*g^(1/2)/f/(e*
(-f)^(3/2)+d*f*g^(1/2))+1/4*g*(e*x+d)*(a+b*ln(c*(e*x+d)^n))^2/f^2/(e*(-f)^(
1/2)+d*g^(1/2))/((-f)^(1/2)-x*g^(1/2))+1/4*g*(e*x+d)*(a+b*ln(c*(e*x+d)^n))^
2/f^2/(e*(-f)^(1/2)-d*g^(1/2))/((-f)^(1/2)+x*g^(1/2))
```

Rubi [A]
time = 1.26, antiderivative size = 919, normalized size of antiderivative = 1.00, number of steps used = 35, number of rules used = 11, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.379$, Rules used = {2463, 2444, 2441, 2352, 2456, 2440, 2438, 2443, 2481, 2421, 6724}

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^2/(x^2*(f + g*x^2)^2),x]
```

```
[Out] (2*b*e*n*Log[-((e*x)/d)]*(a + b*Log[c*(d + e*x)^n]))/(d*f^2) - ((d + e*x)*(
a + b*Log[c*(d + e*x)^n])^2)/(d*f^2*x) + (g*(d + e*x)*(a + b*Log[c*(d + e*x
)^n])^2)/(4*f^2*(e*Sqrt[-f] + d*Sqrt[g])*(Sqrt[-f] - Sqrt[g]*x)) + (g*(d +
e*x)*(a + b*Log[c*(d + e*x)^n])^2)/(4*f^2*(e*Sqrt[-f] - d*Sqrt[g])*(Sqrt[-f
] + Sqrt[g]*x)) + (b*e*Sqrt[g]*n*(a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f
```

```
] - Sqrt[g]*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(2*f^2*(e*Sqrt[-f] + d*Sqrt[g]))
 - (3*Sqrt[g]*(a + b*Log[c*(d + e*x)^n])^2*Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(
e*Sqrt[-f] + d*Sqrt[g])])/(4*(-f)^(5/2)) + (b*e*Sqrt[g]*n*(a + b*Log[c*(d +
 e*x)^n])*Log[(e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g])])/(2*f*(e
*(-f)^(3/2) + d*f*Sqrt[g])) + (3*Sqrt[g]*(a + b*Log[c*(d + e*x)^n])^2*Log[(
e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g])])/(4*(-f)^(5/2)) + (b^2*
e*Sqrt[g]*n^2*PolyLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/
(2*f*(e*(-f)^(3/2) + d*f*Sqrt[g])) + (3*b*Sqrt[g]*n*(a + b*Log[c*(d + e*x)^
n])*PolyLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/(2*(-f)^(5
/2)) + (b^2*e*Sqrt[g]*n^2*PolyLog[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sq
rt[g])])/(2*f^2*(e*Sqrt[-f] + d*Sqrt[g])) - (3*b*Sqrt[g]*n*(a + b*Log[c*(d
+ e*x)^n])*PolyLog[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(2*(-f
)^(5/2)) + (2*b^2*e*n^2*PolyLog[2, 1 + (e*x)/d])/(d*f^2) - (3*b^2*Sqrt[g]*n
^2*PolyLog[3, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/(2*(-f)^(5/
2)) + (3*b^2*Sqrt[g]*n^2*PolyLog[3, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqr
t[g])])/(2*(-f)^(5/2))
```

Rule 2352

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> Simp[(-e^(-1))*PolyLo
g[2, 1 - c*x], x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2421

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> Simp[(-PolyLog[2, (-d)*f*x^m])*((a + b*Log[c
*x^n])^p/m), x] + Dist[b*n*(p/m), Int[PolyLog[2, (-d)*f*x^m]*((a + b*Log[c*
x^n])^(p - 1)/x), x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0
] && EqQ[d*e, 1]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + c*e*(x/g)])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2441

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d + e*x
)^n])/g), x] - Dist[b*e*(n/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
```

```
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2443

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d
+ e*x)^n])^p/g), x] - Dist[b*e*n*(p/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]*
((a + b*Log[c*(d + e*x)^n])^(p - 1)/(d + e*x)), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2444

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_))^2, x_Symbol] :> Simp[(d + e*x)*((a + b*Log[c*(d + e*x)^n])^p/((e*f
- d*g)*(f + g*x))), x] - Dist[b*e*n*(p/(e*f - d*g)), Int[(a + b*Log[c*(d +
e*x)^n])^(p - 1)/(f + g*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] &&
 NeQ[e*f - d*g, 0] && GtQ[p, 0]
```

Rule 2456

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_)^(r_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a + b*Log[c*(d + e*x)
^n])^p, (f + g*x^r)^q, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, r}, x] && I
GtQ[p, 0] && IntegerQ[q] && (GtQ[q, 0] || (IntegerQ[r] && NeQ[r, 1]))
```

Rule 2463

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rule 2481

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[(k*(x/d))^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + j*(x/e))^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 6724

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(a+b\log(c(d+ex)^n))^2}{x^2(f+gx^2)^2}\,dx = \int \left(\frac{(a+b\log(c(d+ex)^n))^2}{f^2x^2} - \frac{g(a+b\log(c(d+ex)^n))^2}{f(f+gx^2)^2} - \frac{g(a+b\log(c(\right.$$

$$= \frac{\int \frac{(a+b\log(c(d+ex)^n))^2}{x^2}\,dx}{f^2} - \frac{g\int \frac{(a+b\log(c(d+ex)^n))^2}{f+gx^2}\,dx}{f^2} - \frac{g\int \frac{(a+b\log(c(d+ex)^n))^2}{(f+gx^2)^2}\,dx}{f}$$

$$= -\frac{(d+ex)(a+b\log(c(d+ex)^n))^2}{df^2x} - \frac{g\int \left(\frac{\sqrt{-f}\,(a+b\log(c(d+ex)^n))^2}{2f\left(\sqrt{-f}-\sqrt{g}\,x\right)} + \frac{\sqrt{-}}{2f}\right.}{f^2}$$

$$= \frac{2ben\log\left(-\frac{ex}{d}\right)(a+b\log(c(d+ex)^n))}{df^2} - \frac{(d+ex)(a+b\log(c(d+ex)^n))^2}{df^2x}$$

$$= \frac{2ben\log\left(-\frac{ex}{d}\right)(a+b\log(c(d+ex)^n))}{df^2} - \frac{(d+ex)(a+b\log(c(d+ex)^n))^2}{df^2x}$$

$$= \frac{2ben\log\left(-\frac{ex}{d}\right)(a+b\log(c(d+ex)^n))}{df^2} - \frac{(d+ex)(a+b\log(c(d+ex)^n))^2}{df^2x}$$

$$= \frac{2ben\log\left(-\frac{ex}{d}\right)(a+b\log(c(d+ex)^n))}{df^2} - \frac{(d+ex)(a+b\log(c(d+ex)^n))^2}{df^2x}$$

$$= \frac{2ben\log\left(-\frac{ex}{d}\right)(a+b\log(c(d+ex)^n))}{df^2} - \frac{(d+ex)(a+b\log(c(d+ex)^n))^2}{df^2x}$$

Mathematica [C] Result contains complex when optimal does not.
time = 2.26, size = 1304, normalized size = 1.42

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^2/(x^2*(f + g*x^2)^2),x]
```

```
[Out] ((-4*Sqrt[f]*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2)/x - (2*Sqrt[f
]*g*x*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2)/(f + g*x^2) - 6*Sqrt
[g]*ArcTan[(Sqrt[g]*x)/Sqrt[f]]*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n
])^2 + 2*b*n*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])*((4*Sqrt[f]*(e*x
*Log[x] - (d + e*x)*Log[d + e*x]))/(d*x) - (Sqrt[f]*Sqrt[g]*(Sqrt[g]*(d + e
*x)*Log[d + e*x] + I*e*(Sqrt[f] + I*Sqrt[g]*x)*Log[I*Sqrt[f] - Sqrt[g]*x]))
/((e*Sqrt[f] - I*d*Sqrt[g])*(Sqrt[f] + I*Sqrt[g]*x)) + (Sqrt[f]*Sqrt[g]*(-(
Sqrt[g]*(d + e*x)*Log[d + e*x]) + e*(I*Sqrt[f] + Sqrt[g]*x)*Log[I*Sqrt[f] +
 Sqrt[g]*x]))/((e*Sqrt[f] + I*d*Sqrt[g])*(Sqrt[f] - I*Sqrt[g]*x)) + (3*I)*S
qrt[g]*(Log[d + e*x]*Log[(e*(Sqrt[f] + I*Sqrt[g]*x))/(e*Sqrt[f] - I*d*Sqrt[
g])] + PolyLog[2, ((-I)*Sqrt[g]*(d + e*x))/(e*Sqrt[f] - I*d*Sqrt[g])]) - (3
*I)*Sqrt[g]*(Log[d + e*x]*Log[(e*(Sqrt[f] - I*Sqrt[g]*x))/(e*Sqrt[f] + I*d*
Sqrt[g])] + PolyLog[2, (I*Sqrt[g]*(d + e*x))/(e*Sqrt[f] + I*d*Sqrt[g])])) +
 b^2*n^2*((Sqrt[f]*Sqrt[g]*(-(Sqrt[g]*(d + e*x)*Log[d + e*x]^2) + 2*e*(I*Sq
rt[f] + Sqrt[g]*x)*Log[d + e*x]*Log[(e*(Sqrt[f] - I*Sqrt[g]*x))/(e*Sqrt[f]
+ I*d*Sqrt[g])] + 2*e*(I*Sqrt[f] + Sqrt[g]*x)*PolyLog[2, (I*Sqrt[g]*(d + e*
x))/(e*Sqrt[f] + I*d*Sqrt[g])]))/((e*Sqrt[f] + I*d*Sqrt[g])*(Sqrt[f] - I*Sq
rt[g]*x)) - (Sqrt[f]*Sqrt[g]*(Log[d + e*x]*(Sqrt[g]*(d + e*x)*Log[d + e*x]
+ (2*I)*e*(Sqrt[f] + I*Sqrt[g]*x)*Log[(e*(Sqrt[f] + I*Sqrt[g]*x))/(e*Sqrt[f
] - I*d*Sqrt[g])]) + (2*I)*e*(Sqrt[f] + I*Sqrt[g]*x)*PolyLog[2, (Sqrt[g]*(d
 + e*x))/(I*e*Sqrt[f] + d*Sqrt[g])]))/((e*Sqrt[f] - I*d*Sqrt[g])*(Sqrt[f] +
 I*Sqrt[g]*x)) + (4*Sqrt[f]*(2*e*x*Log[-((e*x)/d)]*Log[d + e*x] - (d + e*x)
*Log[d + e*x]^2 + 2*e*x*PolyLog[2, 1 + (e*x)/d]))/(d*x) - (3*I)*Sqrt[g]*(Lo
g[d + e*x]^2*Log[1 - (Sqrt[g]*(d + e*x))/((-I)*e*Sqrt[f] + d*Sqrt[g])] + 2*
Log[d + e*x]*PolyLog[2, (Sqrt[g]*(d + e*x))/((-I)*e*Sqrt[f] + d*Sqrt[g])] -
 2*PolyLog[3, (Sqrt[g]*(d + e*x))/((-I)*e*Sqrt[f] + d*Sqrt[g])]) + (3*I)*Sq
rt[g]*(Log[d + e*x]^2*Log[1 - (Sqrt[g]*(d + e*x))/(I*e*Sqrt[f] + d*Sqrt[g])
] + 2*Log[d + e*x]*PolyLog[2, (Sqrt[g]*(d + e*x))/(I*e*Sqrt[f] + d*Sqrt[g])
] - 2*PolyLog[3, (Sqrt[g]*(d + e*x))/(I*e*Sqrt[f] + d*Sqrt[g])])))/(4*f^(5/
2))
```

Maple [F]
time = 0.63, size = 0, normalized size = 0.00

$$\int \frac{\left(a+b\ln\left(c(ex+d)^{n}\right)\right)^{2}}{x^{2}\left(g\,x^{2}+f\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))^2/x^2/(g*x^2+f)^2,x)
```

```
[Out] int((a+b*ln(c*(e*x+d)^n))^2/x^2/(g*x^2+f)^2,x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/x^2/(g*x^2+f)^2,x, algorithm="maxima")
```

```
[Out] -1/2*a^2*((3*g*x^2 + 2*f)/(f^2*g*x^3 + f^3*x) + 3*g*arctan(g*x/sqrt(f*g))/(
sqrt(f*g)*f^2)) + integrate((b^2*log((x*e + d)^n)^2 + b^2*log(c)^2 + 2*a*b*
log(c) + 2*(b^2*log(c) + a*b)*log((x*e + d)^n))/(g^2*x^6 + 2*f*g*x^4 + f^2*
x^2), x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/x^2/(g*x^2+f)^2,x, algorithm="fricas")
```

```
[Out] integral((b^2*log((x*e + d)^n*c)^2 + 2*a*b*log((x*e + d)^n*c) + a^2)/(g^2*x
^6 + 2*f*g*x^4 + f^2*x^2), x)
```

Sympy [F(-1)] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**2/x**2/(g*x**2+f)**2,x)
```

```
[Out] Timed out
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/x^2/(g*x^2+f)^2,x, algorithm="giac")
```

```
[Out] integrate((b*log((x*e + d)^n*c) + a)^2/((g*x^2 + f)^2*x^2), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)^2}{x^2\,{\left(g\,x^2+f\right)}^2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))^2/(x^2*(f + g*x^2)^2),x)
[Out] int((a + b*log(c*(d + e*x)^n))^2/(x^2*(f + g*x^2)^2), x)
```

3.329 $\int \frac{\log^3(c(a+bx)^n)}{d+ex^2} \, dx$

Optimal. Leaf size=477

$$\frac{\log^3\left(c(a+bx)^n\right)\log\left(\frac{b\left(\sqrt{-d}-\sqrt{e}\,x\right)}{b\sqrt{-d}+a\sqrt{e}}\right)}{2\sqrt{-d}\,\sqrt{e}}-\frac{\log^3\left(c(a+bx)^n\right)\log\left(\frac{b\left(\sqrt{-d}+\sqrt{e}\,x\right)}{b\sqrt{-d}-a\sqrt{e}}\right)}{2\sqrt{-d}\,\sqrt{e}}-\frac{3n\log^2\left(c(a+bx)^n\right)\mathrm{Li}_2}{2\sqrt{-d}}$$

```
[Out] 1/2*ln(c*(b*x+a)^n)^3*ln(b*((-d)^(1/2)-x*e^(1/2))/(b*(-d)^(1/2)+a*e^(1/2)))
/(-d)^(1/2)/e^(1/2)-1/2*ln(c*(b*x+a)^n)^3*ln(b*((-d)^(1/2)+x*e^(1/2))/(b*(-
d)^(1/2)-a*e^(1/2)))/(-d)^(1/2)/e^(1/2)-3/2*n*ln(c*(b*x+a)^n)^2*polylog(2,-
(b*x+a)*e^(1/2)/(b*(-d)^(1/2)-a*e^(1/2)))/(-d)^(1/2)/e^(1/2)+3/2*n*ln(c*(b*
x+a)^n)^2*polylog(2,(b*x+a)*e^(1/2)/(b*(-d)^(1/2)+a*e^(1/2)))/(-d)^(1/2)/e^
(1/2)+3*n^2*ln(c*(b*x+a)^n)*polylog(3,-(b*x+a)*e^(1/2)/(b*(-d)^(1/2)-a*e^(1
/2)))/(-d)^(1/2)/e^(1/2)-3*n^2*ln(c*(b*x+a)^n)*polylog(3,(b*x+a)*e^(1/2)/(b
*(-d)^(1/2)+a*e^(1/2)))/(-d)^(1/2)/e^(1/2)-3*n^3*polylog(4,-(b*x+a)*e^(1/2)
/(b*(-d)^(1/2)-a*e^(1/2)))/(-d)^(1/2)/e^(1/2)+3*n^3*polylog(4,(b*x+a)*e^(1/
2)/(b*(-d)^(1/2)+a*e^(1/2)))/(-d)^(1/2)/e^(1/2)
```

Rubi [A]
time = 0.37, antiderivative size = 477, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 6, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.273$, Rules used = {2456, 2443, 2481, 2421, 2430, 6724}

$$\frac{3n^2\log\left(c(a+bx)^n\right)\text{PolyLog}\left(3,-\frac{\sqrt{e}(a+bx)}{b\sqrt{-d}-a\sqrt{e}}\right)}{\sqrt{-d}\sqrt{e}}-\frac{3n^2\log\left(c(a+bx)^n\right)\text{PolyLog}\left(3,\frac{\sqrt{e}(a+bx)}{a\sqrt{e}+b\sqrt{-d}}\right)}{\sqrt{-d}\sqrt{e}}-\frac{3n\log^2\left(c(a+bx)^n\right)\text{PolyLog}\left(2,-\frac{\sqrt{e}(a+bx)}{b\sqrt{-d}-a\sqrt{e}}\right)}{2\sqrt{-d}\sqrt{e}}+\frac{3n\log^2\left(c(a+bx)^n\right)\text{PolyLog}\left(2,\frac{\sqrt{e}(a+bx)}{a\sqrt{e}+b\sqrt{-d}}\right)}{2\sqrt{-d}\sqrt{e}}-\frac{3n^3\text{PolyLog}\left(4,-\frac{\sqrt{e}(a+bx)}{b\sqrt{-d}-a\sqrt{e}}\right)}{\sqrt{-d}\sqrt{e}}+\frac{3n^3\text{PolyLog}\left(4,\frac{\sqrt{e}(a+bx)}{a\sqrt{e}+b\sqrt{-d}}\right)}{\sqrt{-d}\sqrt{e}}+\frac{\log^3\left(c(a+bx)^n\right)\log\left(\frac{b\left(\sqrt{-d}-\sqrt{e}x\right)}{a\sqrt{e}+b\sqrt{-d}}\right)}{2\sqrt{-d}\sqrt{e}}-\frac{\log^3\left(c(a+bx)^n\right)\log\left(\frac{b\left(\sqrt{-d}+\sqrt{e}x\right)}{b\sqrt{-d}-a\sqrt{e}}\right)}{2\sqrt{-d}\sqrt{e}}$$

Antiderivative was successfully verified.

```
[In] Int[Log[c*(a + b*x)^n]^3/(d + e*x^2),x]
```

```
[Out] (Log[c*(a + b*x)^n]^3*Log[(b*(Sqrt[-d] - Sqrt[e]*x))/(b*Sqrt[-d] + a*Sqrt[e
])])/(2*Sqrt[-d]*Sqrt[e]) - (Log[c*(a + b*x)^n]^3*Log[(b*(Sqrt[-d] + Sqrt[e
]*x))/(b*Sqrt[-d] - a*Sqrt[e])])/(2*Sqrt[-d]*Sqrt[e]) - (3*n*Log[c*(a + b*x
)^n]^2*PolyLog[2, -((Sqrt[e]*(a + b*x))/(b*Sqrt[-d] - a*Sqrt[e]))])/(2*Sqrt
[-d]*Sqrt[e]) + (3*n*Log[c*(a + b*x)^n]^2*PolyLog[2, (Sqrt[e]*(a + b*x))/(b
*Sqrt[-d] + a*Sqrt[e])])/(2*Sqrt[-d]*Sqrt[e]) + (3*n^2*Log[c*(a + b*x)^n]*P
olyLog[3, -((Sqrt[e]*(a + b*x))/(b*Sqrt[-d] - a*Sqrt[e]))])/(Sqrt[-d]*Sqrt[
e]) - (3*n^2*Log[c*(a + b*x)^n]*PolyLog[3, (Sqrt[e]*(a + b*x))/(b*Sqrt[-d]
+ a*Sqrt[e])])/(Sqrt[-d]*Sqrt[e]) - (3*n^3*PolyLog[4, -((Sqrt[e]*(a + b*x))
/(b*Sqrt[-d] - a*Sqrt[e]))])/(Sqrt[-d]*Sqrt[e]) + (3*n^3*PolyLog[4, (Sqrt[e
]*(a + b*x))/(b*Sqrt[-d] + a*Sqrt[e])])/(Sqrt[-d]*Sqrt[e])
```

Rule 2421

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> Simp[(-PolyLog[2, (-d)*f*x^m])*((a + b*Log[c
```

```
*x^n])^p/m), x] + Dist[b*n*(p/m), Int[PolyLog[2, (-d)*f*x^m]*((a + b*Log[c*
x^n])^(p - 1)/x), x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0
] && EqQ[d*e, 1]
```

Rule 2430

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*PolyLog[k_, (e_.)*(x_)^(q_
.)])/(x_), x_Symbol] :> Simp[PolyLog[k + 1, e*x^q]*((a + b*Log[c*x^n])^p/q)
, x] - Dist[b*n*(p/q), Int[PolyLog[k + 1, e*x^q]*((a + b*Log[c*x^n])^(p - 1
)/x), x], x] /; FreeQ[{a, b, c, e, k, n, q}, x] && GtQ[p, 0]
```

Rule 2443

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d
+ e*x)^n])^p/g), x] - Dist[b*e*n*(p/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]*
((a + b*Log[c*(d + e*x)^n])^(p - 1)/(d + e*x)), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2456

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_)^(r_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a + b*Log[c*(d + e*x)
^n])^p, (f + g*x^r)^q, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, r}, x] && I
GtQ[p, 0] && IntegerQ[q] && (GtQ[q, 0] || (IntegerQ[r] && NeQ[r, 1]))
```

Rule 2481

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[(k*(x/d))^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + j*(x/e))^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 6724

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{\log^3(c(a+bx)^n)}{d+ex^2}\,dx = \int \left(\frac{\sqrt{-d}\,\log^3(c(a+bx)^n)}{2d\left(\sqrt{-d}-\sqrt{e}\,x\right)}+\frac{\sqrt{-d}\,\log^3(c(a+bx)^n)}{2d\left(\sqrt{-d}+\sqrt{e}\,x\right)}\right)dx$$

$$= -\frac{\int \frac{\log^3(c(a+bx)^n)}{\sqrt{-d}-\sqrt{e}\,x}\,dx}{2\sqrt{-d}} - \frac{\int \frac{\log^3(c(a+bx)^n)}{\sqrt{-d}+\sqrt{e}\,x}\,dx}{2\sqrt{-d}}$$

$$= \frac{\log^3(c(a+bx)^n)\log\left(\frac{b\left(\sqrt{-d}-\sqrt{e}\,x\right)}{b\sqrt{-d}+a\sqrt{e}}\right)}{2\sqrt{-d}\,\sqrt{e}} - \frac{\log^3(c(a+bx)^n)\log\left(\frac{b\left(\sqrt{-d}+\sqrt{e}\,x\right)}{b\sqrt{-d}-a\sqrt{e}}\right.}{2\sqrt{-d}\,\sqrt{e}}$$

$$= \frac{\log^3(c(a+bx)^n)\log\left(\frac{b\left(\sqrt{-d}-\sqrt{e}\,x\right)}{b\sqrt{-d}+a\sqrt{e}}\right)}{2\sqrt{-d}\,\sqrt{e}} - \frac{\log^3(c(a+bx)^n)\log\left(\frac{b\left(\sqrt{-d}+\sqrt{e}\,x\right)}{b\sqrt{-d}-a\sqrt{e}}\right.}{2\sqrt{-d}\,\sqrt{e}}$$

$$= \frac{\log^3(c(a+bx)^n)\log\left(\frac{b\left(\sqrt{-d}-\sqrt{e}\,x\right)}{b\sqrt{-d}+a\sqrt{e}}\right)}{2\sqrt{-d}\,\sqrt{e}} - \frac{\log^3(c(a+bx)^n)\log\left(\frac{b\left(\sqrt{-d}+\sqrt{e}\,x\right)}{b\sqrt{-d}-a\sqrt{e}}\right.}{2\sqrt{-d}\,\sqrt{e}}$$

$$= \frac{\log^3(c(a+bx)^n)\log\left(\frac{b\left(\sqrt{-d}-\sqrt{e}\,x\right)}{b\sqrt{-d}+a\sqrt{e}}\right)}{2\sqrt{-d}\,\sqrt{e}} - \frac{\log^3(c(a+bx)^n)\log\left(\frac{b\left(\sqrt{-d}+\sqrt{e}\,x\right)}{b\sqrt{-d}-a\sqrt{e}}\right.}{2\sqrt{-d}\,\sqrt{e}}$$

$$= \frac{\log^3(c(a+bx)^n)\log\left(\frac{b\left(\sqrt{-d}-\sqrt{e}\,x\right)}{b\sqrt{-d}+a\sqrt{e}}\right)}{2\sqrt{-d}\,\sqrt{e}} - \frac{\log^3(c(a+bx)^n)\log\left(\frac{b\left(\sqrt{-d}+\sqrt{e}\,x\right)}{b\sqrt{-d}-a\sqrt{e}}\right.}{2\sqrt{-d}\,\sqrt{e}}$$

Mathematica [C] Result contains complex when optimal does not.
time = 0.17, size = 754, normalized size = 1.58

Antiderivative was successfully verified.

```
[In] Integrate[Log[c*(a + b*x)^n]^3/(d + e*x^2),x]
```

```
[Out] (-2*n^3*ArcTan[(Sqrt[e]*x)/Sqrt[d]]*Log[a + b*x]^3 + 6*n^2*ArcTan[(Sqrt[e]*
x)/Sqrt[d]]*Log[a + b*x]^2*Log[c*(a + b*x)^n] - 6*n*ArcTan[(Sqrt[e]*x)/Sqrt
[d]]*Log[a + b*x]*Log[c*(a + b*x)^n]^2 + 2*ArcTan[(Sqrt[e]*x)/Sqrt[d]]*Log[
c*(a + b*x)^n]^3 + I*n^3*Log[a + b*x]^3*Log[1 - (Sqrt[e]*(a + b*x))/((-I)*b
*Sqrt[d] + a*Sqrt[e])] - (3*I)*n^2*Log[a + b*x]^2*Log[c*(a + b*x)^n]*Log[1
- (Sqrt[e]*(a + b*x))/((-I)*b*Sqrt[d] + a*Sqrt[e])] + (3*I)*n*Log[a + b*x]*
Log[c*(a + b*x)^n]^2*Log[1 - (Sqrt[e]*(a + b*x))/((-I)*b*Sqrt[d] + a*Sqrt[e
])] - I*n^3*Log[a + b*x]^3*Log[1 - (Sqrt[e]*(a + b*x))/(I*b*Sqrt[d] + a*Sqr
t[e])] + (3*I)*n^2*Log[a + b*x]^2*Log[c*(a + b*x)^n]*Log[1 - (Sqrt[e]*(a +
b*x))/(I*b*Sqrt[d] + a*Sqrt[e])] - (3*I)*n*Log[a + b*x]*Log[c*(a + b*x)^n]^
2*Log[1 - (Sqrt[e]*(a + b*x))/(I*b*Sqrt[d] + a*Sqrt[e])] + (3*I)*n*Log[c*(a
 + b*x)^n]^2*PolyLog[2, (Sqrt[e]*(a + b*x))/((-I)*b*Sqrt[d] + a*Sqrt[e])] -
 (3*I)*n*Log[c*(a + b*x)^n]^2*PolyLog[2, (Sqrt[e]*(a + b*x))/(I*b*Sqrt[d] +
 a*Sqrt[e])] - (6*I)*n^2*Log[c*(a + b*x)^n]*PolyLog[3, (Sqrt[e]*(a + b*x))/
((-I)*b*Sqrt[d] + a*Sqrt[e])] + (6*I)*n^2*Log[c*(a + b*x)^n]*PolyLog[3, (Sq
rt[e]*(a + b*x))/(I*b*Sqrt[d] + a*Sqrt[e])] + (6*I)*n^3*PolyLog[4, (Sqrt[e]
*(a + b*x))/((-I)*b*Sqrt[d] + a*Sqrt[e])] - (6*I)*n^3*PolyLog[4, (Sqrt[e]*(
a + b*x))/(I*b*Sqrt[d] + a*Sqrt[e])])/(2*Sqrt[d]*Sqrt[e])
```

Maple [F]
time = 0.16, size = 0, normalized size = 0.00

$$\int \frac{\ln \left(c(bx+a)^n\right)^3}{e\,x^2+d}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(c*(b*x+a)^n)^3/(e*x^2+d),x)
```

```
[Out] int(ln(c*(b*x+a)^n)^3/(e*x^2+d),x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(b*x+a)^n)^3/(e*x^2+d),x, algorithm="maxima")
```

```
[Out] integrate(log((b*x + a)^n*c)^3/(x^2*e + d), x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(b*x+a)^n)^3/(e*x^2+d),x, algorithm="fricas")
```

```
[Out] integral(log((b*x + a)^n*c)^3/(x^2*e + d), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\log \left(c(a+bx)^n\right)^3}{d+ex^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(c*(b*x+a)**n)**3/(e*x**2+d),x)
```

```
[Out] Integral(log(c*(a + b*x)**n)**3/(d + e*x**2), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(b*x+a)^n)^3/(e*x^2+d),x, algorithm="giac")
```

```
[Out] integrate(log((b*x + a)^n*c)^3/(x^2*e + d), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\ln\left(c\,{\left(a+b\,x\right)}^n\right)^3}{e\,x^2+d}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(log(c*(a + b*x)^n)^3/(d + e*x^2),x)
```

```
[Out] int(log(c*(a + b*x)^n)^3/(d + e*x^2), x)
```

3.330 $\int \frac{\log^2(c(a+bx)^n)}{d+ex^2} \, dx$

Optimal. Leaf size=347

$$\frac{\log^2\left(c(a+bx)^n\right)\log\left(\frac{b\left(\sqrt{-d}-\sqrt{e}\,x\right)}{b\sqrt{-d}+a\sqrt{e}}\right)}{2\sqrt{-d}\,\sqrt{e}}-\frac{\log^2\left(c(a+bx)^n\right)\log\left(\frac{b\left(\sqrt{-d}+\sqrt{e}\,x\right)}{b\sqrt{-d}-a\sqrt{e}}\right)}{2\sqrt{-d}\,\sqrt{e}}-\frac{n\log\left(c(a+bx)^n\right)\mathrm{Li}_2\left(\right.}{\sqrt{-d}\,\sqrt{}}$$

```
[Out] 1/2*ln(c*(b*x+a)^n)^2*ln(b*((-d)^(1/2)-x*e^(1/2))/(b*(-d)^(1/2)+a*e^(1/2)))
/(-d)^(1/2)/e^(1/2)-1/2*ln(c*(b*x+a)^n)^2*ln(b*((-d)^(1/2)+x*e^(1/2))/(b*(-
d)^(1/2)-a*e^(1/2)))/(-d)^(1/2)/e^(1/2)-n*ln(c*(b*x+a)^n)*polylog(2,-(b*x+a
)*e^(1/2)/(b*(-d)^(1/2)-a*e^(1/2)))/(-d)^(1/2)/e^(1/2)+n*ln(c*(b*x+a)^n)*po
lylog(2,(b*x+a)*e^(1/2)/(b*(-d)^(1/2)+a*e^(1/2)))/(-d)^(1/2)/e^(1/2)+n^2*po
lylog(3,-(b*x+a)*e^(1/2)/(b*(-d)^(1/2)-a*e^(1/2)))/(-d)^(1/2)/e^(1/2)-n^2*p
olylog(3,(b*x+a)*e^(1/2)/(b*(-d)^(1/2)+a*e^(1/2)))/(-d)^(1/2)/e^(1/2)
```

Rubi [A]
time = 0.22, antiderivative size = 347, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 5, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.227$, Rules used = {2456, 2443, 2481, 2421, 6724}

$$-\frac{n\log\left(c(a+bx)^n\right)\mathrm{PolyLog}\left(2,-\frac{\sqrt{e}\,(a+bx)}{b\sqrt{-d}-a\sqrt{e}}\right)}{\sqrt{-d}\,\sqrt{e}}+\frac{n\log\left(c(a+bx)^n\right)\mathrm{PolyLog}\left(2,\frac{\sqrt{e}\,(a+bx)}{a\sqrt{e}+b\sqrt{-d}}\right)}{\sqrt{-d}\,\sqrt{e}}+\frac{n^2\mathrm{PolyLog}\left(3,-\frac{\sqrt{e}\,(a+bx)}{b\sqrt{-d}-a\sqrt{e}}\right)}{\sqrt{-d}\,\sqrt{e}}-\frac{n^2\mathrm{PolyLog}\left(3,\frac{\sqrt{e}\,(a+bx)}{a\sqrt{e}+b\sqrt{-d}}\right)}{\sqrt{-d}\,\sqrt{e}}+\frac{\log^2\left(c(a+bx)^n\right)\log\left(\frac{b\left(\sqrt{-d}-\sqrt{e}\,x\right)}{a\sqrt{e}+b\sqrt{-d}}\right)}{2\sqrt{-d}\,\sqrt{e}}-\frac{\log^2\left(c(a+bx)^n\right)\log\left(\frac{b\left(\sqrt{-d}+\sqrt{e}\,x\right)}{b\sqrt{-d}-a\sqrt{e}}\right)}{2\sqrt{-d}\,\sqrt{e}}$$

Antiderivative was successfully verified.

```
[In] Int[Log[c*(a + b*x)^n]^2/(d + e*x^2),x]
```

```
[Out] (Log[c*(a + b*x)^n]^2*Log[(b*(Sqrt[-d] - Sqrt[e]*x))/(b*Sqrt[-d] + a*Sqrt[e
])])/(2*Sqrt[-d]*Sqrt[e]) - (Log[c*(a + b*x)^n]^2*Log[(b*(Sqrt[-d] + Sqrt[e
]*x))/(b*Sqrt[-d] - a*Sqrt[e])])/(2*Sqrt[-d]*Sqrt[e]) - (n*Log[c*(a + b*x)^
n]*PolyLog[2, -((Sqrt[e]*(a + b*x))/(b*Sqrt[-d] - a*Sqrt[e]))])/(Sqrt[-d]*S
qrt[e]) + (n*Log[c*(a + b*x)^n]*PolyLog[2, (Sqrt[e]*(a + b*x))/(b*Sqrt[-d]
+ a*Sqrt[e])])/(Sqrt[-d]*Sqrt[e]) + (n^2*PolyLog[3, -((Sqrt[e]*(a + b*x))/(
b*Sqrt[-d] - a*Sqrt[e]))])/(Sqrt[-d]*Sqrt[e]) - (n^2*PolyLog[3, (Sqrt[e]*(a
 + b*x))/(b*Sqrt[-d] + a*Sqrt[e])])/(Sqrt[-d]*Sqrt[e])
```

Rule 2421

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> Simp[(-PolyLog[2, (-d)*f*x^m])*((a + b*Log[c
*x^n])^p/m), x] + Dist[b*n*(p/m), Int[PolyLog[2, (-d)*f*x^m]*((a + b*Log[c*
x^n])^(p - 1)/x), x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0
] && EqQ[d*e, 1]
```

Rule 2443

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d
+ e*x)^n])^p/g), x] - Dist[b*e*n*(p/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]*
((a + b*Log[c*(d + e*x)^n])^(p - 1)/(d + e*x)), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2456

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_)^(r_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a + b*Log[c*(d + e*x)
^n])^p, (f + g*x^r)^q, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, r}, x] && I
GtQ[p, 0] && IntegerQ[q] && (GtQ[q, 0] || (IntegerQ[r] && NeQ[r, 1]))
```

Rule 2481

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[(k*(x/d))^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + j*(x/e))^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 6724

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{\log^2\left(c(a+bx)^n\right)}{d+ex^2}\,dx = \int \left(\frac{\sqrt{-d}\,\log^2\left(c(a+bx)^n\right)}{2d\left(\sqrt{-d}-\sqrt{e}\,x\right)}+\frac{\sqrt{-d}\,\log^2\left(c(a+bx)^n\right)}{2d\left(\sqrt{-d}+\sqrt{e}\,x\right)}\right)dx$$

$$= -\frac{\int \frac{\log^2(c(a+bx)^n)}{\sqrt{-d}-\sqrt{e}\,x}\,dx}{2\sqrt{-d}} - \frac{\int \frac{\log^2(c(a+bx)^n)}{\sqrt{-d}+\sqrt{e}\,x}\,dx}{2\sqrt{-d}}$$

$$= \frac{\log^2\left(c(a+bx)^n\right)\log\left(\frac{b\left(\sqrt{-d}-\sqrt{e}\,x\right)}{b\sqrt{-d}+a\sqrt{e}}\right)}{2\sqrt{-d}\,\sqrt{e}} - \frac{\log^2\left(c(a+bx)^n\right)\log\left(\frac{b\left(\sqrt{-d}+\sqrt{e}\,x\right.}{b\sqrt{-d}-a\sqrt{e}}\right.}{2\sqrt{-d}\,\sqrt{e}}$$

$$= \frac{\log^2\left(c(a+bx)^n\right)\log\left(\frac{b\left(\sqrt{-d}-\sqrt{e}\,x\right)}{b\sqrt{-d}+a\sqrt{e}}\right)}{2\sqrt{-d}\,\sqrt{e}} - \frac{\log^2\left(c(a+bx)^n\right)\log\left(\frac{b\left(\sqrt{-d}+\sqrt{e}\,x\right.}{b\sqrt{-d}-a\sqrt{e}}\right.}{2\sqrt{-d}\,\sqrt{e}}$$

$$= \frac{\log^2\left(c(a+bx)^n\right)\log\left(\frac{b\left(\sqrt{-d}-\sqrt{e}\,x\right)}{b\sqrt{-d}+a\sqrt{e}}\right)}{2\sqrt{-d}\,\sqrt{e}} - \frac{\log^2\left(c(a+bx)^n\right)\log\left(\frac{b\left(\sqrt{-d}+\sqrt{e}\,x\right.}{b\sqrt{-d}-a\sqrt{e}}\right.}{2\sqrt{-d}\,\sqrt{e}}$$

$$= \frac{\log^2\left(c(a+bx)^n\right)\log\left(\frac{b\left(\sqrt{-d}-\sqrt{e}\,x\right)}{b\sqrt{-d}+a\sqrt{e}}\right)}{2\sqrt{-d}\,\sqrt{e}} - \frac{\log^2\left(c(a+bx)^n\right)\log\left(\frac{b\left(\sqrt{-d}+\sqrt{e}\,x\right.}{b\sqrt{-d}-a\sqrt{e}}\right.}{2\sqrt{-d}\,\sqrt{e}}$$

Mathematica [C] Result contains complex when optimal does not.
time = 0.08, size = 488, normalized size = 1.41

$$\frac{2n^2\tan^{-1}\left(\frac{\sqrt{e}\,x}{\sqrt{d}}\right)\log^2(a+bx)-4n\tan^{-1}\left(\frac{\sqrt{e}\,x}{\sqrt{d}}\right)\log(a+bx)\log\left(c(a+bx)^n\right)+2\tan^{-1}\left(\frac{\sqrt{e}\,x}{\sqrt{d}}\right)\log^2\left(c(a+bx)^n\right)-in^2\log^2(a+bx)\log\left(1-\frac{\sqrt{e}\,(a+bx)}{-ib\sqrt{d}+a\sqrt{e}}\right)+2in\log(a+bx)\log\left(c(a+bx)^n\right)\log\left(1-\frac{\sqrt{e}\,(a+bx)}{-ib\sqrt{d}+a\sqrt{e}}\right)+in^2\log^2(a+bx)\log\left(1-\frac{\sqrt{e}\,(a+bx)}{ib\sqrt{d}+a\sqrt{e}}\right)-2in\log(a+bx)\log\left(c(a+bx)^n\right)\log\left(1-\frac{\sqrt{e}\,(a+bx)}{ib\sqrt{d}+a\sqrt{e}}\right)+2in\log\left(c(a+bx)^n\right)\mathrm{Li}_2\left(\frac{\sqrt{e}\,(a+bx)}{-ib\sqrt{d}+a\sqrt{e}}\right)-2in\log\left(c(a+bx)^n\right)\mathrm{Li}_2\left(\frac{\sqrt{e}\,(a+bx)}{ib\sqrt{d}+a\sqrt{e}}\right)-2in^2\mathrm{Li}_3\left(\frac{\sqrt{e}\,(a+bx)}{-ib\sqrt{d}+a\sqrt{e}}\right)+2in^2\mathrm{Li}_3\left(\frac{\sqrt{e}\,(a+bx)}{ib\sqrt{d}+a\sqrt{e}}\right)}{2\sqrt{d}\,\sqrt{e}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[c*(a + b*x)^n]^2/(d + e*x^2),x]
```

```
[Out] (2*n^2*ArcTan[(Sqrt[e]*x)/Sqrt[d]]*Log[a + b*x]^2 - 4*n*ArcTan[(Sqrt[e]*x)/
Sqrt[d]]*Log[a + b*x]*Log[c*(a + b*x)^n] + 2*ArcTan[(Sqrt[e]*x)/Sqrt[d]]*Lo
g[c*(a + b*x)^n]^2 - I*n^2*Log[a + b*x]^2*Log[1 - (Sqrt[e]*(a + b*x))/((-I)
```

```
*b*Sqrt[d] + a*Sqrt[e])] + (2*I)*n*Log[a + b*x]*Log[c*(a + b*x)^n]*Log[1 -
(Sqrt[e]*(a + b*x))/((-I)*b*Sqrt[d] + a*Sqrt[e])] + I*n^2*Log[a + b*x]^2*Lo
g[1 - (Sqrt[e]*(a + b*x))/(I*b*Sqrt[d] + a*Sqrt[e])] - (2*I)*n*Log[a + b*x]
*Log[c*(a + b*x)^n]*Log[1 - (Sqrt[e]*(a + b*x))/(I*b*Sqrt[d] + a*Sqrt[e])]
+ (2*I)*n*Log[c*(a + b*x)^n]*PolyLog[2, (Sqrt[e]*(a + b*x))/((-I)*b*Sqrt[d]
 + a*Sqrt[e])] - (2*I)*n*Log[c*(a + b*x)^n]*PolyLog[2, (Sqrt[e]*(a + b*x))/
(I*b*Sqrt[d] + a*Sqrt[e])] - (2*I)*n^2*PolyLog[3, (Sqrt[e]*(a + b*x))/((-I)
*b*Sqrt[d] + a*Sqrt[e])] + (2*I)*n^2*PolyLog[3, (Sqrt[e]*(a + b*x))/(I*b*Sq
rt[d] + a*Sqrt[e])])/(2*Sqrt[d]*Sqrt[e])
```

Maple [**F**]
time = 0.18, size = 0, normalized size = 0.00

$$\int \frac{\ln \left(c(bx+a)^{n}\right)^{2}}{e\,x^{2}+d}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(c*(b*x+a)^n)^2/(e*x^2+d),x)
[Out] int(ln(c*(b*x+a)^n)^2/(e*x^2+d),x)
```

Maxima [**F**]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(b*x+a)^n)^2/(e*x^2+d),x, algorithm="maxima")
[Out] integrate(log((b*x + a)^n*c)^2/(x^2*e + d), x)
```

Fricas [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(b*x+a)^n)^2/(e*x^2+d),x, algorithm="fricas")
[Out] integral(log((b*x + a)^n*c)^2/(x^2*e + d), x)
```

Sympy [**F**]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\log \left(c(a+bx)^{n}\right)^{2}}{d+ex^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(c*(b*x+a)**n)**2/(e*x**2+d),x)
[Out] Integral(log(c*(a + b*x)**n)**2/(d + e*x**2), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(b*x+a)^n)^2/(e*x^2+d),x, algorithm="giac")
[Out] integrate(log((b*x + a)^n*c)^2/(x^2*e + d), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\ln\left(c\,{\left(a+b\,x\right)}^n\right)^2}{e\,x^2+d}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(log(c*(a + b*x)^n)^2/(d + e*x^2),x)
[Out] int(log(c*(a + b*x)^n)^2/(d + e*x^2), x)
```

3.331 $\int \frac{\log(c(a+bx)^n)}{d+ex^2}\,dx$

Optimal. Leaf size=229

$$\frac{\log\left(c(a+bx)^n\right)\log\left(\frac{b\left(\sqrt{-d}-\sqrt{e}\,x\right)}{b\sqrt{-d}+a\sqrt{e}}\right)}{2\sqrt{-d}\,\sqrt{e}}-\frac{\log\left(c(a+bx)^n\right)\log\left(\frac{b\left(\sqrt{-d}+\sqrt{e}\,x\right)}{b\sqrt{-d}-a\sqrt{e}}\right)}{2\sqrt{-d}\,\sqrt{e}}-\frac{n\text{Li}_2\left(-\frac{\sqrt{e}\,(a+bx)}{b\sqrt{-d}-a\sqrt{e}}\right)}{2\sqrt{-d}\,\sqrt{e}}+$$

```
[Out] 1/2*ln(c*(b*x+a)^n)*ln(b*((-d)^(1/2)-x*e^(1/2))/(b*(-d)^(1/2)+a*e^(1/2)))/(
-d)^(1/2)/e^(1/2)-1/2*ln(c*(b*x+a)^n)*ln(b*((-d)^(1/2)+x*e^(1/2))/(b*(-d)^(
1/2)-a*e^(1/2)))/(-d)^(1/2)/e^(1/2)-1/2*n*polylog(2,-(b*x+a)*e^(1/2)/(b*(-d
)^(1/2)-a*e^(1/2)))/(-d)^(1/2)/e^(1/2)+1/2*n*polylog(2,(b*x+a)*e^(1/2)/(b*(
-d)^(1/2)+a*e^(1/2)))/(-d)^(1/2)/e^(1/2)
```

Rubi [A]

time = 0.12, antiderivative size = 229, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 4, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.200$, Rules used = {2456, 2441, 2440, 2438}

$$-\frac{n\text{PolyLog}\left(2,-\frac{\sqrt{e}\,(a+bx)}{b\sqrt{-d}-a\sqrt{e}}\right)}{2\sqrt{-d}\,\sqrt{e}}+\frac{n\text{PolyLog}\left(2,\frac{\sqrt{e}\,(a+bx)}{a\sqrt{e}+b\sqrt{-d}}\right)}{2\sqrt{-d}\,\sqrt{e}}+\frac{\log\left(c(a+bx)^n\right)\log\left(\frac{b\left(\sqrt{-d}-\sqrt{e}\,x\right)}{a\sqrt{e}+b\sqrt{-d}}\right)}{2\sqrt{-d}\,\sqrt{e}}-\frac{\log\left(c(a+bx)^n\right)\log\left(\frac{b\left(\sqrt{-d}+\sqrt{e}\,x\right)}{b\sqrt{-d}-a\sqrt{e}}\right)}{2\sqrt{-d}\,\sqrt{e}}$$

Antiderivative was successfully verified.

```
[In] Int[Log[c*(a + b*x)^n]/(d + e*x^2),x]
```

```
[Out] (Log[c*(a + b*x)^n]*Log[(b*(Sqrt[-d] - Sqrt[e]*x))/(b*Sqrt[-d] + a*Sqrt[e])
])/(2*Sqrt[-d]*Sqrt[e]) - (Log[c*(a + b*x)^n]*Log[(b*(Sqrt[-d] + Sqrt[e]*x)
)/(b*Sqrt[-d] - a*Sqrt[e])])/(2*Sqrt[-d]*Sqrt[e]) - (n*PolyLog[2, -((Sqrt[e
]*(a + b*x))/(b*Sqrt[-d] - a*Sqrt[e]))])/(2*Sqrt[-d]*Sqrt[e]) + (n*PolyLog[
2, (Sqrt[e]*(a + b*x))/(b*Sqrt[-d] + a*Sqrt[e])])/(2*Sqrt[-d]*Sqrt[e])
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + c*e*(x/g)])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2441

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d + e*x
)^n])/g), x] - Dist[b*e*(n/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2456

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_)^(r_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a + b*Log[c*(d + e*x)
^n])^p, (f + g*x^r)^q, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, r}, x] && I
GtQ[p, 0] && IntegerQ[q] && (GtQ[q, 0] || (IntegerQ[r] && NeQ[r, 1]))
```

Rubi steps

$$\int \frac{\log(c(a+bx)^n)}{d+ex^2}\,dx = \int \left(\frac{\sqrt{-d}\,\log(c(a+bx)^n)}{2d\left(\sqrt{-d}-\sqrt{e}\,x\right)}+\frac{\sqrt{-d}\,\log(c(a+bx)^n)}{2d\left(\sqrt{-d}+\sqrt{e}\,x\right)}\right)dx$$

$$= -\frac{\int \frac{\log(c(a+bx)^n)}{\sqrt{-d}-\sqrt{e}\,x}\,dx}{2\sqrt{-d}}-\frac{\int \frac{\log(c(a+bx)^n)}{\sqrt{-d}+\sqrt{e}\,x}\,dx}{2\sqrt{-d}}$$

$$= \frac{\log(c(a+bx)^n)\log\left(\frac{b\left(\sqrt{-d}-\sqrt{e}\,x\right)}{b\sqrt{-d}+a\sqrt{e}}\right)}{2\sqrt{-d}\,\sqrt{e}}-\frac{\log(c(a+bx)^n)\log\left(\frac{b\left(\sqrt{-d}+\sqrt{e}\,x\right)}{b\sqrt{-d}-a\sqrt{e}}\right)}{2\sqrt{-d}\,\sqrt{e}}$$

$$= \frac{\log(c(a+bx)^n)\log\left(\frac{b\left(\sqrt{-d}-\sqrt{e}\,x\right)}{b\sqrt{-d}+a\sqrt{e}}\right)}{2\sqrt{-d}\,\sqrt{e}}-\frac{\log(c(a+bx)^n)\log\left(\frac{b\left(\sqrt{-d}+\sqrt{e}\,x\right)}{b\sqrt{-d}-a\sqrt{e}}\right)}{2\sqrt{-d}\,\sqrt{e}}$$

$$= \frac{\log(c(a+bx)^n)\log\left(\frac{b\left(\sqrt{-d}-\sqrt{e}\,x\right)}{b\sqrt{-d}+a\sqrt{e}}\right)}{2\sqrt{-d}\,\sqrt{e}}-\frac{\log(c(a+bx)^n)\log\left(\frac{b\left(\sqrt{-d}+\sqrt{e}\,x\right)}{b\sqrt{-d}-a\sqrt{e}}\right)}{2\sqrt{-d}\,\sqrt{e}}$$

Mathematica [A]
time = 0.07, size = 178, normalized size = 0.78

$$\frac{\log(c(a+bx)^n)\left(\log\left(\frac{b\left(\sqrt{-d}-\sqrt{e}\,x\right)}{b\sqrt{-d}+a\sqrt{e}}\right)-\log\left(\frac{b\left(\sqrt{-d}+\sqrt{e}\,x\right)}{b\sqrt{-d}-a\sqrt{e}}\right)\right)-n\text{Li}_2\left(-\frac{\sqrt{e}\,(a+bx)}{b\sqrt{-d}-a\sqrt{e}}\right)+n\text{Li}_2\left(\frac{\sqrt{e}\,(a+bx)}{b\sqrt{-d}+a\sqrt{e}}\right)}{2\sqrt{-d}\,\sqrt{e}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[c*(a + b*x)^n]/(d + e*x^2),x]
```

```
[Out] (Log[c*(a + b*x)^n]*(Log[(b*(Sqrt[-d] - Sqrt[e]*x))/(b*Sqrt[-d] + a*Sqrt[e]
)] - Log[(b*(Sqrt[-d] + Sqrt[e]*x))/(b*Sqrt[-d] - a*Sqrt[e])]) - n*PolyLog[
2, -((Sqrt[e]*(a + b*x))/(b*Sqrt[-d] - a*Sqrt[e]))] + n*PolyLog[2, (Sqrt[e]
*(a + b*x))/(b*Sqrt[-d] + a*Sqrt[e])])/(2*Sqrt[-d]*Sqrt[e])
```

Maple [C] Result contains higher order function than in optimal. Order 9 vs. order 4.
time = 0.42, size = 419, normalized size = 1.83

method	result
risch	$\frac{(\ln((bx+a)^n)-n\ln(bx+a))\arctan\left(\frac{2(bx+a)e-2ae}{2\sqrt{ed}\,b}\right)}{\sqrt{ed}}+\frac{n\ln(bx+a)\ln\left(\frac{b\sqrt{-ed}-(bx+a)e+ae}{b\sqrt{-ed}+ae}\right)}{2\sqrt{-ed}}-\frac{n\ln(bx+a)\ln\left(\frac{b\sqrt{-ed}+(bx+}{b\sqrt{-ed}-}\right.}{2\sqrt{-ed}}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(c*(b*x+a)^n)/(e*x^2+d),x,method=_RETURNVERBOSE)
```

```
[Out] (ln((b*x+a)^n)-n*ln(b*x+a))/(e*d)^(1/2)*arctan(1/2*(2*(b*x+a)*e-2*a*e)/(e*d
)^(1/2)/b)+1/2*n*ln(b*x+a)/(-e*d)^(1/2)*ln((b*(-e*d)^(1/2)-(b*x+a)*e+a*e)/(
b*(-e*d)^(1/2)+a*e))-1/2*n*ln(b*x+a)/(-e*d)^(1/2)*ln((b*(-e*d)^(1/2)+(b*x+a
)*e-a*e)/(b*(-e*d)^(1/2)-a*e))+1/2*n/(-e*d)^(1/2)*dilog((b*(-e*d)^(1/2)-(b*
x+a)*e+a*e)/(b*(-e*d)^(1/2)+a*e))-1/2*n/(-e*d)^(1/2)*dilog((b*(-e*d)^(1/2)+
(b*x+a)*e-a*e)/(b*(-e*d)^(1/2)-a*e))-1/2*I/(e*d)^(1/2)*arctan(x*e/(e*d)^(1/
2))*Pi*csgn(I*c*(b*x+a)^n)^3+1/2*I/(e*d)^(1/2)*arctan(x*e/(e*d)^(1/2))*Pi*c
sgn(I*c*(b*x+a)^n)^2*csgn(I*c)+1/2*I/(e*d)^(1/2)*arctan(x*e/(e*d)^(1/2))*Pi
*csgn(I*c*(b*x+a)^n)^2*csgn(I*(b*x+a)^n)-1/2*I/(e*d)^(1/2)*arctan(x*e/(e*d)
^(1/2))*Pi*csgn(I*c*(b*x+a)^n)*csgn(I*c)*csgn(I*(b*x+a)^n)+1/(e*d)^(1/2)*ar
ctan(x*e/(e*d)^(1/2))*ln(c)
```

Maxima [C] Result contains complex when optimal does not.
time = 0.54, size = 317, normalized size = 1.38

$$\frac{bn\left(\frac{2\arctan\left(\frac{xe^{\frac{1}{2}}}{\sqrt{d}}\right)\log(bx+a)}{b}+\frac{\arctan\left(\frac{(b^2x+ab)\sqrt{d}\,e^{\frac{1}{2}}}{b^2d+a^2e},\frac{abxe+a^2e}{b^2d+a^2e}\right)\log(x^2e^2+de)-\arctan\left(\frac{xe^{\frac{1}{2}}}{\sqrt{d}}\right)\log\left(\frac{b^2x^2e+2abxe+a^2e}{b^2d+a^2e}\right)-i\,\mathrm{Li}_2\left(\frac{abxe+b^2d-(ib^2x-iab)\sqrt{d}\,e^{\frac{1}{2}}}{2iab\sqrt{d}\,e^{\frac{1}{2}}+b^2d-a^2e}\right)+i\,\mathrm{Li}_2\left(-\frac{abxe+b^2d+(ib^2x-iab)\sqrt{d}\,e^{\frac{1}{2}}}{2iab\sqrt{d}\,e^{\frac{1}{2}}-b^2d+a^2e}\right)}{b}\right)e^{\left(-\frac{1}{2}\right)}}{2\sqrt{d}}-\frac{n\arctan\left(\frac{xe^{\frac{1}{2}}}{\sqrt{d}}\right)e^{\left(-\frac{1}{2}\right)}\log(bx+a)}{\sqrt{d}}+\frac{\arctan\left(\frac{xe^{\frac{1}{2}}}{\sqrt{d}}\right)e^{\left(-\frac{1}{2}\right)}\log((bx+a)^nc)}{\sqrt{d}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(b*x+a)^n)/(e*x^2+d),x, algorithm="maxima")
```

```
[Out] 1/2*b*n*(2*arctan(x*e^(1/2)/sqrt(d))*log(b*x + a)/b + (arctan2((b^2*x + a*b
)*sqrt(d)*e^(1/2)/(b^2*d + a^2*e), (a*b*x*e + a^2*e)/(b^2*d + a^2*e))*log(x
^2*e^2 + d*e) - arctan(x*e^(1/2)/sqrt(d))*log((b^2*x^2*e + 2*a*b*x*e + a^2*
e)/(b^2*d + a^2*e)) - I*dilog((a*b*x*e + b^2*d - (I*b^2*x - I*a*b)*sqrt(d)*
e^(1/2))/(2*I*a*b*sqrt(d)*e^(1/2) + b^2*d - a^2*e)) + I*dilog(-(a*b*x*e + b
^2*d + (I*b^2*x - I*a*b)*sqrt(d)*e^(1/2))/(2*I*a*b*sqrt(d)*e^(1/2) - b^2*d
+ a^2*e)))/b)*e^(-1/2)/sqrt(d) - n*arctan(x*e^(1/2)/sqrt(d))*e^(-1/2)*log(b
```

```
*x + a)/sqrt(d) + arctan(x*e^(1/2)/sqrt(d))*e^(-1/2)*log((b*x + a)^n*c)/sqr
t(d)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(b*x+a)^n)/(e*x^2+d),x, algorithm="fricas")
[Out] integral(log((b*x + a)^n*c)/(x^2*e + d), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\log \left(c(a+bx)^n\right)}{d+ex^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(c*(b*x+a)**n)/(e*x**2+d),x)
[Out] Integral(log(c*(a + b*x)**n)/(d + e*x**2), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(b*x+a)^n)/(e*x^2+d),x, algorithm="giac")
[Out] integrate(log((b*x + a)^n*c)/(x^2*e + d), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\ln \left(c\,{\left(a+b\,x\right)}^n\right)}{e\,x^2+d}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(log(c*(a + b*x)^n)/(d + e*x^2),x)
[Out] int(log(c*(a + b*x)^n)/(d + e*x^2), x)
```

3.332 $\int \frac{1}{(d+ex^2)\log(c(a+bx)^n)}\,dx$

Optimal. Leaf size=90

$$-\frac{\operatorname{Int}\left(\frac{1}{\left(\sqrt{-d}-\sqrt{e}\,x\right)\log(c(a+bx)^n)},x\right)}{2\sqrt{-d}}-\frac{\operatorname{Int}\left(\frac{1}{\left(\sqrt{-d}+\sqrt{e}\,x\right)\log(c(a+bx)^n)},x\right)}{2\sqrt{-d}}$$

```
[Out] -1/2*Unintegrable(1/ln(c*(b*x+a)^n)/((-d)^(1/2)-x*e^(1/2)),x)/(-d)^(1/2)-1/
2*Unintegrable(1/ln(c*(b*x+a)^n)/((-d)^(1/2)+x*e^(1/2)),x)/(-d)^(1/2)
```

Rubi [A]
time = 0.08, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int \frac{1}{(d+ex^2)\log\left(c(a+bx)^n\right)}\,dx$$

Verification is not applicable to the result.

```
[In] Int[1/((d + e*x^2)*Log[c*(a + b*x)^n]),x]
```

```
[Out] -1/2*Defer[Int][1/((Sqrt[-d] - Sqrt[e]*x)*Log[c*(a + b*x)^n]), x]/Sqrt[-d]
- Defer[Int][1/((Sqrt[-d] + Sqrt[e]*x)*Log[c*(a + b*x)^n]), x]/(2*Sqrt[-d])
```

Rubi steps

$$\int \frac{1}{(d+ex^2)\log\left(c(a+bx)^n\right)}\,dx = \int \left(\frac{\sqrt{-d}}{2d\left(\sqrt{-d}-\sqrt{e}\,x\right)\log\left(c(a+bx)^n\right)}+\frac{\sqrt{-d}}{2d\left(\sqrt{-d}+\sqrt{e}\,x\right)\log\left(c(a+bx)^n\right)}\right)dx$$

$$= -\frac{\int \frac{1}{\left(\sqrt{-d}-\sqrt{e}\,x\right)\log(c(a+bx)^n)}\,dx}{2\sqrt{-d}}-\frac{\int \frac{1}{\left(\sqrt{-d}+\sqrt{e}\,x\right)\log(c(a+bx)^n)}\,dx}{2\sqrt{-d}}$$

Mathematica [A]
time = 0.29, size = 0, normalized size = 0.00

$$\int \frac{1}{(d+ex^2)\log\left(c(a+bx)^n\right)}\,dx$$

Verification is not applicable to the result.

```
[In] Integrate[1/((d + e*x^2)*Log[c*(a + b*x)^n]),x]
```

```
[Out] Integrate[1/((d + e*x^2)*Log[c*(a + b*x)^n]), x]
```

Maple [A]
time = 0.18, size = 0, normalized size = 0.00

$$\int \frac{1}{(e\,x^2 + d)\ln\left(c\,(bx + a)^n\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(e*x^2+d)/ln(c*(b*x+a)^n),x)
[Out] int(1/(e*x^2+d)/ln(c*(b*x+a)^n),x)
```

Maxima [A]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(e*x^2+d)/log(c*(b*x+a)^n),x, algorithm="maxima")
[Out] integrate(1/((x^2*e + d)*log((b*x + a)^n*c)), x)
```

Fricas [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(e*x^2+d)/log(c*(b*x+a)^n),x, algorithm="fricas")
[Out] integral(1/((x^2*e + d)*log((b*x + a)^n*c)), x)
```

Sympy [A]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{(d + ex^2)\log\left(c\,(a + bx)^n\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(e*x**2+d)/ln(c*(b*x+a)**n),x)
[Out] Integral(1/((d + e*x**2)*log(c*(a + b*x)**n)), x)
```

Giac [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(e*x^2+d)/log(c*(b*x+a)^n),x, algorithm="giac")
```

```
[Out] integrate(1/((x^2*e + d)*log((b*x + a)^n*c)), x)
```

Mupad [A]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{1}{\ln\left(c\,{\left(a+b\,x\right)}^n\right)\,\left(e\,x^2+d\right)} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(log(c*(a + b*x)^n)*(d + e*x^2)),x)
```

```
[Out] int(1/(log(c*(a + b*x)^n)*(d + e*x^2)), x)
```

3.333 $\int \frac{\log\left(c-\frac{a(1-c)x^{-m}}{b}\right)}{x(a+bx^m)}\,dx$

Optimal. Leaf size=27

$$\frac{\text{Li}_2\left(\frac{(1-c)(b+ax^{-m})}{b}\right)}{am}$$

[Out] polylog(2,(1-c)*(b+a/(x^m))/b)/a/m

Rubi [A]
time = 0.09, antiderivative size = 27, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}} = 0.125$, Rules used = {2525, 2459, 2440, 2438}

$$\frac{\text{PolyLog}\left(2,\frac{(1-c)(ax^{-m}+b)}{b}\right)}{am}$$

Antiderivative was successfully verified.

[In] Int[Log[c - (a*(1 - c))/(b*x^m)]/(x*(a + b*x^m)),x]

[Out] PolyLog[2, ((1 - c)*(b + a/x^m))/b]/(a*m)

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + c*e*(x/g)])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2459

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)/(x_))^(q_.)*(x_)^(m_.), x_Symbol] :> Int[(g + f*x)^q*(a + b*Log[c*(d + e*
x)^n])^p, x] /; FreeQ[{a, b, c, d, e, f, g, m, n, p, q}, x] && EqQ[m, q] &&
 IntegerQ[q]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_))^(p_.)]*(b_.))^(q_.)*(x_)^(m
_.)*((f_) + (g_.)*(x_)^(s_))^(r_.), x_Symbol] :> Dist[1/n, Subst[Int[x^(Sim
```

```
plify[(m + 1)/n] - 1)*(f + g*x^(s/n))^r*(a + b*Log[c*(d + e*x)^p])^q, x], x
, x^n], x] /; FreeQ[{a, b, c, d, e, f, g, m, n, p, q, r, s}, x] && IntegerQ
[r] && IntegerQ[s/n] && IntegerQ[Simplify[(m + 1)/n]] && (GtQ[(m + 1)/n, 0]
 || IGtQ[q, 0])
```

Rubi steps

$$\begin{aligned}
\int \frac{\log\left(c-\frac{a(1-c)x^{-m}}{b}\right)}{x\left(a+bx^m\right)}\,dx &= -\frac{\text{Subst}\left(\int \frac{\log\left(c-\frac{a(1-c)x}{b}\right)}{\left(a+\frac{b}{x}\right)x}\,dx, x, x^{-m}\right)}{m}\\
&= -\frac{\text{Subst}\left(\int \frac{\log\left(c-\frac{a(1-c)x}{b}\right)}{b+ax}\,dx, x, x^{-m}\right)}{m}\\
&= -\frac{\text{Subst}\left(\int \frac{\log\left(1-\frac{(1-c)x}{b}\right)}{x}\,dx, x, b+ax^{-m}\right)}{am}\\
&= \frac{\text{Li}_2\left(\frac{(1-c)\left(b+ax^{-m}\right)}{b}\right)}{am}
\end{aligned}$$

Mathematica [A]
time = 0.02, size = 29, normalized size = 1.07

$$\frac{\text{Li}_2\left(-\frac{(-1+c)x^{-m}\left(a+bx^m\right)}{b}\right)}{am}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[c - (a*(1 - c))/(b*x^m)]/(x*(a + b*x^m)),x]
[Out] PolyLog[2, -(((-1 + c)*(a + b*x^m))/(b*x^m))]/(a*m)
```

Maple [A]
time = 1.93, size = 24, normalized size = 0.89

method	result	size
derivativedivides	$\frac{\text{dilog}\left(c+\frac{a(-1+c)x^{-m}}{b}\right)}{ma}$	24
default	$\frac{\text{dilog}\left(c+\frac{a(-1+c)x^{-m}}{b}\right)}{ma}$	24
risch	Expression too large to display	1267

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(c-a*(1-c)/b/(x^m))/x/(a+b*x^m),x,method=_RETURNVERBOSE)
```

```
[Out] 1/m*dilog(c+a*(-1+c)/(x^m)/b)/a
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c-a*(1-c)/b/(x^m))/x/(a+b*x^m),x, algorithm="maxima")
```

```
[Out] (c*m - m)*integrate(log(x)/(b*c*x*x^m + a*(c - 1)*x), x) + (log(b*c*x^m + a
*c - a)*log(x) - log(b)*log(x) - log(x)*log(x^m))/a + log(b)*log((b*x^m + a
)/b)/(a*m) + (log(x^m)*log(b*x^m/a + 1) + dilog(-b*x^m/a))/(a*m) - (log(b*c
*x^m + a*c - a)*log((b*c*x^m + a*(c - 1))/a + 1) + dilog(-(b*c*x^m + a*(c -
 1))/a))/(a*m)
```

Fricas [A]
time = 0.36, size = 33, normalized size = 1.22

$$\frac{\operatorname{Li}_2\left(-\frac{bcx^m+ac-a}{bx^m}+1\right)}{am}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c-a*(1-c)/b/(x^m))/x/(a+b*x^m),x, algorithm="fricas")
```

```
[Out] dilog(-(b*c*x^m + a*c - a)/(b*x^m) + 1)/(a*m)
```

Sympy [F(-1)] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(c-a*(1-c)/b/(x**m))/x/(a+b*x**m),x)
```

```
[Out] Timed out
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c-a*(1-c)/b/(x^m))/x/(a+b*x^m),x, algorithm="giac")
```

```
[Out] integrate(log(c + a*(c - 1)/(b*x^m))/((b*x^m + a)*x), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{\ln\left(c+\frac{a\,\left(c-1\right)}{b\,x^m}\right)}{x\,\left(a+b\,x^m\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(log(c + (a*(c - 1))/(b*x^m))/(x*(a + b*x^m)),x)
```

```
[Out] int(log(c + (a*(c - 1))/(b*x^m))/(x*(a + b*x^m)), x)
```

3.334 $\int \frac{\log\left(\frac{x^{-m}(-a+ac+bcx^m)}{b}\right)}{x(a+bx^m)}\,dx$

Optimal. Leaf size=27

$$\frac{\mathrm{Li}_2\left(\frac{(1-c)(b+ax^{-m})}{b}\right)}{am}$$

```
[Out] polylog(2,(1-c)*(b+a/(x^m))/b)/a/m
```

Rubi [A]

time = 0.12, antiderivative size = 27, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}} = 0.139$, Rules used = {2530, 2525, 2459, 2440, 2438}

$$\frac{\mathrm{PolyLog}\left(2,\frac{(1-c)(ax^{-m}+b)}{b}\right)}{am}$$

Antiderivative was successfully verified.

```
[In] Int[Log[(-a + a*c + b*c*x^m)/(b*x^m)]/(x*(a + b*x^m)),x]
```

```
[Out] PolyLog[2, ((1 - c)*(b + a/x^m))/b]/(a*m)
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + c*e*(x/g)])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2459

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)/(x_))^(q_.)*(x_)^(m_.), x_Symbol] :> Int[(g + f*x)^q*(a + b*Log[c*(d + e*
x)^n])^p, x] /; FreeQ[{a, b, c, d, e, f, g, m, n, p, q}, x] && EqQ[m, q] &&
 IntegerQ[q]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_))^(p_.)]*(b_.))^(q_.)*(x_)^(m
_.)*((f_) + (g_.)*(x_)^(s_))^(r_.), x_Symbol] :> Dist[1/n, Subst[Int[x^(Sim
```

```
plify[(m + 1)/n] - 1)*(f + g*x^(s/n))^r*(a + b*Log[c*(d + e*x)^p])^q, x], x
, x^n], x] /; FreeQ[{a, b, c, d, e, f, g, m, n, p, q, r, s}, x] && IntegerQ
[r] && IntegerQ[s/n] && IntegerQ[Simplify[(m + 1)/n]] && (GtQ[(m + 1)/n, 0]
 || IGtQ[q, 0])
```

Rule 2530

```
Int[((a_.) + Log[(c_.)*(v_)^(p_.)]*(b_.))^(q_.)*(u_)^(r_.)*((h_.)*(x_))^(m_
.), x_Symbol] :> Int[(h*x)^m*ExpandToSum[u, x]^r*(a + b*Log[c*ExpandToSum[v
, x]^p])^q, x] /; FreeQ[{a, b, c, h, m, p, q, r}, x] && BinomialQ[{u, v}, x
] &&  !BinomialMatchQ[{u, v}, x]
```

Rubi steps

$$\begin{aligned}\int \frac{\log\left(\frac{x^{-m}(-a+ac+bcx^m)}{b}\right)}{x(a+bx^m)}\,dx &= \int \frac{\log\left(c+\frac{(-a+ac)x^{-m}}{b}\right)}{x(a+bx^m)}\,dx\\ &= -\frac{\operatorname{Subst}\left(\int \frac{\log\left(c+\frac{(-a+ac)x}{b}\right)}{\left(a+\frac{b}{x}\right)x}\,dx, x, x^{-m}\right)}{m}\\ &= -\frac{\operatorname{Subst}\left(\int \frac{\log\left(c+\frac{(-a+ac)x}{b}\right)}{b+ax}\,dx, x, x^{-m}\right)}{m}\\ &= -\frac{\operatorname{Subst}\left(\int \frac{\log\left(1+\frac{(-a+ac)x}{ab}\right)}{x}\,dx, x, b+ax^{-m}\right)}{am}\\ &= \frac{\operatorname{Li}_2\left(\frac{(1-c)(b+ax^{-m})}{b}\right)}{am}\end{aligned}$$

Mathematica [A]
time = 0.01, size = 29, normalized size = 1.07

$$\frac{\operatorname{Li}_2\left(-\frac{(-1+c)x^{-m}(a+bx^m)}{b}\right)}{am}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[(-a + a*c + b*c*x^m)/(b*x^m)]/(x*(a + b*x^m)),x]
[Out] PolyLog[2, -(((-1 + c)*(a + b*x^m))/(b*x^m))]/(a*m)
```

Maple [A]
time = 1.93, size = 24, normalized size = 0.89

method	result	size
derivativedivides	$\frac{\text{dilog}\left(c+\frac{a(-1+c)x^{-m}}{b}\right)}{ma}$	24
default	$\frac{\text{dilog}\left(c+\frac{a(-1+c)x^{-m}}{b}\right)}{ma}$	24
risch	Expression too large to display	1267

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln((-a+c*a+b*c*x^m)/b/(x^m))/x/(a+b*x^m),x,method=_RETURNVERBOSE)
```

```
[Out] 1/m*dilog(c+a*(-1+c)/(x^m)/b)/a
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log((-a+a*c+b*c*x^m)/b/(x^m))/x/(a+b*x^m),x, algorithm="maxima")
```

```
[Out] (c*m - m)*integrate(log(x)/(b*c*x*x^m + a*(c - 1)*x), x) + (log(b*c*x^m + a
*c - a)*log(x) - log(b)*log(x) - log(x)*log(x^m))/a + log(b)*log((b*x^m + a
)/b)/(a*m) + (log(x^m)*log(b*x^m/a + 1) + dilog(-b*x^m/a))/(a*m) - (log(b*c
*x^m + a*c - a)*log((b*c*x^m + a*(c - 1))/a + 1) + dilog(-(b*c*x^m + a*(c -
 1))/a))/(a*m)
```

Fricas [A]
time = 0.36, size = 33, normalized size = 1.22

$$\frac{\text{Li}_2\left(-\frac{bcx^m+ac-a}{bx^m}+1\right)}{am}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log((-a+a*c+b*c*x^m)/b/(x^m))/x/(a+b*x^m),x, algorithm="fricas")
```

```
[Out] dilog(-(b*c*x^m + a*c - a)/(b*x^m) + 1)/(a*m)
```

Sympy [F(-1)] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln((-a+a*c+b*c*x**m)/b/(x**m))/x/(a+b*x**m),x)
```

```
[Out] Timed out
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log((-a+a*c+b*c*x^m)/b/(x^m))/x/(a+b*x^m),x, algorithm="giac")
[Out] integrate(log((b*c*x^m + a*c - a)/(b*x^m))/((b*x^m + a)*x), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{\ln\left(\frac{a\,c-a+b\,c\,x^m}{b\,x^m}\right)}{x\,\left(a+b\,x^m\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(log((a*c - a + b*c*x^m)/(b*x^m))/(x*(a + b*x^m)),x)
[Out] int(log((a*c - a + b*c*x^m)/(b*x^m))/(x*(a + b*x^m)), x)
```

3.335 $\int \frac{\log\left(c\left(a-\frac{(d-acd)x^{-m}}{ce}\right)\right)}{x(d+ex^m)}\,dx$

Optimal. Leaf size=28

$$\frac{\text{Li}_2\left(\frac{(1-ac)(e+dx^{-m})}{e}\right)}{dm}$$

[Out] polylog(2,(-a*c+1)*(e+d/(x^m))/e)/d/m

Rubi [A]
time = 0.09, antiderivative size = 28, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 38, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105, Rules used = {2525, 2459, 2440, 2438}

$$\frac{\text{PolyLog}\left(2,\frac{(1-ac)(dx^{-m}+e)}{e}\right)}{dm}$$

Antiderivative was successfully verified.

[In] Int[Log[c*(a - (d - a*c*d)/(c*e*x^m))]/(x*(d + e*x^m)),x]

[Out] PolyLog[2, ((1 - a*c)*(e + d/x^m))/e]/(d*m)

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + c*e*(x/g)])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2459

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)/(x_))^(q_.)*(x_)^(m_.), x_Symbol] :> Int[(g + f*x)^q*(a + b*Log[c*(d + e*
x)^n])^p, x] /; FreeQ[{a, b, c, d, e, f, g, m, n, p, q}, x] && EqQ[m, q] &&
 IntegerQ[q]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_))^(p_.)]*(b_.))^(q_.)*(x_)^(m
_.)*((f_) + (g_.)*(x_)^(s_))^(r_.), x_Symbol] :> Dist[1/n, Subst[Int[x^(Sim
```

```
plify[(m + 1)/n] - 1)*(f + g*x^(s/n))^r*(a + b*Log[c*(d + e*x)^p])^q, x], x
, x^n], x] /; FreeQ[{a, b, c, d, e, f, g, m, n, p, q, r, s}, x] && IntegerQ
[r] && IntegerQ[s/n] && IntegerQ[Simplify[(m + 1)/n]] && (GtQ[(m + 1)/n, 0]
 || IGtQ[q, 0])
```

Rubi steps

$$\begin{aligned}
\int \frac{\log\left(c\left(a-\frac{(d-acd)x^{-m}}{ce}\right)\right)}{x\left(d+ex^m\right)}\,dx &= -\frac{\text{Subst}\left(\int \frac{\log\left(c\left(a-\frac{(d-acd)x}{ce}\right)\right)}{\left(d+\frac{e}{x}\right)x}\,dx, x, x^{-m}\right)}{m}\\
&= -\frac{\text{Subst}\left(\int \frac{\log\left(c\left(a-\frac{(d-acd)x}{ce}\right)\right)}{e+dx}\,dx, x, x^{-m}\right)}{m}\\
&= -\frac{\text{Subst}\left(\int \frac{\log\left(1-\frac{(d-acd)x}{de}\right)}{x}\,dx, x, e+dx^{-m}\right)}{dm}\\
&= \frac{\text{Li}_2\left(\frac{(1-ac)\left(e+dx^{-m}\right)}{e}\right)}{dm}
\end{aligned}$$

Mathematica [A]
time = 0.02, size = 31, normalized size = 1.11

$$\frac{\text{Li}_2\left(-\frac{(-1+ac)x^{-m}\left(d+ex^m\right)}{e}\right)}{dm}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[c*(a - (d - a*c*d)/(c*e*x^m))]/(x*(d + e*x^m)),x]
```

```
[Out] PolyLog[2, -(((-1 + a*c)*(d + e*x^m))/(e*x^m))]/(d*m)
```

Maple [A]
time = 1.89, size = 28, normalized size = 1.00

method	result	size
derivativedivides	$\frac{\text{dilog}\left(ca+\frac{d(ca-1)x^{-m}}{e}\right)}{md}$	28
default	$\frac{\text{dilog}\left(ca+\frac{d(ca-1)x^{-m}}{e}\right)}{md}$	28
risch	Expression too large to display	1200

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(c*(a+(a*c*d-d)/c/e/(x^m)))/x/(d+e*x^m),x,method=_RETURNVERBOSE)
```

```
[Out] 1/m*dilog(c*a+d*(a*c-1)/e/(x^m))/d
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(a+(a*c*d-d)/c/e/(x^m)))/x/(d+e*x^m),x, algorithm="maxima")
```

```
[Out] (a*c*m - m)*integrate(log(x)/(a*c*x*e^(m*log(x) + 1) + (a*c*d - d)*x), x) +
 (log(a*c*e^(m*log(x) + 1) + (a*c - 1)*d)*log(x) - log(x)*log(x^m) - log(x)
)/d - (log(a*c*e^(m*log(x) + 1) + (a*c - 1)*d)*log((a*c*d + a*c*e^(m*log(x)
 + 1) - d)/d + 1) + dilog(-(a*c*d + a*c*e^(m*log(x) + 1) - d)/d))/(d*m) + (
log(x^m)*log(e^(m*log(x) + 1)/d + 1) + dilog(-e^(m*log(x) + 1)/d))/(d*m) +
log((d + e^(m*log(x) + 1))*e^(-1))/(d*m)
```

Fricas [A]
time = 0.36, size = 35, normalized size = 1.25

$$\frac{\mathrm{Li}_2\left(-\frac{(acx^m e+(ac-1)d)e^{(-1)}}{x^m}+1\right)}{dm}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(a+(a*c*d-d)/c/e/(x^m)))/x/(d+e*x^m),x, algorithm="fricas")
```

```
[Out] dilog(-(a*c*x^m*e + (a*c - 1)*d)*e^(-1)/x^m + 1)/(d*m)
```

Sympy [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: HeuristicGCDFailed

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(c*(a+(a*c*d-d)/c/e/(x**m)))/x/(d+e*x**m),x)
```

```
[Out] Exception raised: HeuristicGCDFailed >> no luck
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(a+(a*c*d-d)/c/e/(x^m)))/x/(d+e*x^m),x, algorithm="giac")
```

```
[Out] integrate(log((a + (a*c*d - d)*e^(-1)/(c*x^m))*c)/((x^m*e + d)*x), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{\ln\left(c\,\left(a-\frac{d-a\,c\,d}{c\,e\,x^m}\right)\right)}{x\,\left(d+e\,x^m\right)} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(log(c*(a - (d - a*c*d)/(c*e*x^m)))/(x*(d + e*x^m)),x)
```

```
[Out] int(log(c*(a - (d - a*c*d)/(c*e*x^m)))/(x*(d + e*x^m)), x)
```

3.336 $\int \frac{\log\left(\frac{x^{-m}(-d+acd+acex^m)}{e}\right)}{x(d+ex^m)}\,dx$

Optimal. Leaf size=28

$$\frac{\text{Li}_2\left(\frac{(1-ac)(e+dx^{-m})}{e}\right)}{dm}$$

[Out] polylog(2,(-a*c+1)*(e+d/(x^m))/e)/d/m

Rubi [A]
time = 0.12, antiderivative size = 28, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 38, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.132, Rules used = {2530, 2525, 2459, 2440, 2438}

$$\frac{\text{PolyLog}\left(2,\frac{(1-ac)(dx^{-m}+e)}{e}\right)}{dm}$$

Antiderivative was successfully verified.

[In] Int[Log[(-d + a*c*d + a*c*e*x^m)/(e*x^m)]/(x*(d + e*x^m)),x]

[Out] PolyLog[2, ((1 - a*c)*(e + d/x^m))/e]/(d*m)

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + c*e*(x/g)])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2459

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)/(x_))^(q_.)*(x_)^(m_.), x_Symbol] :> Int[(g + f*x)^q*(a + b*Log[c*(d + e*
x)^n])^p, x] /; FreeQ[{a, b, c, d, e, f, g, m, n, p, q}, x] && EqQ[m, q] &&
 IntegerQ[q]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_))^(p_.)]*(b_.))^(q_.)*(x_)^(m
_.)*((f_) + (g_.)*(x_)^(s_))^(r_.), x_Symbol] :> Dist[1/n, Subst[Int[x^(Sim
```

```
plify[(m + 1)/n] - 1)*(f + g*x^(s/n))^r*(a + b*Log[c*(d + e*x)^p])^q, x], x
, x^n], x] /; FreeQ[{a, b, c, d, e, f, g, m, n, p, q, r, s}, x] && IntegerQ
[r] && IntegerQ[s/n] && IntegerQ[Simplify[(m + 1)/n]] && (GtQ[(m + 1)/n, 0]
 || IGtQ[q, 0])
```

Rule 2530

```
Int[((a_.) + Log[(c_.)*(v_)^(p_.)]*(b_.))^(q_.)*(u_)^(r_.)*((h_.)*(x_))^(m_
.), x_Symbol] :> Int[(h*x)^m*ExpandToSum[u, x]^r*(a + b*Log[c*ExpandToSum[v
, x]^p])^q, x] /; FreeQ[{a, b, c, h, m, p, q, r}, x] && BinomialQ[{u, v}, x
] &&  !BinomialMatchQ[{u, v}, x]
```

Rubi steps

$$\begin{aligned}\int \frac{\log\left(\frac{x^{-m}(-d+acd+acex^m)}{e}\right)}{x\,(d+ex^m)}\,dx &= \int \frac{\log\left(ac+\frac{(-d+acd)x^{-m}}{e}\right)}{x\,(d+ex^m)}\,dx\\ &= -\frac{\text{Subst}\left(\int \frac{\log\left(ac+\frac{(-d+acd)x}{e}\right)}{\left(d+\frac{e}{x}\right)x}\,dx,x,x^{-m}\right)}{m}\\ &= -\frac{\text{Subst}\left(\int \frac{\log\left(ac+\frac{(-d+acd)x}{e}\right)}{e+dx}\,dx,x,x^{-m}\right)}{m}\\ &= -\frac{\text{Subst}\left(\int \frac{\log\left(1+\frac{(-d+acd)x}{de}\right)}{x}\,dx,x,e+dx^{-m}\right)}{dm}\\ &= \frac{\text{Li}_2\left(\frac{(1-ac)(e+dx^{-m})}{e}\right)}{dm}\end{aligned}$$

Mathematica [A]
time = 0.01, size = 31, normalized size = 1.11

$$\frac{\text{Li}_2\left(-\frac{(-1+ac)x^{-m}(d+ex^m)}{e}\right)}{dm}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[(-d + a*c*d + a*c*e*x^m)/(e*x^m)]/(x*(d + e*x^m)),x]
[Out] PolyLog[2, -(((-1 + a*c)*(d + e*x^m))/(e*x^m))]/(d*m)
```

Maple [A]
time = 1.85, size = 28, normalized size = 1.00

method	result	size
derivativedivides	$\frac{\operatorname{dilog}\left(ca+\frac{d(ca-1)x^{-m}}{e}\right)}{md}$	28
default	$\frac{\operatorname{dilog}\left(ca+\frac{d(ca-1)x^{-m}}{e}\right)}{md}$	28
risch	Expression too large to display	1200

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln((-d+a*c*d+a*c*e*x^m)/e/(x^m))/x/(d+e*x^m),x,method=_RETURNVERBOSE)
```

```
[Out] 1/m*dilog(c*a+d*(a*c-1)/e/(x^m))/d
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log((-d+a*c*d+a*c*e*x^m)/e/(x^m))/x/(d+e*x^m),x, algorithm="maxim
a")
```

```
[Out] (a*c*m - m)*integrate(log(x)/(a*c*x*e^(m*log(x) + 1) + (a*c*d - d)*x), x) +
 (log(a*c*e^(m*log(x) + 1) + (a*c - 1)*d)*log(x) - log(x)*log(x^m) - log(x)
)/d - (log(a*c*e^(m*log(x) + 1) + (a*c - 1)*d)*log((a*c*d + a*c*e^(m*log(x)
 + 1) - d)/d + 1) + dilog(-(a*c*d + a*c*e^(m*log(x) + 1) - d)/d))/(d*m) + (
log(x^m)*log(e^(m*log(x) + 1)/d + 1) + dilog(-e^(m*log(x) + 1)/d))/(d*m) +
log((d + e^(m*log(x) + 1))*e^(-1))/(d*m)
```

Fricas [A]
time = 0.36, size = 35, normalized size = 1.25

$$\frac{\operatorname{Li}_2\left(-\frac{(acx^m e+(ac-1)d)e^{(-1)}}{x^m}+1\right)}{dm}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log((-d+a*c*d+a*c*e*x^m)/e/(x^m))/x/(d+e*x^m),x, algorithm="frica
s")
```

```
[Out] dilog(-(a*c*x^m*e + (a*c - 1)*d)*e^(-1)/x^m + 1)/(d*m)
```

Sympy [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: HeuristicGCDFailed

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln((-d+a*c*d+a*c*e*x**m)/e/(x**m))/x/(d+e*x**m),x)
```

```
[Out] Exception raised: HeuristicGCDFailed >> no luck
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log((-d+a*c*d+a*c*e*x^m)/e/(x^m))/x/(d+e*x^m),x, algorithm="giac"
)
```

```
[Out] integrate(log((a*c*x^m*e + a*c*d - d)*e^(-1)/x^m)/((x^m*e + d)*x), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{\ln\left(\frac{a\,c\,d-d+a\,c\,e\,x^m}{e\,x^m}\right)}{x\,\left(d+e\,x^m\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(log((a*c*d - d + a*c*e*x^m)/(e*x^m))/(x*(d + e*x^m)),x)
```

```
[Out] int(log((a*c*d - d + a*c*e*x^m)/(e*x^m))/(x*(d + e*x^m)), x)
```

3.337 $\int \frac{\log\left(\frac{2a}{a+bx}\right)}{a^2-b^2x^2}\,dx$

Optimal. Leaf size=24

$$\frac{\text{Li}_2\left(1-\frac{2a}{a+bx}\right)}{2ab}$$

```
[Out] 1/2*polylog(2,1-2*a/(b*x+a))/a/b
```

Rubi [A]
time = 0.02, antiderivative size = 24, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.077$, Rules used = {2449, 2352}

$$\frac{\text{PolyLog}\left(2,1-\frac{2a}{a+bx}\right)}{2ab}$$

Antiderivative was successfully verified.

```
[In] Int[Log[(2*a)/(a + b*x)]/(a^2 - b^2*x^2),x]
```

```
[Out] PolyLog[2, 1 - (2*a)/(a + b*x)]/(2*a*b)
```

Rule 2352

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> Simp[(-e^(-1))*PolyLo
g[2, 1 - c*x], x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2449

```
Int[Log[(c_.)/((d_) + (e_.)*(x_))]/((f_) + (g_.)*(x_)^2), x_Symbol] :> Dist
[-e/g, Subst[Int[Log[2*d*x]/(1 - 2*d*x), x], x, 1/(d + e*x)], x] /; FreeQ[{
c, d, e, f, g}, x] && EqQ[c, 2*d] && EqQ[e^2*f + d^2*g, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{\log\left(\frac{2a}{a+bx}\right)}{a^2-b^2x^2}\,dx &= \frac{\text{Subst}\left(\int \frac{\log(2ax)}{1-2ax}\,dx,x,\frac{1}{a+bx}\right)}{b}\\ &= \frac{\text{Li}_2\left(1-\frac{2a}{a+bx}\right)}{2ab}\end{aligned}$$

Mathematica [A]
time = 0.01, size = 27, normalized size = 1.12

$$\frac{\text{Li}_2\left(\frac{-a+bx}{a+bx}\right)}{2ab}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[(2*a)/(a + b*x)]/(a^2 - b^2*x^2),x]
```

```
[Out] PolyLog[2, (-a + b*x)/(a + b*x)]/(2*a*b)
```

Maple [A]
time = 0.72, size = 20, normalized size = 0.83

method	result	size
derivativedivides	$\frac{\operatorname{dilog}\left(\frac{2a}{bx+a}\right)}{2ba}$	20
default	$\frac{\operatorname{dilog}\left(\frac{2a}{bx+a}\right)}{2ba}$	20
risch	$\frac{\operatorname{dilog}\left(\frac{2a}{bx+a}\right)}{2ba}$	20

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(2*a/(b*x+a))/(-b^2*x^2+a^2),x,method=_RETURNVERBOSE)
```

```
[Out] 1/2/b/a*dilog(2*a/(b*x+a))
```

Maxima [B] Leaf count of result is larger than twice the leaf count of optimal. 120 vs. 2(21) = 42.
time = 0.30, size = 120, normalized size = 5.00

$$\frac{1}{4}b\left(\frac{\log\left(bx+a\right)^{2}-2\,\log\left(bx+a\right)\log\left(bx-a\right)}{ab^{2}}+\frac{2\left(\log\left(bx+a\right)\log\left(-\frac{bx+a}{2\,a}+1\right)+\mathrm{Li}_{2}\left(\frac{bx+a}{2\,a}\right)\right)}{ab^{2}}\right)+\frac{1}{2}\left(\frac{\log\left(bx+a\right)}{ab}-\frac{\log\left(bx-a\right)}{ab}\right)\log\left(\frac{2\,a}{bx+a}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(2*a/(b*x+a))/(-b^2*x^2+a^2),x, algorithm="maxima")
```

```
[Out] 1/4*b*((log(b*x + a)^2 - 2*log(b*x + a)*log(b*x - a))/(a*b^2) + 2*(log(b*x
+ a)*log(-1/2*(b*x + a)/a + 1) + dilog(1/2*(b*x + a)/a))/(a*b^2)) + 1/2*(lo
g(b*x + a)/(a*b) - log(b*x - a)/(a*b))*log(2*a/(b*x + a))
```

Fricas [A]
time = 0.38, size = 21, normalized size = 0.88

$$\frac{\mathrm{Li}_{2}\left(-\frac{2\,a}{bx+a}+1\right)}{2\,ab}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(2*a/(b*x+a))/(-b^2*x^2+a^2),x, algorithm="fricas")
```

```
[Out] 1/2*dilog(-2*a/(b*x + a) + 1)/(a*b)
```

Sympy [**F**]
time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{\log(2)}{-a^2+b^2x^2}\,dx-\int \frac{\log\left(\frac{a}{a+bx}\right)}{-a^2+b^2x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(2*a/(b*x+a))/(-b**2*x**2+a**2),x)
```

```
[Out] -Integral(log(2)/(-a**2 + b**2*x**2), x) - Integral(log(a/(a + b*x))/(-a**2
 + b**2*x**2), x)
```

Giac [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(2*a/(b*x+a))/(-b^2*x^2+a^2),x, algorithm="giac")
```

```
[Out] integrate(-log(2*a/(b*x + a))/(b^2*x^2 - a^2), x)
```

Mupad [**B**]
time = 0.28, size = 19, normalized size = 0.79

$$\frac{\mathrm{Li}_2\left(\frac{2\,a}{a+b\,x}\right)}{2\,a\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(log((2*a)/(a + b*x))/(a^2 - b^2*x^2),x)
```

```
[Out] dilog((2*a)/(a + b*x))/(2*a*b)
```

3.338 $\int \frac{\log\left(\frac{2a}{a+bx}\right)}{(a-bx)(a+bx)}\,dx$

Optimal. Leaf size=24

$$\frac{\operatorname{Li}_2\left(1-\frac{2a}{a+bx}\right)}{2ab}$$

[Out] 1/2*polylog(2,1-2*a/(b*x+a))/a/b

Rubi [A]
time = 0.09, antiderivative size = 24, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.148$, Rules used = {2458, 2378, 2370, 2352}

$$\frac{\operatorname{PolyLog}\left(2,1-\frac{2a}{a+bx}\right)}{2ab}$$

Antiderivative was successfully verified.

[In] Int[Log[(2*a)/(a + b*x)]/((a - b*x)*(a + b*x)),x]

[Out] PolyLog[2, 1 - (2*a)/(a + b*x)]/(2*a*b)

Rule 2352

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> Simp[(-e^(-1))*PolyLo
g[2, 1 - c*x], x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2370

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)/(x_))^(q_.)*(
x_)^(m_.), x_Symbol] :> Int[(e + d*x)^q*(a + b*Log[c*x^n])^p, x] /; FreeQ[{
a, b, c, d, e, m, n, p}, x] && EqQ[m, q] && IntegerQ[q]
```

Rule 2378

```
Int[((a_.) + Log[(c_.)*(x_)^(n_)]*(b_.))/((x_)*((d_) + (e_.)*(x_)^(r_.))),
x_Symbol] :> Dist[1/n, Subst[Int[(a + b*Log[c*x])/(x*(d + e*x^(r/n))), x],
x, x^n], x] /; FreeQ[{a, b, c, d, e, n, r}, x] && IntegerQ[r/n]
```

Rule 2458

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[(g*(x/e))^q*((e*h - d*i)/e + i*(x/e))^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rubi steps

$$\int \frac{\log \left(\frac{2a}{a+bx}\right)}{(a-bx)(a+bx)}\,dx = \frac{\text{Subst}\left(\int \frac{\log\left(\frac{2a}{x}\right)}{(2a-x)x}\,dx, x, a+bx\right)}{b}$$
$$= -\frac{\text{Subst}\left(\int \frac{\log(2ax)}{\left(2a-\frac{1}{x}\right)x}\,dx, x, \frac{1}{a+bx}\right)}{b}$$
$$= -\frac{\text{Subst}\left(\int \frac{\log(2ax)}{-1+2ax}\,dx, x, \frac{1}{a+bx}\right)}{b}$$
$$= \frac{\text{Li}_2\left(1-\frac{2a}{a+bx}\right)}{2ab}$$

Mathematica [A]
time = 0.00, size = 27, normalized size = 1.12

$$\frac{\text{Li}_2\left(\frac{-a+bx}{a+bx}\right)}{2ab}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[(2*a)/(a + b*x)]/((a - b*x)*(a + b*x)),x]
[Out] PolyLog[2, (-a + b*x)/(a + b*x)]/(2*a*b)
```

Maple [A]
time = 0.83, size = 20, normalized size = 0.83

method	result	size
derivativedivides	$\frac{\text{dilog}\left(\frac{2a}{bx+a}\right)}{2ba}$	20
default	$\frac{\text{dilog}\left(\frac{2a}{bx+a}\right)}{2ba}$	20
risch	$\frac{\text{dilog}\left(\frac{2a}{bx+a}\right)}{2ba}$	20

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(2*a/(b*x+a))/(-b*x+a)/(b*x+a),x,method=_RETURNVERBOSE)
[Out] 1/2/b/a*dilog(2*a/(b*x+a))
```

Maxima [B] Leaf count of result is larger than twice the leaf count of optimal. 120 vs. 2(21) = 42.
time = 0.29, size = 120, normalized size = 5.00

$$\frac{1}{4}b\left(\frac{\log(bx+a)^2-2\log(bx+a)\log(bx-a)}{ab^2}+\frac{2\left(\log(bx+a)\log\left(-\frac{bx+a}{2a}+1\right)+\text{Li}_2\left(\frac{bx+a}{2a}\right)\right)}{ab^2}\right)+\frac{1}{2}\left(\frac{\log(bx+a)}{ab}-\frac{\log(bx-a)}{ab}\right)\log\left(\frac{2a}{bx+a}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(2*a/(b*x+a))/(-b*x+a)/(b*x+a),x, algorithm="maxima")
```

```
[Out] 1/4*b*((log(b*x + a)^2 - 2*log(b*x + a)*log(b*x - a))/(a*b^2) + 2*(log(b*x
+ a)*log(-1/2*(b*x + a)/a + 1) + dilog(1/2*(b*x + a)/a))/(a*b^2)) + 1/2*(lo
g(b*x + a)/(a*b) - log(b*x - a)/(a*b))*log(2*a/(b*x + a))
```

Fricas [A]
time = 0.37, size = 21, normalized size = 0.88

$$\frac{\mathrm{Li}_2\left(-\frac{2a}{bx+a}+1\right)}{2ab}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(2*a/(b*x+a))/(-b*x+a)/(b*x+a),x, algorithm="fricas")
```

```
[Out] 1/2*dilog(-2*a/(b*x + a) + 1)/(a*b)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{\log(2)}{-a^2+b^2x^2}\,dx - \int \frac{\log\left(\frac{a}{a+bx}\right)}{-a^2+b^2x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(2*a/(b*x+a))/(-b*x+a)/(b*x+a),x)
```

```
[Out] -Integral(log(2)/(-a**2 + b**2*x**2), x) - Integral(log(a/(a + b*x))/(-a**2
 + b**2*x**2), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(2*a/(b*x+a))/(-b*x+a)/(b*x+a),x, algorithm="giac")
```

```
[Out] integrate(-log(2*a/(b*x + a))/((b*x + a)*(b*x - a)), x)
```

Mupad [B]
time = 0.20, size = 19, normalized size = 0.79

$$\frac{\mathrm{Li}_2\left(\frac{2\,a}{a+b\,x}\right)}{2\,a\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(log((2*a)/(a + b*x))/((a + b*x)*(a - b*x)),x)
```

```
[Out] dilog((2*a)/(a + b*x))/(2*a*b)
```

3.339 $\int \frac{\log\left(\frac{a(1-c)+b(1+c)x}{a+bx}\right)}{a^2-b^2x^2}\,dx$

Optimal. Leaf size=37

$$\frac{\text{Li}_2\left(1-\frac{a(1-c)+b(1+c)x}{a+bx}\right)}{2ab}$$

```
[Out] 1/2*polylog(2,1+(-a*(1-c)-b*(1+c)*x)/(b*x+a))/a/b
```

Rubi [A]
time = 0.02, antiderivative size = 37, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 38, $\frac{\text{number of rules}}{\text{integrand size}} = 0.026$, Rules used = $\{2497\}$

$$\frac{\text{PolyLog}\left(2,1-\frac{a(1-c)+b(c+1)x}{a+bx}\right)}{2ab}$$

Antiderivative was successfully verified.

```
[In] Int[Log[(a*(1 - c) + b*(1 + c)*x)/(a + b*x)]/(a^2 - b^2*x^2),x]
```

```
[Out] PolyLog[2, 1 - (a*(1 - c) + b*(1 + c)*x)/(a + b*x)]/(2*a*b)
```

Rule 2497

```
Int[Log[u_]*(Pq_)^(m_.), x_Symbol] :> With[{C = FullSimplify[Pq^m*((1 - u)/
D[u, x])]}, Simp[C*PolyLog[2, 1 - u], x] /; FreeQ[C, x]] /; IntegerQ[m] &&
PolyQ[Pq, x] && RationalFunctionQ[u, x] && LeQ[RationalFunctionExponents[u,
 x][[2]], Expon[Pq, x]]
```

Rubi steps

$$\int \frac{\log\left(\frac{a(1-c)+b(1+c)x}{a+bx}\right)}{a^2-b^2x^2}\,dx=\frac{\text{Li}_2\left(1-\frac{a(1-c)+b(1+c)x}{a+bx}\right)}{2ab}$$

Mathematica [B] Leaf count is larger than twice the leaf count of optimal. 252 vs. 2(37) = 74.
time = 0.13, size = 252, normalized size = 6.81

$$\frac{\log^2\left(\frac{2ac}{(1+c)(a+bx)}\right)-2\log(a-bx)\log\left(\frac{a+bx}{2a}\right)+2\log(a-bx)\log\left(\frac{a-ac+b(1+c)x}{2a}\right)+2\log\left(\frac{2ac}{(1+c)(a+bx)}\right)\log\left(-\frac{a-ac+b(1+c)x}{2ac}\right)-2\log(a-bx)\log\left(\frac{a-ac+b(1+c)x}{a+bx}\right)-2\log\left(\frac{2ac}{(1+c)(a+bx)}\right)\log\left(\frac{a-ac+b(1+c)x}{a+bx}\right)-2\text{Li}_2\left(\frac{a-bx}{2a}\right)+2\text{Li}_2\left(\frac{(1+c)(a-bx)}{2a}\right)-2\text{Li}_2\left(\frac{(1+c)(a+bx)}{2ac}\right)}{4ab}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[(a*(1 - c) + b*(1 + c)*x)/(a + b*x)]/(a^2 - b^2*x^2),x]
```

```
[Out] (Log[(2*a*c)/((1 + c)*(a + b*x))]^2 - 2*Log[a - b*x]*Log[(a + b*x)/(2*a)] +
 2*Log[a - b*x]*Log[(a - a*c + b*(1 + c)*x)/(2*a)] + 2*Log[(2*a*c)/((1 + c)
*(a + b*x))]*Log[-1/2*(a - a*c + b*(1 + c)*x)/(a*c)] - 2*Log[a - b*x]*Log[(
a - a*c + b*(1 + c)*x)/(a + b*x)] - 2*Log[(2*a*c)/((1 + c)*(a + b*x))]*Log[
(a - a*c + b*(1 + c)*x)/(a + b*x)] - 2*PolyLog[2, (a - b*x)/(2*a)] + 2*Poly
Log[2, ((1 + c)*(a - b*x))/(2*a)] - 2*PolyLog[2, ((1 + c)*(a + b*x))/(2*a*c
)])/(4*a*b)
```

Maple [A]
time = 0.78, size = 24, normalized size = 0.65

method	result	size
derivativedivides	$\frac{\operatorname{dilog}\left(1+c-\frac{2ca}{bx+a}\right)}{2ba}$	24
default	$\frac{\operatorname{dilog}\left(1+c-\frac{2ca}{bx+a}\right)}{2ba}$	24
risch	$\frac{\operatorname{dilog}\left(1+c-\frac{2ca}{bx+a}\right)}{2ba}$	24

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln((a*(1-c)+b*(1+c)*x)/(b*x+a))/(-b^2*x^2+a^2),x,method=_RETURNVERBOSE)
```

```
[Out] 1/2/b/a*dilog(1+c-2*c*a/(b*x+a))
```

Maxima [B] Leaf count of result is larger than twice the leaf count of optimal. 246 vs. 2(33) = 66.
time = 0.31, size = 246, normalized size = 6.65

$$\frac{1}{2}\left(\frac{\log\left(bx+a\right)}{ab}-\frac{\log\left(bx-a\right)}{ab}\right)\log\left(\frac{b(c+1)x-a(c-1)}{bx+a}\right)+\frac{\log\left(bx+a\right)^{2}-2\log\left(bx+a\right)\log\left(bx-a\right)}{4\,ab}+\frac{\log\left(bx-a\right)\log\left(\frac{b(c+1)x-a(c+1)}{2\,a}+1\right)+\mathrm{Li}_2\left(-\frac{b(c+1)x-a(c+1)}{2\,a}\right)}{2\,ab}+\frac{\log\left(bx+a\right)\log\left(-\frac{bx+a}{2\,a}+1\right)+\mathrm{Li}_2\left(\frac{bx+a}{2\,a}\right)}{2\,ab}-\frac{\log\left(bx+a\right)\log\left(-\frac{b(c+1)x+a(c+1)}{2\,ac}+1\right)+\mathrm{Li}_2\left(\frac{b(c+1)x+a(c+1)}{2\,ac}\right)}{2\,ab}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log((a*(1-c)+b*(1+c)*x)/(b*x+a))/(-b^2*x^2+a^2),x, algorithm="max
ima")
```

```
[Out] 1/2*(log(b*x + a)/(a*b) - log(b*x - a)/(a*b))*log((b*(c + 1)*x - a*(c - 1))
/(b*x + a)) + 1/4*(log(b*x + a)^2 - 2*log(b*x + a)*log(b*x - a))/(a*b) + 1/
2*(log(b*x - a)*log(1/2*(b*(c + 1)*x - a*(c + 1))/a + 1) + dilog(-1/2*(b*(c
 + 1)*x - a*(c + 1))/a))/(a*b) + 1/2*(log(b*x + a)*log(-1/2*(b*x + a)/a + 1
) + dilog(1/2*(b*x + a)/a))/(a*b) - 1/2*(log(b*x + a)*log(-1/2*(b*(c + 1)*x
 + a*(c + 1))/(a*c) + 1) + dilog(1/2*(b*(c + 1)*x + a*(c + 1))/(a*c)))/(a*b
)
```

Fricas [A]
time = 0.35, size = 34, normalized size = 0.92

$$\frac{\mathrm{Li}_2\left(\frac{ac-(bc+b)x-a}{bx+a}+1\right)}{2\,ab}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log((a*(1-c)+b*(1+c)*x)/(b*x+a))/(-b^2*x^2+a^2),x, algorithm="fri
cas")
```

```
[Out] 1/2*dilog((a*c - (b*c + b)*x - a)/(b*x + a) + 1)/(a*b)
```

Sympy [**F(-1)**] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln((a*(1-c)+b*(c+1)*x)/(b*x+a))/(-b**2*x**2+a**2),x)
```

```
[Out] Timed out
```

Giac [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log((a*(1-c)+b*(1+c)*x)/(b*x+a))/(-b^2*x^2+a^2),x, algorithm="gia
c")
```

```
[Out] integrate(-log((b*(c + 1)*x - a*(c - 1))/(b*x + a))/(b^2*x^2 - a^2), x)
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{\ln\left(-\frac{a\,(c-1)-b\,x\,(c+1)}{a+b\,x}\right)}{a^2-b^2\,x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(log(-(a*(c - 1) - b*x*(c + 1))/(a + b*x))/(a^2 - b^2*x^2),x)
```

```
[Out] int(log(-(a*(c - 1) - b*x*(c + 1))/(a + b*x))/(a^2 - b^2*x^2), x)
```

3.340 $\int \frac{\log\left(\frac{a(1-c)+b(1+c)x}{a+bx}\right)}{(a-bx)(a+bx)}\,dx$

Optimal. Leaf size=27

$$\frac{\text{Li}_2\left(\frac{c(a-bx)}{a+bx}\right)}{2ab}$$

```
[Out] 1/2*polylog(2,c*(-b*x+a)/(b*x+a))/a/b
```

Rubi [A]

time = 0.05, antiderivative size = 27, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 39, $\frac{\text{number of rules}}{\text{integrand size}} = 0.051$, Rules used = {2565, 2352}

$$\frac{\text{PolyLog}\left(2,\frac{c(a-bx)}{a+bx}\right)}{2ab}$$

Antiderivative was successfully verified.

```
[In] Int[Log[(a*(1 - c) + b*(1 + c)*x)/(a + b*x)]/((a - b*x)*(a + b*x)),x]
```

```
[Out] PolyLog[2, (c*(a - b*x))/(a + b*x)]/(2*a*b)
```

Rule 2352

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> Simp[(-e^(-1))*PolyLo
g[2, 1 - c*x], x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2565

```
Int[((A_.) + Log[(e_.)*(((a_.) + (b_.)*(x_))/((c_.) + (d_.)*(x_)))^(n_.)]*(
B_.))^(p_.)*((f_.) + (g_.)*(x_))^(m_.)*((h_.) + (i_.)*(x_))^(q_.), x_Symbol
] :> Dist[(b*c - a*d)^(q + 1)*(i/d)^q, Subst[Int[(b*f - a*g - (d*f - c*g)*x
)^m*((A + B*Log[e*x^n])^p/(b - d*x)^(m + q + 2)), x], x, (a + b*x)/(c + d*x
)], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, A, B, n}, x] && NeQ[b*c - a*d,
0] && IntegersQ[m, q] && IGtQ[p, 0] && EqQ[d*h - c*i, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{\log\left(\frac{a(1-c)+b(1+c)x}{a+bx}\right)}{(a-bx)(a+bx)}\,dx &= \frac{\text{Subst}\left(\int \frac{\log(x)}{1-x}\,dx, x, \frac{a(1-c)+b(1+c)x}{a+bx}\right)}{2ab}\\ &= \frac{\text{Li}_2\left(\frac{c(a-bx)}{a+bx}\right)}{2ab}\end{aligned}$$

Mathematica [B] Leaf count is larger than twice the leaf count of optimal. 259 vs. $2(27) = 54$.
time = 0.08, size = 259, normalized size = 9.59

$$\frac{4\tanh^{-1}\left(\frac{bx}{a}\right)\log\left(\frac{a}{b}+x\right)-\log^2\left(\frac{a}{b}+x\right)-4\tanh^{-1}\left(\frac{bx}{a}\right)\log\left(\frac{a-ac}{b+bc}+x\right)+2\log\left(\frac{a}{b}+x\right)\log\left(\frac{a-bx}{2a}\right)-2\log\left(\frac{a-ac}{b+bc}+x\right)\log\left(\frac{(1+c)(a-bx)}{2a}\right)+2\log\left(\frac{a-ac}{b+bc}+x\right)\log\left(\frac{(1+c)(a+bx)}{2ac}\right)+4\tanh^{-1}\left(\frac{bx}{a}\right)\log\left(\frac{a-ac+b(1+c)x}{a+bx}\right)+2\text{Li}_2\left(\frac{a+bx}{2a}\right)-2\text{Li}_2\left(\frac{a-ac+b(1+c)x}{2a}\right)+2\text{Li}_2\left(-\frac{a-ac+b(1+c)x}{2ac}\right)}{4ab}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[(a*(1 - c) + b*(1 + c)*x)/(a + b*x)]/((a - b*x)*(a + b*x)),x]
```

```
[Out] (4*ArcTanh[(b*x)/a]*Log[a/b + x] - Log[a/b + x]^2 - 4*ArcTanh[(b*x)/a]*Log[
(a - a*c)/(b + b*c) + x] + 2*Log[a/b + x]*Log[(a - b*x)/(2*a)] - 2*Log[(a -
 a*c)/(b + b*c) + x]*Log[((1 + c)*(a - b*x))/(2*a)] + 2*Log[(a - a*c)/(b +
b*c) + x]*Log[((1 + c)*(a + b*x))/(2*a*c)] + 4*ArcTanh[(b*x)/a]*Log[(a - a*
c + b*(1 + c)*x)/(a + b*x)] + 2*PolyLog[2, (a + b*x)/(2*a)] - 2*PolyLog[2,
(a - a*c + b*(1 + c)*x)/(2*a)] + 2*PolyLog[2, -1/2*(a - a*c + b*(1 + c)*x)/
(a*c)])/(4*a*b)
```

Maple [A]
time = 0.95, size = 24, normalized size = 0.89

method	result	size
derivativedivides	$\frac{\text{dilog}\left(1+c-\frac{2ca}{bx+a}\right)}{2ba}$	24
default	$\frac{\text{dilog}\left(1+c-\frac{2ca}{bx+a}\right)}{2ba}$	24
risch	$\frac{\text{dilog}\left(1+c-\frac{2ca}{bx+a}\right)}{2ba}$	24

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln((a*(1-c)+b*(1+c)*x)/(b*x+a))/(-b*x+a)/(b*x+a),x,method=_RETURNVERBOS
E)
```

```
[Out] 1/2/b/a*dilog(1+c-2*c*a/(b*x+a))
```

Maxima [B] Leaf count of result is larger than twice the leaf count of optimal. 246 vs. $2(26) = 52$.
time = 0.30, size = 246, normalized size = 9.11

$$\frac{1}{2}\left(\frac{\log(bx+a)}{ab}-\frac{\log(bx-a)}{ab}\right)\log\left(\frac{b(c+1)x-a(c-1)}{bx+a}\right)+\frac{\log(bx+a)^2-2\log(bx+a)\log(bx-a)}{4ab}+\frac{\log(bx-a)\log\left(\frac{b(c+1)x-a(c+1)}{2a}+1\right)+\text{Li}_2\left(-\frac{b(c+1)x-a(c+1)}{2a}\right)}{2ab}+\frac{\log(bx+a)\log\left(-\frac{bx+a}{2a}+1\right)+\text{Li}_2\left(\frac{bx+a}{2a}\right)}{2ab}-\frac{\log(bx+a)\log\left(-\frac{b(c+1)x+a(c+1)}{2ac}+1\right)+\text{Li}_2\left(\frac{b(c+1)x+a(c+1)}{2ac}\right)}{2ab}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log((a*(1-c)+b*(1+c)*x)/(b*x+a))/(-b*x+a)/(b*x+a),x, algorithm="m
axima")
```

```
[Out] 1/2*(log(b*x + a)/(a*b) - log(b*x - a)/(a*b))*log((b*(c + 1)*x - a*(c - 1))
/(b*x + a)) + 1/4*(log(b*x + a)^2 - 2*log(b*x + a)*log(b*x - a))/(a*b) + 1/
```

```
2*(log(b*x - a)*log(1/2*(b*(c + 1)*x - a*(c + 1))/a + 1) + dilog(-1/2*(b*(c
 + 1)*x - a*(c + 1))/a))/(a*b) + 1/2*(log(b*x + a)*log(-1/2*(b*x + a)/a + 1
) + dilog(1/2*(b*x + a)/a))/(a*b) - 1/2*(log(b*x + a)*log(-1/2*(b*(c + 1)*x
 + a*(c + 1))/(a*c) + 1) + dilog(1/2*(b*(c + 1)*x + a*(c + 1))/(a*c)))/(a*b
)
```

Fricas [A]
time = 0.35, size = 34, normalized size = 1.26

$$\frac{\mathrm{Li}_2\left(\frac{ac-(bc+b)x-a}{bx+a}+1\right)}{2\,ab}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log((a*(1-c)+b*(1+c)*x)/(b*x+a))/(-b*x+a)/(b*x+a),x, algorithm="f
ricas")
```

```
[Out] 1/2*dilog((a*c - (b*c + b)*x - a)/(b*x + a) + 1)/(a*b)
```

Sympy [F(-1)] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln((a*(1-c)+b*(c+1)*x)/(b*x+a))/(-b*x+a)/(b*x+a),x)
```

```
[Out] Timed out
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log((a*(1-c)+b*(1+c)*x)/(b*x+a))/(-b*x+a)/(b*x+a),x, algorithm="g
iac")
```

```
[Out] integrate(-log((b*(c + 1)*x - a*(c - 1))/(b*x + a))/((b*x + a)*(b*x - a)),
x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{\ln\left(-\frac{a\,(c-1)-b\,x\,(c+1)}{a+b\,x}\right)}{(a+b\,x)\,(a-b\,x)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(log(-(a*(c - 1) - b*x*(c + 1))/(a + b*x))/((a + b*x)*(a - b*x)),x)
```

```
[Out] int(log(-(a*(c - 1) - b*x*(c + 1))/(a + b*x))/((a + b*x)*(a - b*x)), x)
```

3.341 $\int \frac{\log\left(1-\frac{c(a-bx)}{a+bx}\right)}{a^2-b^2x^2}\,dx$

Optimal. Leaf size=27

$$\frac{\text{Li}_2\left(\frac{c(a-bx)}{a+bx}\right)}{2ab}$$

```
[Out] 1/2*polylog(2,c*(-b*x+a)/(b*x+a))/a/b
```

Rubi [A]
time = 0.01, antiderivative size = 27, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}} = 0.029$, Rules used = {2497}

$$\frac{\text{PolyLog}\left(2,\frac{c(a-bx)}{a+bx}\right)}{2ab}$$

Antiderivative was successfully verified.

```
[In] Int[Log[1 - (c*(a - b*x))/(a + b*x)]/(a^2 - b^2*x^2),x]
```

```
[Out] PolyLog[2, (c*(a - b*x))/(a + b*x)]/(2*a*b)
```

Rule 2497

```
Int[Log[u_]*(Pq_)^(m_.), x_Symbol] :> With[{C = FullSimplify[Pq^m*((1 - u)/
D[u, x])]}, Simp[C*PolyLog[2, 1 - u], x] /; FreeQ[C, x]] /; IntegerQ[m] &&
PolyQ[Pq, x] && RationalFunctionQ[u, x] && LeQ[RationalFunctionExponents[u,
 x][[2]], Expon[Pq, x]]
```

Rubi steps

$$\int \frac{\log\left(1-\frac{c(a-bx)}{a+bx}\right)}{a^2-b^2x^2}\,dx = \frac{\text{Li}_2\left(\frac{c(a-bx)}{a+bx}\right)}{2ab}$$

Mathematica [B] Leaf count is larger than twice the leaf count of optimal. 252 vs. 2(27) = 54.
time = 0.10, size = 252, normalized size = 9.33

$$\frac{\log^2\left(\frac{2ac}{(1+c)(a+bx)}\right)-2\log(a-bx)\log\left(\frac{a+bx}{2a}\right)+2\log(a-bx)\log\left(\frac{a-ac+b(1+c)x}{2a}\right)+2\log\left(\frac{2ac}{(1+c)(a+bx)}\right)\log\left(-\frac{a-ac+b(1+c)x}{2ac}\right)-2\log(a-bx)\log\left(\frac{a-ac+b(1+c)x}{a+bx}\right)-2\log\left(\frac{2ac}{(1+c)(a+bx)}\right)\log\left(\frac{a-ac+b(1+c)x}{a+bx}\right)-2\text{Li}_2\left(\frac{a-bx}{2a}\right)+2\text{Li}_2\left(\frac{(1+c)(a-bx)}{2a}\right)-2\text{Li}_2\left(\frac{(1+c)(a+bx)}{2ac}\right)}{4ab}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[1 - (c*(a - b*x))/(a + b*x)]/(a^2 - b^2*x^2),x]
```

```
[Out] (Log[(2*a*c)/((1 + c)*(a + b*x))]^2 - 2*Log[a - b*x]*Log[(a + b*x)/(2*a)] +
 2*Log[a - b*x]*Log[(a - a*c + b*(1 + c)*x)/(2*a)] + 2*Log[(2*a*c)/((1 + c)
*(a + b*x))]*Log[-1/2*(a - a*c + b*(1 + c)*x)/(a*c)] - 2*Log[a - b*x]*Log[(
a - a*c + b*(1 + c)*x)/(a + b*x)] - 2*Log[(2*a*c)/((1 + c)*(a + b*x))]*Log[
(a - a*c + b*(1 + c)*x)/(a + b*x)] - 2*PolyLog[2, (a - b*x)/(2*a)] + 2*Poly
Log[2, ((1 + c)*(a - b*x))/(2*a)] - 2*PolyLog[2, ((1 + c)*(a + b*x))/(2*a*c
)])/(4*a*b)
```

Maple [**A**]
time = 0.76, size = 24, normalized size = 0.89

method	result	size
derivativedivides	$\frac{\operatorname{dilog}\left(1+c-\frac{2ca}{bx+a}\right)}{2ba}$	24
default	$\frac{\operatorname{dilog}\left(1+c-\frac{2ca}{bx+a}\right)}{2ba}$	24
risch	$\frac{\operatorname{dilog}\left(1+c-\frac{2ca}{bx+a}\right)}{2ba}$	24

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(1-c*(-b*x+a)/(b*x+a))/(-b^2*x^2+a^2),x,method=_RETURNVERBOSE)
```

```
[Out] 1/2/b/a*dilog(1+c-2*c*a/(b*x+a))
```

Maxima [**B**] Leaf count of result is larger than twice the leaf count of optimal. 243 vs. 2(26) = 52.
time = 0.29, size = 243, normalized size = 9.00

$$\frac{1}{2}\left(\frac{\log\left(bx+a\right)}{ab}-\frac{\log\left(bx-a\right)}{ab}\right)\log\left(\frac{(bx-a)c}{bx+a}+1\right)+\frac{\log\left(bx+a\right)^{2}-2\,\log\left(bx+a\right)\log\left(bx-a\right)}{4\,ab}+\frac{\log\left(bx-a\right)\log\left(\frac{b(c+1)x-a(c+1)}{2\,a}+1\right)+\mathrm{Li}_2\left(-\frac{b(c+1)x-a(c+1)}{2\,a}\right)}{2\,ab}+\frac{\log\left(bx+a\right)\log\left(-\frac{bx+a}{2\,a}+1\right)+\mathrm{Li}_2\left(\frac{bx+a}{2\,a}\right)}{2\,ab}-\frac{\log\left(bx+a\right)\log\left(-\frac{b(c+1)x+a(c+1)}{2\,ac}+1\right)+\mathrm{Li}_2\left(\frac{b(c+1)x+a(c+1)}{2\,ac}\right)}{2\,ab}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(1-c*(-b*x+a)/(b*x+a))/(-b^2*x^2+a^2),x, algorithm="maxima")
```

```
[Out] 1/2*(log(b*x + a)/(a*b) - log(b*x - a)/(a*b))*log((b*x - a)*c/(b*x + a) + 1
) + 1/4*(log(b*x + a)^2 - 2*log(b*x + a)*log(b*x - a))/(a*b) + 1/2*(log(b*x
 - a)*log(1/2*(b*(c + 1)*x - a*(c + 1))/a + 1) + dilog(-1/2*(b*(c + 1)*x -
a*(c + 1))/a))/(a*b) + 1/2*(log(b*x + a)*log(-1/2*(b*x + a)/a + 1) + dilog(
1/2*(b*x + a)/a))/(a*b) - 1/2*(log(b*x + a)*log(-1/2*(b*(c + 1)*x + a*(c +
1))/(a*c) + 1) + dilog(1/2*(b*(c + 1)*x + a*(c + 1))/(a*c)))/(a*b)
```

Fricas [**A**]
time = 0.36, size = 34, normalized size = 1.26

$$\frac{\mathrm{Li}_2\left(\frac{ac-(bc+b)x-a}{bx+a}+1\right)}{2\,ab}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(1-c*(-b*x+a)/(b*x+a))/(-b^2*x^2+a^2),x, algorithm="fricas")
```

```
[Out] 1/2*dilog((a*c - (b*c + b)*x - a)/(b*x + a) + 1)/(a*b)
```

Sympy [**F(-1)**] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(1-c*(-b*x+a)/(b*x+a))/(-b**2*x**2+a**2),x)
```

```
[Out] Timed out
```

Giac [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(1-c*(-b*x+a)/(b*x+a))/(-b^2*x^2+a^2),x, algorithm="giac")
```

```
[Out] integrate(-log((b*x - a)*c/(b*x + a) + 1)/(b^2*x^2 - a^2), x)
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{\ln\left(1-\frac{c\,(a-b\,x)}{a+b\,x}\right)}{a^2-b^2\,x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(log(1 - (c*(a - b*x))/(a + b*x))/(a^2 - b^2*x^2),x)
```

```
[Out] int(log(1 - (c*(a - b*x))/(a + b*x))/(a^2 - b^2*x^2), x)
```

3.342 $\int \frac{\log\left(1-\frac{c(a-bx)}{a+bx}\right)}{(a-bx)(a+bx)}\,dx$

Optimal. Leaf size=27

$$\frac{\text{Li}_2\left(\frac{c(a-bx)}{a+bx}\right)}{2ab}$$

[Out] 1/2*polylog(2,c*(-b*x+a)/(b*x+a))/a/b

Rubi [A]
time = 0.08, antiderivative size = 27, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.086$, Rules used = {2597, 2565, 2352}

$$\frac{\text{PolyLog}\left(2, \frac{c(a-bx)}{a+bx}\right)}{2ab}$$

Antiderivative was successfully verified.

[In] Int[Log[1 - (c*(a - b*x))/(a + b*x)]/((a - b*x)*(a + b*x)),x]

[Out] PolyLog[2, (c*(a - b*x))/(a + b*x)]/(2*a*b)

Rule 2352

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> Simp[(-e^(-1))*PolyLo
g[2, 1 - c*x], x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2565

```
Int[((A_.) + Log[(e_.)*(((a_.) + (b_.)*(x_))/((c_.) + (d_.)*(x_)))^(n_.)]*(
B_.))^(p_.)*((f_.) + (g_.)*(x_))^(m_.)*((h_.) + (i_.)*(x_))^(q_.), x_Symbol
] :> Dist[(b*c - a*d)^(q + 1)*(i/d)^q, Subst[Int[(b*f - a*g - (d*f - c*g)*x
)^m*((A + B*Log[e*x^n])^p/(b - d*x)^(m + q + 2)), x], x, (a + b*x)/(c + d*x
)], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, A, B, n}, x] && NeQ[b*c - a*d,
0] && IntegersQ[m, q] && IGtQ[p, 0] && EqQ[d*h - c*i, 0]
```

Rule 2597

```
Int[Log[(e_.)*((f_.)*((g_) + (v_.)/(w_)))^(r_.)]^(s_.)*(u_.), x_Symbol] :>
Int[u*Log[e*(f*(ExpandToSum[v + g*w, x]/ExpandToSum[w, x]))^r]^s, x] /; Fre
eQ[{e, f, g, r, s}, x] && LinearQ[w, x] && (FreeQ[v, x] || LinearQ[v, x]) &
& AlgebraicFunctionQ[u, x]
```

Rubi steps

$$\int \frac{\log\left(1-\frac{c(a-bx)}{a+bx}\right)}{(a-bx)(a+bx)}\,dx = \int \frac{\log\left(\frac{a(1-c)+b(1+c)x}{a+bx}\right)}{(a-bx)(a+bx)}\,dx$$
$$= \frac{\text{Subst}\left(\int \frac{\log(x)}{1-x}\,dx, x, \frac{a(1-c)+b(1+c)x}{a+bx}\right)}{2ab}$$
$$= \frac{\text{Li}_2\left(\frac{c(a-bx)}{a+bx}\right)}{2ab}$$

Mathematica [B] Leaf count is larger than twice the leaf count of optimal. 259 vs. $2(27) = 54$.
time = 0.06, size = 259, normalized size = 9.59

$$\frac{4\tanh^{-1}\left(\frac{bx}{a}\right)\log\left(\frac{a}{b}+x\right)-\log^2\left(\frac{a}{b}+x\right)-4\tanh^{-1}\left(\frac{bx}{a}\right)\log\left(\frac{a-ac}{b+bc}+x\right)+2\log\left(\frac{a}{b}+x\right)\log\left(\frac{a-bx}{2a}\right)-2\log\left(\frac{a-ac}{b+bc}+x\right)\log\left(\frac{(1+c)(a-bx)}{2a}\right)+2\log\left(\frac{a-ac}{b+bc}+x\right)\log\left(\frac{(1+c)(a+bx)}{2ac}\right)+4\tanh^{-1}\left(\frac{bx}{a}\right)\log\left(\frac{a-ac+b(1+c)x}{a+bx}\right)+2\text{Li}_2\left(\frac{a+bx}{2a}\right)-2\text{Li}_2\left(\frac{a-ac+b(1+c)x}{2a}\right)+2\text{Li}_2\left(-\frac{a-ac+b(1+c)x}{2ac}\right)}{4ab}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[1 - (c*(a - b*x))/(a + b*x)]/((a - b*x)*(a + b*x)),x]
```

```
[Out] (4*ArcTanh[(b*x)/a]*Log[a/b + x] - Log[a/b + x]^2 - 4*ArcTanh[(b*x)/a]*Log[
(a - a*c)/(b + b*c) + x] + 2*Log[a/b + x]*Log[(a - b*x)/(2*a)] - 2*Log[(a -
 a*c)/(b + b*c) + x]*Log[((1 + c)*(a - b*x))/(2*a)] + 2*Log[(a - a*c)/(b +
b*c) + x]*Log[((1 + c)*(a + b*x))/(2*a*c)] + 4*ArcTanh[(b*x)/a]*Log[(a - a*
c + b*(1 + c)*x)/(a + b*x)] + 2*PolyLog[2, (a + b*x)/(2*a)] - 2*PolyLog[2,
(a - a*c + b*(1 + c)*x)/(2*a)] + 2*PolyLog[2, -1/2*(a - a*c + b*(1 + c)*x)/
(a*c)])/(4*a*b)
```

Maple [A]
time = 0.80, size = 24, normalized size = 0.89

method	result	size
derivativedivides	$\frac{\text{dilog}\left(1+c-\frac{2ca}{bx+a}\right)}{2ba}$	24
default	$\frac{\text{dilog}\left(1+c-\frac{2ca}{bx+a}\right)}{2ba}$	24
risch	$\frac{\text{dilog}\left(1+c-\frac{2ca}{bx+a}\right)}{2ba}$	24

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(1-c*(-b*x+a)/(b*x+a))/(-b*x+a)/(b*x+a),x,method=_RETURNVERBOSE)
```

```
[Out] 1/2/b/a*dilog(1+c-2*c*a/(b*x+a))
```

Maxima [**B**] Leaf count of result is larger than twice the leaf count of optimal. 243 vs. $2(26) = 52$.
time = 0.30, size = 243, normalized size = 9.00

$$\frac{1}{2}\left(\frac{\log(bx+a)}{ab}-\frac{\log(bx-a)}{ab}\right)\log\left(\frac{(bx-a)c}{bx+a}+1\right)+\frac{\log(bx+a)^2-2\log(bx+a)\log(bx-a)}{4ab}+\frac{\log(bx-a)\log\left(\frac{b(c+1)x-a(c+1)}{2a}+1\right)+\mathrm{Li}_2\left(-\frac{b(c+1)x-a(c+1)}{2a}\right)}{2ab}+\frac{\log(bx+a)\log\left(-\frac{bx+a}{2a}+1\right)+\mathrm{Li}_2\left(\frac{bx+a}{2a}\right)}{2ab}-\frac{\log(bx+a)\log\left(-\frac{b(c+1)x+a(c+1)}{2ac}+1\right)+\mathrm{Li}_2\left(\frac{b(c+1)x+a(c+1)}{2ac}\right)}{2ab}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(1-c*(-b*x+a)/(b*x+a))/(-b*x+a)/(b*x+a),x, algorithm="maxima")
```

```
[Out] 1/2*(log(b*x + a)/(a*b) - log(b*x - a)/(a*b))*log((b*x - a)*c/(b*x + a) + 1
) + 1/4*(log(b*x + a)^2 - 2*log(b*x + a)*log(b*x - a))/(a*b) + 1/2*(log(b*x
 - a)*log(1/2*(b*(c + 1)*x - a*(c + 1))/a + 1) + dilog(-1/2*(b*(c + 1)*x -
a*(c + 1))/a))/(a*b) + 1/2*(log(b*x + a)*log(-1/2*(b*x + a)/a + 1) + dilog(
1/2*(b*x + a)/a))/(a*b) - 1/2*(log(b*x + a)*log(-1/2*(b*(c + 1)*x + a*(c +
1))/(a*c) + 1) + dilog(1/2*(b*(c + 1)*x + a*(c + 1))/(a*c)))/(a*b)
```

Fricas [**A**]
time = 0.36, size = 34, normalized size = 1.26

$$\frac{\mathrm{Li}_2\left(\frac{ac-(bc+b)x-a}{bx+a}+1\right)}{2\,ab}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(1-c*(-b*x+a)/(b*x+a))/(-b*x+a)/(b*x+a),x, algorithm="fricas")
```

```
[Out] 1/2*dilog((a*c - (b*c + b)*x - a)/(b*x + a) + 1)/(a*b)
```

Sympy [**F(-1)**] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(1-c*(-b*x+a)/(b*x+a))/(-b*x+a)/(b*x+a),x)
```

```
[Out] Timed out
```

Giac [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(1-c*(-b*x+a)/(b*x+a))/(-b*x+a)/(b*x+a),x, algorithm="giac")
```

```
[Out] integrate(-log((b*x - a)*c/(b*x + a) + 1)/((b*x + a)*(b*x - a)), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{\ln\left(1-\frac{c\,(a-b\,x)}{a+b\,x}\right)}{(a+b\,x)\,(a-b\,x)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(log(1 - (c*(a - b*x))/(a + b*x))/((a + b*x)*(a - b*x)),x)
[Out] int(log(1 - (c*(a - b*x))/(a + b*x))/((a + b*x)*(a - b*x)), x)
```

3.343 $\int \frac{\log^3(c(a+bx)^n)}{dx+ex^2}\,dx$

Optimal. Leaf size=238

$$\frac{\log\left(-\frac{bx}{a}\right)\log^3\left(c(a+bx)^n\right)}{d}-\frac{\log^3\left(c(a+bx)^n\right)\log\left(\frac{b(d+ex)}{bd-ae}\right)}{d}-\frac{3n\log^2\left(c(a+bx)^n\right)\mathrm{Li}_2\left(-\frac{e(a+bx)}{bd-ae}\right)}{d}+\frac{3n\log^2\left(c(\right.}{}$$

```
[Out] ln(-b*x/a)*ln(c*(b*x+a)^n)^3/d-ln(c*(b*x+a)^n)^3*ln(b*(e*x+d)/(-a*e+b*d))/d
-3*n*ln(c*(b*x+a)^n)^2*polylog(2,-e*(b*x+a)/(-a*e+b*d))/d+3*n*ln(c*(b*x+a)^
n)^2*polylog(2,1+b*x/a)/d+6*n^2*ln(c*(b*x+a)^n)*polylog(3,-e*(b*x+a)/(-a*e+
b*d))/d-6*n^2*ln(c*(b*x+a)^n)*polylog(3,1+b*x/a)/d-6*n^3*polylog(4,-e*(b*x+
a)/(-a*e+b*d))/d+6*n^3*polylog(4,1+b*x/a)/d
```

Rubi [A]

time = 0.25, antiderivative size = 238, normalized size of antiderivative = 1.00, number of steps used = 13, number of rules used = 7, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.292$, Rules used = {1607, 2463, 2443, 2481, 2421, 2430, 6724}

$$\frac{6n^2\log\left(c(a+bx)^n\right)\text{PolyLog}\left(3,-\frac{e(a+bx)}{bd-ae}\right)}{d}-\frac{3n\log^2\left(c(a+bx)^n\right)\text{PolyLog}\left(2,-\frac{e(a+bx)}{bd-ae}\right)}{d}-\frac{6n^2\text{PolyLog}\left(3,\frac{bx}{a}+1\right)\log\left(c(a+bx)^n\right)}{d}+\frac{3n\text{PolyLog}\left(2,\frac{bx}{a}+1\right)\log^2\left(c(a+bx)^n\right)}{d}-\frac{6n^3\text{PolyLog}\left(4,-\frac{e(a+bx)}{bd-ae}\right)}{d}+\frac{6n^3\text{PolyLog}\left(4,\frac{bx}{a}+1\right)}{d}-\frac{\log^3\left(c(a+bx)^n\right)\log\left(\frac{b(d+ex)}{bd-ae}\right)}{d}+\frac{\log\left(-\frac{bx}{a}\right)\log^3\left(c(a+bx)^n\right)}{d}$$

Antiderivative was successfully verified.

```
[In] Int[Log[c*(a + b*x)^n]^3/(d*x + e*x^2),x]
```

```
[Out] (Log[-((b*x)/a)]*Log[c*(a + b*x)^n]^3)/d - (Log[c*(a + b*x)^n]^3*Log[(b*(d
+ e*x))/(b*d - a*e)])/d - (3*n*Log[c*(a + b*x)^n]^2*PolyLog[2, -((e*(a + b*
x))/(b*d - a*e))])/d + (3*n*Log[c*(a + b*x)^n]^2*PolyLog[2, 1 + (b*x)/a])/d
 + (6*n^2*Log[c*(a + b*x)^n]*PolyLog[3, -((e*(a + b*x))/(b*d - a*e))])/d -
(6*n^2*Log[c*(a + b*x)^n]*PolyLog[3, 1 + (b*x)/a])/d - (6*n^3*PolyLog[4, -(
(e*(a + b*x))/(b*d - a*e))])/d + (6*n^3*PolyLog[4, 1 + (b*x)/a])/d
```

Rule 1607

```
Int[(u_.)*((a_.)*(x_)^(p_.) + (b_.)*(x_)^(q_.))^(n_.), x_Symbol] :> Int[u*x
^(n*p)*(a + b*x^(q - p))^n, x] /; FreeQ[{a, b, p, q}, x] && IntegerQ[n] &&
PosQ[q - p]
```

Rule 2421

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> Simp[(-PolyLog[2, (-d)*f*x^m])*((a + b*Log[c
*x^n])^p/m), x] + Dist[b*n*(p/m), Int[PolyLog[2, (-d)*f*x^m]*((a + b*Log[c*
x^n])^(p - 1)/x), x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0
] && EqQ[d*e, 1]
```

Rule 2430

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*PolyLog[k_, (e_.)*(x_)^(q_
.)])/(x_), x_Symbol] :> Simp[PolyLog[k + 1, e*x^q]*((a + b*Log[c*x^n])^p/q)
, x] - Dist[b*n*(p/q), Int[PolyLog[k + 1, e*x^q]*((a + b*Log[c*x^n])^(p - 1
)/x), x], x] /; FreeQ[{a, b, c, e, k, n, q}, x] && GtQ[p, 0]
```

Rule 2443

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d
+ e*x)^n])^p/g), x] - Dist[b*e*n*(p/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]*
((a + b*Log[c*(d + e*x)^n])^(p - 1)/(d + e*x)), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2463

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rule 2481

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[(k*(x/d))^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + j*(x/e))^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 6724

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{\log^3(c(a+bx)^n)}{dx+ex^2}\,dx = \int \frac{\log^3(c(a+bx)^n)}{x(d+ex)}\,dx$$

$$= \int \left(\frac{\log^3(c(a+bx)^n)}{dx} - \frac{e\log^3(c(a+bx)^n)}{d(d+ex)}\right)dx$$

$$= \frac{\int \frac{\log^3(c(a+bx)^n)}{x}\,dx}{d} - \frac{e\int \frac{\log^3(c(a+bx)^n)}{d+ex}\,dx}{d}$$

$$= \frac{\log\left(-\frac{bx}{a}\right)\log^3(c(a+bx)^n)}{d} - \frac{\log^3(c(a+bx)^n)\log\left(\frac{b(d+ex)}{bd-ae}\right)}{d} - \frac{(3bn)\int \frac{\log\left(-\frac{bx}{a}\right)\log^2}{a+b}}{d}$$

$$= \frac{\log\left(-\frac{bx}{a}\right)\log^3(c(a+bx)^n)}{d} - \frac{\log^3(c(a+bx)^n)\log\left(\frac{b(d+ex)}{bd-ae}\right)}{d} - \frac{(3n)\text{Subst}\left(\int \frac{\log^2(c}{}\right.}{}$$

$$= \frac{\log\left(-\frac{bx}{a}\right)\log^3(c(a+bx)^n)}{d} - \frac{\log^3(c(a+bx)^n)\log\left(\frac{b(d+ex)}{bd-ae}\right)}{d} - \frac{3n\log^2(c(a+bx)^n}{d}$$

$$= \frac{\log\left(-\frac{bx}{a}\right)\log^3(c(a+bx)^n)}{d} - \frac{\log^3(c(a+bx)^n)\log\left(\frac{b(d+ex)}{bd-ae}\right)}{d} - \frac{3n\log^2(c(a+bx)^n}{d}$$

$$= \frac{\log\left(-\frac{bx}{a}\right)\log^3(c(a+bx)^n)}{d} - \frac{\log^3(c(a+bx)^n)\log\left(\frac{b(d+ex)}{bd-ae}\right)}{d} - \frac{3n\log^2(c(a+bx)^n}{d}$$

Mathematica [B] Leaf count is larger than twice the leaf count of optimal. 494 vs. 2(238) = 476.

time = 0.14, size = 494, normalized size = 2.08

[illegible]

Antiderivative was successfully verified.

```
[In] Integrate[Log[c*(a + b*x)^n]^3/(d*x + e*x^2),x]
```

```
[Out] (-(Log[x]*(n*Log[a + b*x] - Log[c*(a + b*x)^n])^3) + (n*Log[a + b*x] - Log[
c*(a + b*x)^n])^3*Log[d + e*x] + 3*n*(-(n*Log[a + b*x]) + Log[c*(a + b*x)^n
])^2*(Log[x]*(Log[a + b*x] - Log[1 + (b*x)/a]) - Log[a + b*x]*Log[(b*(d + e
*x))/(b*d - a*e)] - PolyLog[2, -((b*x)/a)] - PolyLog[2, (e*(a + b*x))/(-(b*
d) + a*e)]) - 3*n^2*(n*Log[a + b*x] - Log[c*(a + b*x)^n])*(Log[-((b*x)/a)]*
Log[a + b*x]^2 - Log[a + b*x]^2*Log[(b*(d + e*x))/(b*d - a*e)] - 2*Log[a +
b*x]*PolyLog[2, (e*(a + b*x))/(-(b*d) + a*e)] + 2*Log[a + b*x]*PolyLog[2, 1
 + (b*x)/a] + 2*PolyLog[3, (e*(a + b*x))/(-(b*d) + a*e)] - 2*PolyLog[3, 1 +
```

```
(b*x)/a]) + n^3*(Log[-((b*x)/a)]*Log[a + b*x]^3 - Log[a + b*x]^3*Log[(b*(d
 + e*x))/(b*d - a*e)] - 3*Log[a + b*x]^2*PolyLog[2, (e*(a + b*x))/(-(b*d) +
 a*e)] + 3*Log[a + b*x]^2*PolyLog[2, 1 + (b*x)/a] + 6*Log[a + b*x]*PolyLog[
3, (e*(a + b*x))/(-(b*d) + a*e)] - 6*Log[a + b*x]*PolyLog[3, 1 + (b*x)/a] -
 6*PolyLog[4, (e*(a + b*x))/(-(b*d) + a*e)] + 6*PolyLog[4, 1 + (b*x)/a]))/d
```

Maple [C] Result contains higher order function than in optimal. Order 9 vs. order 4.
time = 2.00, size = 12205, normalized size = 51.28

method	result	size
risch	Expression too large to display	12205

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(c*(b*x+a)^n)^3/(e*x^2+d*x),x,method=_RETURNVERBOSE)
[Out] result too large to display
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(b*x+a)^n)^3/(e*x^2+d*x),x, algorithm="maxima")
[Out] integrate(log((b*x + a)^n*c)^3/(x^2*e + d*x), x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(b*x+a)^n)^3/(e*x^2+d*x),x, algorithm="fricas")
[Out] integral(log((b*x + a)^n*c)^3/(x^2*e + d*x), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\log\left(c(a+bx)^n\right)^3}{x\,(d+ex)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(c*(b*x+a)**n)**3/(e*x**2+d*x),x)
```

```
[Out] Integral(log(c*(a + b*x)**n)**3/(x*(d + e*x)), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(b*x+a)^n)^3/(e*x^2+d*x),x, algorithm="giac")
[Out] integrate(log((b*x + a)^n*c)^3/(x^2*e + d*x), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\ln\left(c\,{\left(a+b\,x\right)}^n\right)^3}{e\,x^2+d\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(log(c*(a + b*x)^n)^3/(d*x + e*x^2),x)
[Out] int(log(c*(a + b*x)^n)^3/(d*x + e*x^2), x)
```

3.344 $\int \frac{\log^2(c(a+bx)^n)}{dx+ex^2} \, dx$

Optimal. Leaf size=168

$$\frac{\log\left(-\frac{bx}{a}\right)\log^2\left(c(a+bx)^n\right)}{d}-\frac{\log^2\left(c(a+bx)^n\right)\log\left(\frac{b(d+ex)}{bd-ae}\right)}{d}-\frac{2n\log\left(c(a+bx)^n\right)\mathrm{Li}_2\left(-\frac{e(a+bx)}{bd-ae}\right)}{d}+\frac{2n\log(c(\cdots}{}$$

```
[Out] ln(-b*x/a)*ln(c*(b*x+a)^n)^2/d-ln(c*(b*x+a)^n)^2*ln(b*(e*x+d)/(-a*e+b*d))/d
-2*n*ln(c*(b*x+a)^n)*polylog(2,-e*(b*x+a)/(-a*e+b*d))/d+2*n*ln(c*(b*x+a)^n)
*polylog(2,1+b*x/a)/d+2*n^2*polylog(3,-e*(b*x+a)/(-a*e+b*d))/d-2*n^2*polylo
g(3,1+b*x/a)/d
```

Rubi [A]
time = 0.17, antiderivative size = 168, normalized size of antiderivative = 1.00, number of steps used = 11, number of rules used = 6, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.250$, Rules used = {1607, 2463, 2443, 2481, 2421, 6724}

$$-\frac{2n\log\left(c(a+bx)^n\right)\mathrm{PolyLog}\left(2,-\frac{e(a+bx)}{bd-ae}\right)}{d}+\frac{2n\mathrm{PolyLog}\left(2,\frac{bx}{a}+1\right)\log\left(c(a+bx)^n\right)}{d}+\frac{2n^2\mathrm{PolyLog}\left(3,-\frac{e(a+bx)}{bd-ae}\right)}{d}-\frac{2n^2\mathrm{PolyLog}\left(3,\frac{bx}{a}+1\right)}{d}-\frac{\log^2\left(c(a+bx)^n\right)\log\left(\frac{b(d+ex)}{bd-ae}\right)}{d}+\frac{\log\left(-\frac{bx}{a}\right)\log^2\left(c(a+bx)^n\right)}{d}$$

Antiderivative was successfully verified.

```
[In] Int[Log[c*(a + b*x)^n]^2/(d*x + e*x^2),x]
```

```
[Out] (Log[-((b*x)/a)]*Log[c*(a + b*x)^n]^2)/d - (Log[c*(a + b*x)^n]^2*Log[(b*(d
+ e*x))/(b*d - a*e)])/d - (2*n*Log[c*(a + b*x)^n]*PolyLog[2, -((e*(a + b*x)
)/(b*d - a*e))])/d + (2*n*Log[c*(a + b*x)^n]*PolyLog[2, 1 + (b*x)/a])/d + (
2*n^2*PolyLog[3, -((e*(a + b*x))/(b*d - a*e))])/d - (2*n^2*PolyLog[3, 1 + (
b*x)/a])/d
```

Rule 1607

```
Int[(u_.)*((a_.)*(x_)^(p_.) + (b_.)*(x_)^(q_.))^(n_.), x_Symbol] :> Int[u*x
^(n*p)*(a + b*x^(q - p))^n, x] /; FreeQ[{a, b, p, q}, x] && IntegerQ[n] &&
PosQ[q - p]
```

Rule 2421

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> Simp[(-PolyLog[2, (-d)*f*x^m])*((a + b*Log[c
*x^n])^p/m), x] + Dist[b*n*(p/m), Int[PolyLog[2, (-d)*f*x^m]*((a + b*Log[c*
x^n])^(p - 1)/x), x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0
] && EqQ[d*e, 1]
```

Rule 2443

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d
```

```
+ e*x)^n])^p/g), x] - Dist[b*e*n*(p/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]*
((a + b*Log[c*(d + e*x)^n])^(p - 1)/(d + e*x)), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2463

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rule 2481

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[(k*(x/d))^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + j*(x/e))^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 6724

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$
\begin{aligned}
\int \frac{\log^2(c(a+bx)^n)}{dx+ex^2}\,dx &= \int \frac{\log^2(c(a+bx)^n)}{x(d+ex)}\,dx \\
&= \int \left(\frac{\log^2(c(a+bx)^n)}{dx} - \frac{e\log^2(c(a+bx)^n)}{d(d+ex)}\right)dx \\
&= \frac{\int \frac{\log^2(c(a+bx)^n)}{x}\,dx}{d} - \frac{e\int \frac{\log^2(c(a+bx)^n)}{d+ex}\,dx}{d} \\
&= \frac{\log\left(-\frac{bx}{a}\right)\log^2(c(a+bx)^n)}{d} - \frac{\log^2(c(a+bx)^n)\log\left(\frac{b(d+ex)}{bd-ae}\right)}{d} - \frac{(2bn)\int \frac{\log\left(-\frac{bx}{a}\right)\log}{a+}}{d} \\
&= \frac{\log\left(-\frac{bx}{a}\right)\log^2(c(a+bx)^n)}{d} - \frac{\log^2(c(a+bx)^n)\log\left(\frac{b(d+ex)}{bd-ae}\right)}{d} - \frac{(2n)\mathrm{Subst}\left(\int \frac{\log(}{}\right.}{} \\
&= \frac{\log\left(-\frac{bx}{a}\right)\log^2(c(a+bx)^n)}{d} - \frac{\log^2(c(a+bx)^n)\log\left(\frac{b(d+ex)}{bd-ae}\right)}{d} - \frac{2n\log(c(a+bx)^n}{d} \\
&= \frac{\log\left(-\frac{bx}{a}\right)\log^2(c(a+bx)^n)}{d} - \frac{\log^2(c(a+bx)^n)\log\left(\frac{b(d+ex)}{bd-ae}\right)}{d} - \frac{2n\log(c(a+bx)^n}{d}
\end{aligned}
$$

Mathematica [A]
time = 0.09, size = 292, normalized size = 1.74

$$
\frac{\log(x)\left(-n\log(a+bx)+\log\left(c(a+bx)^n\right)\right)^2-\left(-n\log(a+bx)+\log\left(c(a+bx)^n\right)\right)^2\log(d+ex)-2n\left(n\log(a+bx)-\log\left(c(a+bx)^n\right)\right)\left(\log(x)\left(\log(a+bx)-\log\left(1+\frac{bx}{a}\right)\right)-\log(a+bx)\log\left(\frac{b(d+ex)}{bd-ae}\right)-\mathrm{Li}_2\left(-\frac{bx}{a}\right)-\mathrm{Li}_2\left(\frac{e(a+bx)}{-bd+ae}\right)\right)+n^2\left(\log\left(-\frac{bx}{a}\right)\log^2(a+bx)-\log^2(a+bx)\log\left(\frac{b(d+ex)}{bd-ae}\right)-2\log(a+bx)\mathrm{Li}_2\left(\frac{e(a+bx)}{-bd+ae}\right)+2\log(a+bx)\mathrm{Li}_2\left(1+\frac{bx}{a}\right)+2\mathrm{Li}_3\left(\frac{e(a+bx)}{-bd+ae}\right)-2\mathrm{Li}_3\left(1+\frac{bx}{a}\right)\right)}{d}
$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[c*(a + b*x)^n]^2/(d*x + e*x^2),x]
```

```
[Out] (Log[x]*(-(n*Log[a + b*x]) + Log[c*(a + b*x)^n])^2 - (-(n*Log[a + b*x]) + L
og[c*(a + b*x)^n])^2*Log[d + e*x] - 2*n*(n*Log[a + b*x] - Log[c*(a + b*x)^n
])*(Log[x]*(Log[a + b*x] - Log[1 + (b*x)/a]) - Log[a + b*x]*Log[(b*(d + e*x
))/(b*d - a*e)] - PolyLog[2, -((b*x)/a)] - PolyLog[2, (e*(a + b*x))/(-(b*d)
 + a*e)]) + n^2*(Log[-((b*x)/a)]*Log[a + b*x]^2 - Log[a + b*x]^2*Log[(b*(d
+ e*x))/(b*d - a*e)] - 2*Log[a + b*x]*PolyLog[2, (e*(a + b*x))/(-(b*d) + a*
e)] + 2*Log[a + b*x]*PolyLog[2, 1 + (b*x)/a] + 2*PolyLog[3, (e*(a + b*x))/(
-(b*d) + a*e)] - 2*PolyLog[3, 1 + (b*x)/a]))/d
```

Maple [C] Result contains higher order function than in optimal. Order 9 vs. order 4.
time = 0.43, size = 2679, normalized size = 15.95

---

method	result	size
risch	Expression too large to display	2679

Verification of antiderivative is not currently implemented for this CAS.

[In] int(ln(c*(b*x+a)^n)^2/(e*x^2+d*x),x,method=_RETURNVERBOSE)

[Out] I*ln((b*x+a)^n)/d*ln(x)*Pi*csgn(I*c*(b*x+a)^n)^2*csgn(I*(b*x+a)^n)-I*n/d*dilog(((e*x+d)*b+a*e-b*d)/(a*e-b*d))*Pi*csgn(I*c*(b*x+a)^n)*csgn(I*c)*csgn(I*(b*x+a)^n)-2*n^2/d*polylog(3,1/a*(b*x+a))-2/d*ln(e*x+d)*ln((b*x+a)^n)*ln(c)+2*n*(ln((b*x+a)^n)-n*ln(b*x+a))/d*dilog(-b*x/a)-2*n*(ln((b*x+a)^n)-n*ln(b*x+a))/d*dilog(((b*x+a)*e-a*e+b*d)/(-a*e+b*d))-1/4/d*ln(x)*Pi^2*csgn(I*c*(b*x+a)^n)^6+1/4/d*ln(e*x+d)*Pi^2*csgn(I*c*(b*x+a)^n)^6+2*ln((b*x+a)^n)/d*ln(x)*ln(c)-2*n/d*dilog(1/a*(b*x+a))*ln(c)+2*n/d*dilog(((e*x+d)*b+a*e-b*d)/(a*e-b*d))*ln(c)-I*n/d*ln(x)*ln(1/a*(b*x+a))*Pi*csgn(I*c*(b*x+a)^n)^2*csgn(I*c)-I*ln((b*x+a)^n)/d*ln(x)*Pi*csgn(I*c*(b*x+a)^n)*csgn(I*c)*csgn(I*(b*x+a)^n)-I*n/d*ln(e*x+d)*ln(((e*x+d)*b+a*e-b*d)/(a*e-b*d))*Pi*csgn(I*c*(b*x+a)^n)*csgn(I*c)*csgn(I*(b*x+a)^n)+I*n/d*ln(x)*ln(1/a*(b*x+a))*Pi*csgn(I*c*(b*x+a)^n)*csgn(I*c)*csgn(I*(b*x+a)^n)+1/4/d*ln(e*x+d)*Pi^2*csgn(I*c*(b*x+a)^n)^4*csgn(I*(b*x+a)^n)^2-I*n/d*ln(x)*ln(1/a*(b*x+a))*Pi*csgn(I*c*(b*x+a)^n)^2*csgn(I*(b*x+a)^n)+I*n/d*dilog(1/a*(b*x+a))*Pi*csgn(I*c*(b*x+a)^n)*csgn(I*c)*csgn(I*(b*x+a)^n)+I/d*ln(e*x+d)*ln(c)*Pi*csgn(I*c*(b*x+a)^n)*csgn(I*c)*csgn(I*(b*x+a)^n)+I*n/d*ln(e*x+d)*ln(((e*x+d)*b+a*e-b*d)/(a*e-b*d))*Pi*csgn(I*c*(b*x+a)^n)^2*csgn(I*(b*x+a)^n)+I*n/d*ln(e*x+d)*ln(((e*x+d)*b+a*e-b*d)/(a*e-b*d))*Pi*csgn(I*c*(b*x+a)^n)^2*csgn(I*c)-I/d*ln(x)*ln(c)*Pi*csgn(I*c*(b*x+a)^n)*csgn(I*c)*csgn(I*(b*x+a)^n)+I/d*ln(e*x+d)*ln((b*x+a)^n)*Pi*csgn(I*c*(b*x+a)^n)*csgn(I*c)*csgn(I*(b*x+a)^n)+2*n/d*ln(e*x+d)*ln(((e*x+d)*b+a*e-b*d)/(a*e-b*d))*ln(c)-2*n/d*ln(x)*ln(1/a*(b*x+a))*ln(c)-I*ln((b*x+a)^n)/d*ln(x)*Pi*csgn(I*c*(b*x+a)^n)^3-1/d*ln(e*x+d)*ln(c)^2+I/d*ln(x)*ln(c)*Pi*csgn(I*c*(b*x+a)^n)^2*csgn(I*(b*x+a)^n)-I/d*ln(e*x+d)*ln(c)*Pi*csgn(I*c*(b*x+a)^n)^2*csgn(I*c)+1/d*ln(x)*ln(c)^2+n^2/d*ln(b*x+a)^2*ln(1-1/a*(b*x+a))+2*n^2/d*ln(b*x+a)*polylog(2,1/a*(b*x+a))-n^2/d*ln(b*x+a)^2*ln(1+e*(b*x+a)/(-a*e+b*d))-2*n^2/d*ln(b*x+a)*polylog(2,-e*(b*x+a)/(-a*e+b*d))+(ln((b*x+a)^n)-n*ln(b*x+a))^2/d*ln(b*x)+I*n/d*ln(x)*ln(1/a*(b*x+a))*Pi*csgn(I*c*(b*x+a)^n)^3+1/2/d*ln(x)*Pi^2*csgn(I*c*(b*x+a)^n)^3*csgn(I*c)^2*csgn(I*(b*x+a)^n)+2*n*(ln((b*x+a)^n)-n*ln(b*x+a))/d*ln(b*x+a)*ln(-b*x/a)-2*n*(ln((b*x+a)^n)-n*ln(b*x+a))/d*ln(b*x+a)*ln(((b*x+a)*e-a*e+b*d)/(-a*e+b*d))-I*n/d*dilog(1/a*(b*x+a))*Pi*csgn(I*c*(b*x+a)^n)^2*csgn(I*(b*x+a)^n)-1/2/d*ln(e*x+d)*Pi^2*csgn(I*c*(b*x+a)^n)^3*csgn(I*c)^2*csgn(I*(b*x+a)^n)+1/4/d*ln(e*x+d)*Pi^2*csgn(I*c*(b*x+a)^n)^2*csgn(I*c)^2*csgn(I*(b*x+a)^n)^2-1/2/d*ln(e*x+d)*Pi^2*csgn(I*c*(b*x+a)^n)^3*csgn(I*c)*csgn(I*(b*x+a)^n)^2-1/4/d*ln(x)*Pi^2*csgn(I*c*(b*x+a)^n)^4*csgn(I*c)^2-1/4/d*ln(x)*Pi^2*csgn(I*c*(b*x+a)^n)^4*csgn(I*(b*x+a)^n)^2+1/2/d*ln(x)*Pi^2*csgn(I*c*(b*x+a)^n)^5*csgn(I*c)-(ln((b*x+a)^n)-n*ln(b*x+a))^2/d*ln((b*x+a)*e-a*e+b*d)-I*n/d*dilog(((e*x+d)*b+a*e-b*d)/(a*e-b*d))*Pi*csgn

```
(I*c*(b*x+a)^n)^3-I*n/d*ln(e*x+d)*ln(((e*x+d)*b+a*e-b*d)/(a*e-b*d))*Pi*csgn
(I*c*(b*x+a)^n)^3-I*n/d*dilog(1/a*(b*x+a))*Pi*csgn(I*c*(b*x+a)^n)^2*csgn(I*
c)-I/d*ln(e*x+d)*ln((b*x+a)^n)*Pi*csgn(I*c*(b*x+a)^n)^2*csgn(I*c)-I/d*ln(e*
x+d)*ln((b*x+a)^n)*Pi*csgn(I*c*(b*x+a)^n)^2*csgn(I*(b*x+a)^n)+I*n/d*dilog((
(e*x+d)*b+a*e-b*d)/(a*e-b*d))*Pi*csgn(I*c*(b*x+a)^n)^2*csgn(I*c)-I/d*ln(e*x
+d)*ln(c)*Pi*csgn(I*c*(b*x+a)^n)^2*csgn(I*(b*x+a)^n)+1/d*ln(e*x+d)*Pi^2*csg
n(I*c*(b*x+a)^n)^4*csgn(I*c)*csgn(I*(b*x+a)^n)+I*ln((b*x+a)^n)/d*ln(x)*Pi*c
sgn(I*c*(b*x+a)^n)^2*csgn(I*c)+1/4/d*ln(e*x+d)*Pi^2*csgn(I*c*(b*x+a)^n)^4*c
sgn(I*c)^2+I/d*ln(e*x+d)*ln((b*x+a)^n)*Pi*csgn(I*c*(b*x+a)^n)^3+I/d*ln(x)*l
n(c)*Pi*csgn(I*c*(b*x+a)^n)^2*csgn(I*c)+1/2/d*ln(x)*Pi^2*csgn(I*c*(b*x+a)^n
)^5*csgn(I*(b*x+a)^n)-1/2/d*ln(e*x+d)*Pi^2*csgn(I*c*(b*x+a)^n)^5*csgn(I*c)-
1/2/d*ln(e*x+d)*Pi^2*csgn(I*c*(b*x+a)^n)^5*csgn(I*(b*x+a)^n)+I*n/d*dilog(((
e*x+d)*b+a*e-b*d)/(a*e-b*d))*Pi*csgn(I*c*(b*x+a)^n)^2*csgn(I*(b*x+a)^n)+I*n
/d*dilog(1/a*(b*x+a))*Pi*csgn(I*c*(b*x+a)^n)^3-1/d*ln(x)*Pi^2*csgn(I*c*(b*x
+a)^n)^4*csgn(I*c)*csgn(I*(b*x+a)^n)-1/4/d*ln(x)*Pi^2*csgn(I*c*(b*x+a)^n)^2
*csgn(I*c)^2*csgn(I*(b*x+a)^n)^2-I/d*ln(x)*ln(c)*Pi*csgn(I*c*(b*x+a)^n)^3+I
/d*ln(e*x+d)*ln(c)*Pi*csgn(I*c*(b*x+a)^n)^3+1/2/d*ln(x)*Pi^2*csgn(I*c*(b*x+
a)^n)^3*csgn(I*c)*csgn(I*(b*x+a)^n)^2+2*n^2*polylog(3,-e*(b*x+a)/(-a*e+b*d)
)/d
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(b*x+a)^n)^2/(e*x^2+d*x),x, algorithm="maxima")
[Out] integrate(log((b*x + a)^n*c)^2/(x^2*e + d*x), x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(b*x+a)^n)^2/(e*x^2+d*x),x, algorithm="fricas")
[Out] integral(log((b*x + a)^n*c)^2/(x^2*e + d*x), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\log\left(c(a+bx)^n\right)^2}{x\left(d+ex\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(c*(b*x+a)**n)**2/(e*x**2+d*x),x)
[Out] Integral(log(c*(a + b*x)**n)**2/(x*(d + e*x)), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(b*x+a)^n)^2/(e*x^2+d*x),x, algorithm="giac")
[Out] integrate(log((b*x + a)^n*c)^2/(x^2*e + d*x), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\ln\left(c\,{\left(a+b\,x\right)}^n\right)^2}{e\,x^2+d\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(log(c*(a + b*x)^n)^2/(d*x + e*x^2),x)
[Out] int(log(c*(a + b*x)^n)^2/(d*x + e*x^2), x)
```

3.345 $\int \frac{\log(c(a+bx)^n)}{dx+ex^2}\,dx$

Optimal. Leaf size=97

$$\frac{\log\left(-\frac{bx}{a}\right)\log\left(c(a+bx)^n\right)}{d}-\frac{\log\left(c(a+bx)^n\right)\log\left(\frac{b(d+ex)}{bd-ae}\right)}{d}-\frac{n\text{Li}_2\left(-\frac{e(a+bx)}{bd-ae}\right)}{d}+\frac{n\text{Li}_2\left(1+\frac{bx}{a}\right)}{d}$$

```
[Out] ln(-b*x/a)*ln(c*(b*x+a)^n)/d-ln(c*(b*x+a)^n)*ln(b*(e*x+d)/(-a*e+b*d))/d-n*p
olylog(2,-e*(b*x+a)/(-a*e+b*d))/d+n*polylog(2,1+b*x/a)/d
```

Rubi [A]
time = 0.09, antiderivative size = 97, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 9, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.409$, Rules used = {1607, 36, 29, 31, 2463, 2441, 2352, 2440, 2438}

$$-\frac{n\text{PolyLog}\left(2,-\frac{e(a+bx)}{bd-ae}\right)}{d}+\frac{n\text{PolyLog}\left(2,\frac{bx}{a}+1\right)}{d}-\frac{\log\left(c(a+bx)^n\right)\log\left(\frac{b(d+ex)}{bd-ae}\right)}{d}+\frac{\log\left(-\frac{bx}{a}\right)\log\left(c(a+bx)^n\right)}{d}$$

Antiderivative was successfully verified.

```
[In] Int[Log[c*(a + b*x)^n]/(d*x + e*x^2),x]
```

```
[Out] (Log[-((b*x)/a)]*Log[c*(a + b*x)^n])/d - (Log[c*(a + b*x)^n]*Log[(b*(d + e*
x))/(b*d - a*e)])/d - (n*PolyLog[2, -((e*(a + b*x))/(b*d - a*e))])/d + (n*P
olyLog[2, 1 + (b*x)/a])/d
```

Rule 29

```
Int[(x_)^(-1), x_Symbol] :> Simp[Log[x], x]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 36

```
Int[1/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))), x_Symbol] :> Dist[b/(b*c
 - a*d), Int[1/(a + b*x), x], x] - Dist[d/(b*c - a*d), Int[1/(c + d*x), x],
 x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0]
```

Rule 1607

```
Int[(u_.)*((a_.)*(x_)^(p_.) + (b_.)*(x_)^(q_.))^(n_.), x_Symbol] :> Int[u*x
^(n*p)*(a + b*x^(q - p))^n, x] /; FreeQ[{a, b, p, q}, x] && IntegerQ[n] &&
PosQ[q - p]
```

Rule 2352

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> Simp[(-e^(-1))*PolyLo
g[2, 1 - c*x], x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + c*e*(x/g)])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2441

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d + e*x
)^n])/g), x] - Dist[b*e*(n/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2463

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rubi steps

$$\int \frac{\log(c(a+bx)^n)}{dx+ex^2}\,dx = \int \frac{\log(c(a+bx)^n)}{x(d+ex)}\,dx$$
$$= \int \left(\frac{\log(c(a+bx)^n)}{dx} - \frac{e\log(c(a+bx)^n)}{d(d+ex)}\right)dx$$
$$= \frac{\int \frac{\log(c(a+bx)^n)}{x}\,dx}{d} - \frac{e\int \frac{\log(c(a+bx)^n)}{d+ex}\,dx}{d}$$
$$= \frac{\log\left(-\frac{bx}{a}\right)\log(c(a+bx)^n)}{d} - \frac{\log(c(a+bx)^n)\log\left(\frac{b(d+ex)}{bd-ae}\right)}{d} - \frac{(bn)\int \frac{\log\left(-\frac{bx}{a}\right)}{a+bx}\,dx}{d} +$$
$$= \frac{\log\left(-\frac{bx}{a}\right)\log(c(a+bx)^n)}{d} - \frac{\log(c(a+bx)^n)\log\left(\frac{b(d+ex)}{bd-ae}\right)}{d} + \frac{n\text{Li}_2\left(1+\frac{bx}{a}\right)}{d} + \frac{n\text{Su}}{}$$
$$= \frac{\log\left(-\frac{bx}{a}\right)\log(c(a+bx)^n)}{d} - \frac{\log(c(a+bx)^n)\log\left(\frac{b(d+ex)}{bd-ae}\right)}{d} - \frac{n\text{Li}_2\left(-\frac{e(a+bx)}{bd-ae}\right)}{d} + \frac{n}{}$$

Mathematica [A]
time = 0.02, size = 98, normalized size = 1.01

$$\frac{\log\left(-\frac{bx}{a}\right)\log(c(a+bx)^n)}{d} - \frac{\log(c(a+bx)^n)\log\left(\frac{b(d+ex)}{bd-ae}\right)}{d} + \frac{n\text{Li}_2\left(\frac{a+bx}{a}\right)}{d} - \frac{n\text{Li}_2\left(-\frac{e(a+bx)}{bd-ae}\right)}{d}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[c*(a + b*x)^n]/(d*x + e*x^2),x]
```

```
[Out] (Log[-((b*x)/a)]*Log[c*(a + b*x)^n])/d - (Log[c*(a + b*x)^n]*Log[(b*(d + e*
x))/(b*d - a*e)])/d + (n*PolyLog[2, (a + b*x)/a])/d - (n*PolyLog[2, -((e*(a
 + b*x))/(b*d - a*e))])/d
```

Maple [C] Result contains higher order function than in optimal. Order 9 vs. order 4.
time = 0.38, size = 420, normalized size = 4.33

method	result
risch	$-\frac{\ln(ex+d)\ln((bx+a)^n)}{d} + \frac{\ln((bx+a)^n)\ln(x)}{d} - \frac{n\,\text{dilog}\left(\frac{bx+a}{a}\right)}{d} - \frac{n\ln(x)\ln\left(\frac{bx+a}{a}\right)}{d} + \frac{n\,\text{dilog}\left(\frac{(ex+d)b+ae-bd}{ae-bd}\right)}{d} + \frac{n\ln(ex+}{}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(c*(b*x+a)^n)/(e*x^2+d*x),x,method=_RETURNVERBOSE)
```

```
[Out] -1/d*ln(e*x+d)*ln((b*x+a)^n)+ln((b*x+a)^n)/d*ln(x)-n/d*dilog(1/a*(b*x+a))-n
/d*ln(x)*ln(1/a*(b*x+a))+n/d*dilog(((e*x+d)*b+a*e-b*d)/(a*e-b*d))+n/d*ln(e*
```

```
x+d)*ln(((e*x+d)*b+a*e-b*d)/(a*e-b*d))-1/2*I*Pi*csgn(I*c*(b*x+a)^n)^2*csgn(
I*c)/d*ln(e*x+d)-1/2*I*Pi*csgn(I*c*(b*x+a)^n)*csgn(I*c)*csgn(I*(b*x+a)^n)/d
*ln(x)-1/2*I*Pi*csgn(I*c*(b*x+a)^n)^3/d*ln(x)+1/2*I*Pi*csgn(I*c*(b*x+a)^n)*
csgn(I*c)*csgn(I*(b*x+a)^n)/d*ln(e*x+d)+1/2*I*Pi*csgn(I*c*(b*x+a)^n)^3/d*ln
(e*x+d)-1/2*I*Pi*csgn(I*c*(b*x+a)^n)^2*csgn(I*(b*x+a)^n)/d*ln(e*x+d)+1/2*I*
Pi*csgn(I*c*(b*x+a)^n)^2*csgn(I*(b*x+a)^n)/d*ln(x)+1/2*I*Pi*csgn(I*c*(b*x+a
)^n)^2*csgn(I*c)/d*ln(x)-ln(c)/d*ln(e*x+d)+ln(c)/d*ln(x)
```

Maxima [A]
time = 0.32, size = 129, normalized size = 1.33

$$-bn\left(\frac{\log\left(\frac{bx}{a}+1\right)\log\left(x\right)+\mathrm{Li}_2\left(-\frac{bx}{a}\right)}{bd}-\frac{\log\left(xe+d\right)\log\left(-\frac{bxe+bd}{bd-ae}+1\right)+\mathrm{Li}_2\left(\frac{bxe+bd}{bd-ae}\right)}{bd}\right)-\left(\frac{\log\left(xe+d\right)}{d}-\frac{\log\left(x\right)}{d}\right)\log\left(\left(bx+a\right)^n c\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(b*x+a)^n)/(e*x^2+d*x),x, algorithm="maxima")
```

```
[Out] -b*n*((log(b*x/a + 1)*log(x) + dilog(-b*x/a))/(b*d) - (log(x*e + d)*log(-(b
*x*e + b*d)/(b*d - a*e) + 1) + dilog((b*x*e + b*d)/(b*d - a*e)))/(b*d)) - (
log(x*e + d)/d - log(x)/d)*log((b*x + a)^n*c)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(b*x+a)^n)/(e*x^2+d*x),x, algorithm="fricas")
```

```
[Out] integral(log((b*x + a)^n*c)/(x^2*e + d*x), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{\log\left(c(a+bx)^n\right)}{x\left(d+ex\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(c*(b*x+a)**n)/(e*x**2+d*x),x)
```

```
[Out] Integral(log(c*(a + b*x)**n)/(x*(d + e*x)), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(b*x+a)^n)/(e*x^2+d*x),x, algorithm="giac")
```

```
[Out] integrate(log((b*x + a)^n*c)/(x^2*e + d*x), x)
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\ln\left(c\,{\left(a+b\,x\right)}^n\right)}{e\,x^2+d\,x} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(log(c*(a + b*x)^n)/(d*x + e*x^2),x)
```

```
[Out] int(log(c*(a + b*x)^n)/(d*x + e*x^2), x)
```

3.346 $\int \frac{1}{(dx+ex^2)\log(c(a+bx)^n)}\,dx$

Optimal. Leaf size=53

$$\frac{\text{Int}\left(\frac{1}{x\log(c(a+bx)^n)},x\right)}{d}-\frac{e\text{Int}\left(\frac{1}{(d+ex)\log(c(a+bx)^n)},x\right)}{d}$$

```
[Out] Unintegrable(1/x/ln(c*(b*x+a)^n),x)/d-e*Unintegrable(1/(e*x+d)/ln(c*(b*x+a)
^n),x)/d
```

Rubi [A]
time = 0.07, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int \frac{1}{(dx+ex^2)\log(c(a+bx)^n)}\,dx$$

Verification is not applicable to the result.

```
[In] Int[1/((d*x + e*x^2)*Log[c*(a + b*x)^n]),x]
```

```
[Out] Defer[Int][1/(x*Log[c*(a + b*x)^n]), x]/d - (e*Defer[Int][1/((d + e*x)*Log[
c*(a + b*x)^n]), x])/d
```

Rubi steps

$$\begin{aligned}\int \frac{1}{(dx+ex^2)\log(c(a+bx)^n)}\,dx &= \int \frac{1}{x(d+ex)\log(c(a+bx)^n)}\,dx\\ &= \int \left(\frac{1}{dx\log(c(a+bx)^n)}-\frac{e}{d(d+ex)\log(c(a+bx)^n)}\right)dx\\ &= \frac{\int \frac{1}{x\log(c(a+bx)^n)}\,dx}{d}-\frac{e\int \frac{1}{(d+ex)\log(c(a+bx)^n)}\,dx}{d}\end{aligned}$$

Mathematica [A]
time = 0.33, size = 0, normalized size = 0.00

$$\int \frac{1}{(dx+ex^2)\log(c(a+bx)^n)}\,dx$$

Verification is not applicable to the result.

```
[In] Integrate[1/((d*x + e*x^2)*Log[c*(a + b*x)^n]),x]
```

```
[Out] Integrate[1/((d*x + e*x^2)*Log[c*(a + b*x)^n]), x]
```

Maple [A]
time = 0.19, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(e\,x^{2}+dx\right)\ln\left(c\left(bx+a\right)^{n}\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(e*x^2+d*x)/ln(c*(b*x+a)^n),x)
[Out] int(1/(e*x^2+d*x)/ln(c*(b*x+a)^n),x)
```

Maxima [A]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(e*x^2+d*x)/log(c*(b*x+a)^n),x, algorithm="maxima")
[Out] integrate(1/((x^2*e + d*x)*log((b*x + a)^n*c)), x)
```

Fricas [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(e*x^2+d*x)/log(c*(b*x+a)^n),x, algorithm="fricas")
[Out] integral(1/((x^2*e + d*x)*log((b*x + a)^n*c)), x)
```

Sympy [A]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{x\left(d+ex\right)\log\left(c\left(a+bx\right)^{n}\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(e*x**2+d*x)/ln(c*(b*x+a)**n),x)
[Out] Integral(1/(x*(d + e*x)*log(c*(a + b*x)**n)), x)
```

Giac [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(e*x^2+d*x)/log(c*(b*x+a)^n),x, algorithm="giac")
```

```
[Out] integrate(1/((x^2*e + d*x)*log((b*x + a)^n*c)), x)
```

Mupad [A]
time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{1}{\ln\left(c\,{\left(a+b\,x\right)}^n\right)\,\left(e\,x^2+d\,x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(log(c*(a + b*x)^n)*(d*x + e*x^2)),x)
```

```
[Out] int(1/(log(c*(a + b*x)^n)*(d*x + e*x^2)), x)
```

3.347 $\int \frac{\log^3(c(a+bx)^n)}{d+ex+fx^2}\,dx$

Optimal. Leaf size=500

$$\frac{\log^3\left(c(a+bx)^n\right)\log\left(-\frac{b\left(e-\sqrt{e^2-4df}+2fx\right)}{2af-b\left(e-\sqrt{e^2-4df}\right)}\right)}{\sqrt{e^2-4df}}-\frac{\log^3\left(c(a+bx)^n\right)\log\left(-\frac{b\left(e+\sqrt{e^2-4df}+2fx\right)}{2af-b\left(e+\sqrt{e^2-4df}\right)}\right)}{\sqrt{e^2-4df}}+\frac{3n\log\cdots}{}$$

```
[Out] ln(c*(b*x+a)^n)^3*ln(-b*(e+2*f*x-(-4*d*f+e^2)^(1/2))/(2*a*f-b*(e-(-4*d*f+e^
2)^(1/2))))/(-4*d*f+e^2)^(1/2)-ln(c*(b*x+a)^n)^3*ln(-b*(e+2*f*x+(-4*d*f+e^2
)^(1/2))/(2*a*f-b*(e+(-4*d*f+e^2)^(1/2))))/(-4*d*f+e^2)^(1/2)+3*n*ln(c*(b*x
+a)^n)^2*polylog(2,2*f*(b*x+a)/(2*a*f-b*(e-(-4*d*f+e^2)^(1/2))))/(-4*d*f+e^
2)^(1/2)-3*n*ln(c*(b*x+a)^n)^2*polylog(2,2*f*(b*x+a)/(2*a*f-b*(e+(-4*d*f+e^
2)^(1/2))))/(-4*d*f+e^2)^(1/2)-6*n^2*ln(c*(b*x+a)^n)*polylog(3,2*f*(b*x+a)/
(2*a*f-b*(e-(-4*d*f+e^2)^(1/2))))/(-4*d*f+e^2)^(1/2)+6*n^2*ln(c*(b*x+a)^n)*
polylog(3,2*f*(b*x+a)/(2*a*f-b*(e+(-4*d*f+e^2)^(1/2))))/(-4*d*f+e^2)^(1/2)+
6*n^3*polylog(4,2*f*(b*x+a)/(2*a*f-b*(e-(-4*d*f+e^2)^(1/2))))/(-4*d*f+e^2)^
(1/2)-6*n^3*polylog(4,2*f*(b*x+a)/(2*a*f-b*(e+(-4*d*f+e^2)^(1/2))))/(-4*d*f
+e^2)^(1/2)
```

Rubi [A]

time = 0.48, antiderivative size = 500, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 6, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.240$, Rules used = {2465, 2443, 2481, 2421, 2430, 6724}

$$-\frac{6n^2\log\left(c(a+bx)^n\right)\text{PolyLog}\left(3,\frac{2f(a+bx)}{2af-b\left(e-\sqrt{e^2-4df}\right)}\right)}{\sqrt{e^2-4df}}+\frac{6n^2\log\left(c(a+bx)^n\right)\text{PolyLog}\left(3,\frac{2f(a+bx)}{2af-b\left(\sqrt{e^2-4df}+e\right)}\right)}{\sqrt{e^2-4df}}+\frac{3n\log^2\left(c(a+bx)^n\right)\text{PolyLog}\left(2,\frac{2f(a+bx)}{2af-b\left(e-\sqrt{e^2-4df}\right)}\right)}{\sqrt{e^2-4df}}-\frac{3n\log^2\left(c(a+bx)^n\right)\text{PolyLog}\left(2,\frac{2f(a+bx)}{2af-b\left(\sqrt{e^2-4df}+e\right)}\right)}{\sqrt{e^2-4df}}+\frac{6n^3\text{PolyLog}\left(4,\frac{2f(a+bx)}{2af-b\left(e-\sqrt{e^2-4df}\right)}\right)}{\sqrt{e^2-4df}}-\frac{6n^3\text{PolyLog}\left(4,\frac{2f(a+bx)}{2af-b\left(\sqrt{e^2-4df}+e\right)}\right)}{\sqrt{e^2-4df}}+\frac{\log^3\left(c(a+bx)^n\right)\log\left(-\frac{b\left(-\sqrt{e^2-4df}+e+2fx\right)}{2af-b\left(e-\sqrt{e^2-4df}\right)}\right)}{\sqrt{e^2-4df}}-\frac{\log^3\left(c(a+bx)^n\right)\log\left(-\frac{b\left(\sqrt{e^2-4df}+e+2fx\right)}{2af-b\left(\sqrt{e^2-4df}+e\right)}\right)}{\sqrt{e^2-4df}}$$

Antiderivative was successfully verified.

```
[In] Int[Log[c*(a + b*x)^n]^3/(d + e*x + f*x^2),x]
```

```
[Out] (Log[c*(a + b*x)^n]^3*Log[-((b*(e - Sqrt[e^2 - 4*d*f] + 2*f*x))/(2*a*f - b*
(e - Sqrt[e^2 - 4*d*f])))])/Sqrt[e^2 - 4*d*f] - (Log[c*(a + b*x)^n]^3*Log[-
((b*(e + Sqrt[e^2 - 4*d*f] + 2*f*x))/(2*a*f - b*(e + Sqrt[e^2 - 4*d*f])))])
/Sqrt[e^2 - 4*d*f] + (3*n*Log[c*(a + b*x)^n]^2*PolyLog[2, (2*f*(a + b*x))/(
2*a*f - b*(e - Sqrt[e^2 - 4*d*f]))])/Sqrt[e^2 - 4*d*f] - (3*n*Log[c*(a + b*
x)^n]^2*PolyLog[2, (2*f*(a + b*x))/(2*a*f - b*(e + Sqrt[e^2 - 4*d*f]))])/Sq
rt[e^2 - 4*d*f] - (6*n^2*Log[c*(a + b*x)^n]*PolyLog[3, (2*f*(a + b*x))/(2*a
*f - b*(e - Sqrt[e^2 - 4*d*f]))])/Sqrt[e^2 - 4*d*f] + (6*n^2*Log[c*(a + b*x
)^n]*PolyLog[3, (2*f*(a + b*x))/(2*a*f - b*(e + Sqrt[e^2 - 4*d*f]))])/Sqrt[
e^2 - 4*d*f] + (6*n^3*PolyLog[4, (2*f*(a + b*x))/(2*a*f - b*(e - Sqrt[e^2 -
 4*d*f]))])/Sqrt[e^2 - 4*d*f] - (6*n^3*PolyLog[4, (2*f*(a + b*x))/(2*a*f -
b*(e + Sqrt[e^2 - 4*d*f]))])/Sqrt[e^2 - 4*d*f]
```

Rule 2421

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> Simp[(-PolyLog[2, (-d)*f*x^m])*((a + b*Log[c
*x^n])^p/m), x] + Dist[b*n*(p/m), Int[PolyLog[2, (-d)*f*x^m]*((a + b*Log[c*
x^n])^(p - 1)/x), x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0
] && EqQ[d*e, 1]
```

Rule 2430

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*PolyLog[k_, (e_.)*(x_)^(q_
.)])/(x_), x_Symbol] :> Simp[PolyLog[k + 1, e*x^q]*((a + b*Log[c*x^n])^p/q)
, x] - Dist[b*n*(p/q), Int[PolyLog[k + 1, e*x^q]*((a + b*Log[c*x^n])^(p - 1
)/x), x], x] /; FreeQ[{a, b, c, e, k, n, q}, x] && GtQ[p, 0]
```

Rule 2443

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d
+ e*x)^n])^p/g), x] - Dist[b*e*n*(p/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]*
((a + b*Log[c*(d + e*x)^n])^(p - 1)/(d + e*x)), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2465

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2481

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[(k*(x/d))^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + j*(x/e))^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 6724

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{\log^3(c(a+bx)^n)}{d+ex+fx^2}\,dx = \int \left(\frac{2f\log^3(c(a+bx)^n)}{\sqrt{e^2-4df}\left(e-\sqrt{e^2-4df}+2fx\right)} - \frac{2f\log^3(c(a+bx)^n)}{\sqrt{e^2-4df}\left(e+\sqrt{e^2-4df}+2f\right.}\right.$$

$$= \frac{(2f)\int \frac{\log^3(c(a+bx)^n)}{e-\sqrt{e^2-4df}+2fx}\,dx}{\sqrt{e^2-4df}} - \frac{(2f)\int \frac{\log^3(c(a+bx)^n)}{e+\sqrt{e^2-4df}+2fx}\,dx}{\sqrt{e^2-4df}}$$

$$= \frac{\log^3(c(a+bx)^n)\log\left(-\frac{b\left(e-\sqrt{e^2-4df}+2fx\right)}{2af-b\left(e-\sqrt{e^2-4df}\right)}\right)}{\sqrt{e^2-4df}} - \frac{\log^3(c(a+bx)^n)\log\left(-\frac{b(e+}{2af-b}\right.}{\sqrt{e^2-4df}}$$

$$= \frac{\log^3(c(a+bx)^n)\log\left(-\frac{b\left(e-\sqrt{e^2-4df}+2fx\right)}{2af-b\left(e-\sqrt{e^2-4df}\right)}\right)}{\sqrt{e^2-4df}} - \frac{\log^3(c(a+bx)^n)\log\left(-\frac{b(e+}{2af-b}\right.}{\sqrt{e^2-4df}}$$

$$= \frac{\log^3(c(a+bx)^n)\log\left(-\frac{b\left(e-\sqrt{e^2-4df}+2fx\right)}{2af-b\left(e-\sqrt{e^2-4df}\right)}\right)}{\sqrt{e^2-4df}} - \frac{\log^3(c(a+bx)^n)\log\left(-\frac{b(e+}{2af-b}\right.}{\sqrt{e^2-4df}}$$

$$= \frac{\log^3(c(a+bx)^n)\log\left(-\frac{b\left(e-\sqrt{e^2-4df}+2fx\right)}{2af-b\left(e-\sqrt{e^2-4df}\right)}\right)}{\sqrt{e^2-4df}} - \frac{\log^3(c(a+bx)^n)\log\left(-\frac{b(e+}{2af-b}\right.}{\sqrt{e^2-4df}}$$

$$= \frac{\log^3(c(a+bx)^n)\log\left(-\frac{b\left(e-\sqrt{e^2-4df}+2fx\right)}{2af-b\left(e-\sqrt{e^2-4df}\right)}\right)}{\sqrt{e^2-4df}} - \frac{\log^3(c(a+bx)^n)\log\left(-\frac{b(e+}{2af-b}\right.}{\sqrt{e^2-4df}}$$

Mathematica [A]
time = 0.33, size = 993, normalized size = 1.99

Antiderivative was successfully verified.

```
[In] Integrate[Log[c*(a + b*x)^n]^3/(d + e*x + f*x^2),x]
```

```
[Out] (-2*Sqrt[e^2 - 4*d*f]*n^3*ArcTan[(e + 2*f*x)/Sqrt[-e^2 + 4*d*f]]*Log[a + b*
x]^3 + 6*Sqrt[e^2 - 4*d*f]*n^2*ArcTan[(e + 2*f*x)/Sqrt[-e^2 + 4*d*f]]*Log[a
 + b*x]^2*Log[c*(a + b*x)^n] - 6*Sqrt[e^2 - 4*d*f]*n*ArcTan[(e + 2*f*x)/Sqr
t[-e^2 + 4*d*f]]*Log[a + b*x]*Log[c*(a + b*x)^n]^2 + 2*Sqrt[e^2 - 4*d*f]*Ar
cTan[(e + 2*f*x)/Sqrt[-e^2 + 4*d*f]]*Log[c*(a + b*x)^n]^3 + Sqrt[-e^2 + 4*d
*f]*n^3*Log[a + b*x]^3*Log[1 - (2*f*(a + b*x))/(-(b*e) + 2*a*f + b*Sqrt[e^2
 - 4*d*f])] - 3*Sqrt[-e^2 + 4*d*f]*n^2*Log[a + b*x]^2*Log[c*(a + b*x)^n]*Lo
g[1 - (2*f*(a + b*x))/(-(b*e) + 2*a*f + b*Sqrt[e^2 - 4*d*f])] + 3*Sqrt[-e^2
 + 4*d*f]*n*Log[a + b*x]*Log[c*(a + b*x)^n]^2*Log[1 - (2*f*(a + b*x))/(-(b*
e) + 2*a*f + b*Sqrt[e^2 - 4*d*f])] - Sqrt[-e^2 + 4*d*f]*n^3*Log[a + b*x]^3*
Log[1 + (2*f*(a + b*x))/(-2*a*f + b*(e + Sqrt[e^2 - 4*d*f]))] + 3*Sqrt[-e^2
 + 4*d*f]*n^2*Log[a + b*x]^2*Log[c*(a + b*x)^n]*Log[1 + (2*f*(a + b*x))/(-2
*a*f + b*(e + Sqrt[e^2 - 4*d*f]))] - 3*Sqrt[-e^2 + 4*d*f]*n*Log[a + b*x]*Lo
g[c*(a + b*x)^n]^2*Log[1 + (2*f*(a + b*x))/(-2*a*f + b*(e + Sqrt[e^2 - 4*d*
f]))] + 3*Sqrt[-e^2 + 4*d*f]*n*Log[c*(a + b*x)^n]^2*PolyLog[2, (2*f*(a + b*
x))/(2*a*f + b*(-e + Sqrt[e^2 - 4*d*f]))] - 3*Sqrt[-e^2 + 4*d*f]*n*Log[c*(a
 + b*x)^n]^2*PolyLog[2, (2*f*(a + b*x))/(2*a*f - b*(e + Sqrt[e^2 - 4*d*f]))
] - 6*Sqrt[-e^2 + 4*d*f]*n^2*Log[c*(a + b*x)^n]*PolyLog[3, (2*f*(a + b*x))/
(-(b*e) + 2*a*f + b*Sqrt[e^2 - 4*d*f])] + 6*Sqrt[-e^2 + 4*d*f]*n^2*Log[c*(a
 + b*x)^n]*PolyLog[3, (2*f*(a + b*x))/(2*a*f - b*(e + Sqrt[e^2 - 4*d*f]))]
+ 6*Sqrt[-e^2 + 4*d*f]*n^3*PolyLog[4, (2*f*(a + b*x))/(-(b*e) + 2*a*f + b*S
qrt[e^2 - 4*d*f])] - 6*Sqrt[-e^2 + 4*d*f]*n^3*PolyLog[4, (2*f*(a + b*x))/(2
*a*f - b*(e + Sqrt[e^2 - 4*d*f]))])/Sqrt[-(e^2 - 4*d*f)^2]
```

Maple [F]
time = 0.64, size = 0, normalized size = 0.00

$$\int \frac{\ln \left(c(bx+a)^{n}\right)^{3}}{f\,x^{2}+ex+d}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(c*(b*x+a)^n)^3/(f*x^2+e*x+d),x)
```

```
[Out] int(ln(c*(b*x+a)^n)^3/(f*x^2+e*x+d),x)
```

Maxima [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(b*x+a)^n)^3/(f*x^2+e*x+d),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*d*f-%e^2>0)', see `assume?` for m
ore det
```

Fricas [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(b*x+a)^n)^3/(f*x^2+e*x+d),x, algorithm="fricas")
```

```
[Out] integral(log((b*x + a)^n*c)^3/(f*x^2 + x*e + d), x)
```

Sympy [**F(-1)**] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(c*(b*x+a)**n)**3/(f*x**2+e*x+d),x)
```

```
[Out] Timed out
```

Giac [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(b*x+a)^n)^3/(f*x^2+e*x+d),x, algorithm="giac")
```

```
[Out] integrate(log((b*x + a)^n*c)^3/(f*x^2 + x*e + d), x)
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\ln\left(c\,{\left(a+b\,x\right)}^n\right)^3}{f\,x^2+e\,x+d}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(log(c*(a + b*x)^n)^3/(d + e*x + f*x^2),x)
```

```
[Out] int(log(c*(a + b*x)^n)^3/(d + e*x + f*x^2), x)
```

3.348 $\int \frac{\log^2(c(a+bx)^n)}{d+ex+fx^2}\,dx$

Optimal. Leaf size=372

$$\frac{\log^2\left(c(a+bx)^n\right)\log\left(-\frac{b\left(e-\sqrt{e^2-4df}+2fx\right)}{2af-b\left(e-\sqrt{e^2-4df}\right)}\right)}{\sqrt{e^2-4df}}-\frac{\log^2\left(c(a+bx)^n\right)\log\left(-\frac{b\left(e+\sqrt{e^2-4df}+2fx\right)}{2af-b\left(e+\sqrt{e^2-4df}\right)}\right)}{\sqrt{e^2-4df}}+\frac{2n\log\left(\right.}{}$$

```
[Out] ln(c*(b*x+a)^n)^2*ln(-b*(e+2*f*x-(-4*d*f+e^2)^(1/2))/(2*a*f-b*(e-(-4*d*f+e^
2)^(1/2))))/(-4*d*f+e^2)^(1/2)-ln(c*(b*x+a)^n)^2*ln(-b*(e+2*f*x+(-4*d*f+e^2
)^(1/2))/(2*a*f-b*(e+(-4*d*f+e^2)^(1/2))))/(-4*d*f+e^2)^(1/2)+2*n*ln(c*(b*x
+a)^n)*polylog(2,2*f*(b*x+a)/(2*a*f-b*(e-(-4*d*f+e^2)^(1/2))))/(-4*d*f+e^2)
^(1/2)-2*n*ln(c*(b*x+a)^n)*polylog(2,2*f*(b*x+a)/(2*a*f-b*(e+(-4*d*f+e^2)^(
1/2))))/(-4*d*f+e^2)^(1/2)-2*n^2*polylog(3,2*f*(b*x+a)/(2*a*f-b*(e-(-4*d*f+
e^2)^(1/2))))/(-4*d*f+e^2)^(1/2)+2*n^2*polylog(3,2*f*(b*x+a)/(2*a*f-b*(e+(-
4*d*f+e^2)^(1/2))))/(-4*d*f+e^2)^(1/2)
```

Rubi [A]

time = 0.28, antiderivative size = 372, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 5, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.200$, Rules used = {2465, 2443, 2481, 2421, 6724}

$$\frac{2n\log\left(c(a+bx)^n\right)\text{PolyLog}\left(2,\frac{2f(a+bx)}{2af-b\left(e-\sqrt{e^2-4df}\right)}\right)}{\sqrt{e^2-4df}}-\frac{2n\log\left(c(a+bx)^n\right)\text{PolyLog}\left(2,\frac{2f(a+bx)}{2af-b\left(\sqrt{e^2-4df}+e\right)}\right)}{\sqrt{e^2-4df}}-\frac{2n^2\text{PolyLog}\left(3,\frac{2f(a+bx)}{2af-b\left(e-\sqrt{e^2-4df}\right)}\right)}{\sqrt{e^2-4df}}+\frac{2n^2\text{PolyLog}\left(3,\frac{2f(a+bx)}{2af-b\left(\sqrt{e^2-4df}+e\right)}\right)}{\sqrt{e^2-4df}}+\frac{\log^2\left(c(a+bx)^n\right)\log\left(-\frac{b\left(-\sqrt{e^2-4df}+e+2fx\right)}{2af-b\left(e-\sqrt{e^2-4df}\right)}\right)}{\sqrt{e^2-4df}}-\frac{\log^2\left(c(a+bx)^n\right)\log\left(-\frac{b\left(\sqrt{e^2-4df}+e+2fx\right)}{2af-b\left(\sqrt{e^2-4df}+e\right)}\right)}{\sqrt{e^2-4df}}$$

Antiderivative was successfully verified.

```
[In] Int[Log[c*(a + b*x)^n]^2/(d + e*x + f*x^2),x]
```

```
[Out] (Log[c*(a + b*x)^n]^2*Log[-((b*(e - Sqrt[e^2 - 4*d*f] + 2*f*x))/(2*a*f - b*
(e - Sqrt[e^2 - 4*d*f])))])/Sqrt[e^2 - 4*d*f] - (Log[c*(a + b*x)^n]^2*Log[-
((b*(e + Sqrt[e^2 - 4*d*f] + 2*f*x))/(2*a*f - b*(e + Sqrt[e^2 - 4*d*f])))])
/Sqrt[e^2 - 4*d*f] + (2*n*Log[c*(a + b*x)^n]*PolyLog[2, (2*f*(a + b*x))/(2*
a*f - b*(e - Sqrt[e^2 - 4*d*f]))])/Sqrt[e^2 - 4*d*f] - (2*n*Log[c*(a + b*x)
^n]*PolyLog[2, (2*f*(a + b*x))/(2*a*f - b*(e + Sqrt[e^2 - 4*d*f]))])/Sqrt[e
^2 - 4*d*f] - (2*n^2*PolyLog[3, (2*f*(a + b*x))/(2*a*f - b*(e - Sqrt[e^2 -
4*d*f]))])/Sqrt[e^2 - 4*d*f] + (2*n^2*PolyLog[3, (2*f*(a + b*x))/(2*a*f - b
*(e + Sqrt[e^2 - 4*d*f]))])/Sqrt[e^2 - 4*d*f]
```

Rule 2421

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> Simp[(-PolyLog[2, (-d)*f*x^m])*((a + b*Log[c
*x^n])^p/m), x] + Dist[b*n*(p/m), Int[PolyLog[2, (-d)*f*x^m]*((a + b*Log[c*
x^n])^(p - 1)/x), x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0
] && EqQ[d*e, 1]
```

Rule 2443

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d
+ e*x)^n])^p/g), x] - Dist[b*e*n*(p/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]*
((a + b*Log[c*(d + e*x)^n])^(p - 1)/(d + e*x)), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2465

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2481

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[(k*(x/d))^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + j*(x/e))^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 6724

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{\log^2(c(a+bx)^n)}{d+ex+fx^2}\,dx = \int \left(\frac{2f\log^2(c(a+bx)^n)}{\sqrt{e^2-4df}\left(e-\sqrt{e^2-4df}+2fx\right)} - \frac{2f\log^2(c(a+bx)^n)}{\sqrt{e^2-4df}\left(e+\sqrt{e^2-4df}+2fx\right.}$$

$$= \frac{(2f)\int \frac{\log^2(c(a+bx)^n)}{e-\sqrt{e^2-4df}+2fx}\,dx}{\sqrt{e^2-4df}} - \frac{(2f)\int \frac{\log^2(c(a+bx)^n)}{e+\sqrt{e^2-4df}+2fx}\,dx}{\sqrt{e^2-4df}}$$

$$= \frac{\log^2(c(a+bx)^n)\log\left(-\frac{b\left(e-\sqrt{e^2-4df}+2fx\right)}{2af-b\left(e-\sqrt{e^2-4df}\right)}\right)}{\sqrt{e^2-4df}} - \frac{\log^2(c(a+bx)^n)\log\left(-\frac{b\left(e+\sqrt{\right.}}{2af-b\left(\right.}\right.}{\sqrt{e^2-4df}}$$

$$= \frac{\log^2(c(a+bx)^n)\log\left(-\frac{b\left(e-\sqrt{e^2-4df}+2fx\right)}{2af-b\left(e-\sqrt{e^2-4df}\right)}\right)}{\sqrt{e^2-4df}} - \frac{\log^2(c(a+bx)^n)\log\left(-\frac{b\left(e+\sqrt{\right.}}{2af-b\left(\right.}\right.}{\sqrt{e^2-4df}}$$

$$= \frac{\log^2(c(a+bx)^n)\log\left(-\frac{b\left(e-\sqrt{e^2-4df}+2fx\right)}{2af-b\left(e-\sqrt{e^2-4df}\right)}\right)}{\sqrt{e^2-4df}} - \frac{\log^2(c(a+bx)^n)\log\left(-\frac{b\left(e+\sqrt{\right.}}{2af-b\left(\right.}\right.}{\sqrt{e^2-4df}}$$

$$= \frac{\log^2(c(a+bx)^n)\log\left(-\frac{b\left(e-\sqrt{e^2-4df}+2fx\right)}{2af-b\left(e-\sqrt{e^2-4df}\right)}\right)}{\sqrt{e^2-4df}} - \frac{\log^2(c(a+bx)^n)\log\left(-\frac{b\left(e+\sqrt{\right.}}{2af-b\left(\right.}\right.}{\sqrt{e^2-4df}}$$

<u>Mathematica</u> [A]
time = 0.18, size = 655, normalized size = 1.76

$$\frac{2\sqrt{e^2-4df}\,n^2\tan^{-1}\left(\frac{e+2fx}{\sqrt{-e^2+4df}}\right)\log^2(a+bx)-4\sqrt{e^2-4df}\,n\tan^{-1}\left(\frac{e+2fx}{\sqrt{-e^2+4df}}\right)\log(a+bx)\log(c(a+bx)^n)+2\sqrt{e^2-4df}\tan^{-1}\left(\frac{e+2fx}{\sqrt{-e^2+4df}}\right)\log^2(c(a+bx)^n)-\sqrt{-e^2+4df}\,n^2\log^2(a+bx)\log\left(1-\frac{2f(a+bx)}{-be+2af+b\sqrt{e^2-4df}}\right)+2\sqrt{-e^2+4df}\,n\log(a+bx)\log(c(a+bx)^n)\log\left(1-\frac{2f(a+bx)}{-be+2af+b\sqrt{e^2-4df}}\right)+\sqrt{-e^2+4df}\,n^2\log^2(a+bx)\log\left(1+\frac{2f(a+bx)}{-2af+b\left(e+\sqrt{e^2-4df}\right)}\right)-2\sqrt{-e^2+4df}\,n\log(a+bx)\log(c(a+bx)^n)\log\left(1+\frac{2f(a+bx)}{-2af+b\left(e+\sqrt{e^2-4df}\right)}\right)+2\sqrt{-e^2+4df}\,n\log(c(a+bx)^n)\,\mathrm{Li}_2\left(\frac{2f(a+bx)}{2af+b\left(-e+\sqrt{e^2-4df}\right)}\right)-2\sqrt{-e^2+4df}\,n\log(c(a+bx)^n)\,\mathrm{Li}_2\left(\frac{2f(a+bx)}{2af-b\left(e+\sqrt{e^2-4df}\right)}\right)-2\sqrt{-e^2+4df}\,n^2\,\mathrm{Li}_3\left(\frac{2f(a+bx)}{-be+2af+b\sqrt{e^2-4df}}\right)+2\sqrt{-e^2+4df}\,n^2\,\mathrm{Li}_3\left(\frac{2f(a+bx)}{2af-b\left(e+\sqrt{e^2-4df}\right)}\right)}{\sqrt{-\left(e^2-4df\right)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[c*(a + b*x)^n]^2/(d + e*x + f*x^2),x]
```

```
[Out] (2*Sqrt[e^2 - 4*d*f]*n^2*ArcTan[(e + 2*f*x)/Sqrt[-e^2 + 4*d*f]]*Log[a + b*x
]^2 - 4*Sqrt[e^2 - 4*d*f]*n*ArcTan[(e + 2*f*x)/Sqrt[-e^2 + 4*d*f]]*Log[a +
b*x]*Log[c*(a + b*x)^n] + 2*Sqrt[e^2 - 4*d*f]*ArcTan[(e + 2*f*x)/Sqrt[-e^2
+ 4*d*f]]*Log[c*(a + b*x)^n]^2 - Sqrt[-e^2 + 4*d*f]*n^2*Log[a + b*x]^2*Log[
1 - (2*f*(a + b*x))/(-(b*e) + 2*a*f + b*Sqrt[e^2 - 4*d*f])] + 2*Sqrt[-e^2 +
 4*d*f]*n*Log[a + b*x]*Log[c*(a + b*x)^n]*Log[1 - (2*f*(a + b*x))/(-(b*e) +
 2*a*f + b*Sqrt[e^2 - 4*d*f])] + Sqrt[-e^2 + 4*d*f]*n^2*Log[a + b*x]^2*Log[
1 + (2*f*(a + b*x))/(-2*a*f + b*(e + Sqrt[e^2 - 4*d*f]))] - 2*Sqrt[-e^2 + 4
*d*f]*n*Log[a + b*x]*Log[c*(a + b*x)^n]*Log[1 + (2*f*(a + b*x))/(-2*a*f + b
*(e + Sqrt[e^2 - 4*d*f]))] + 2*Sqrt[-e^2 + 4*d*f]*n*Log[c*(a + b*x)^n]*Poly
Log[2, (2*f*(a + b*x))/(2*a*f + b*(-e + Sqrt[e^2 - 4*d*f]))] - 2*Sqrt[-e^2
+ 4*d*f]*n*Log[c*(a + b*x)^n]*PolyLog[2, (2*f*(a + b*x))/(2*a*f - b*(e + Sq
rt[e^2 - 4*d*f]))] - 2*Sqrt[-e^2 + 4*d*f]*n^2*PolyLog[3, (2*f*(a + b*x))/(-
(b*e) + 2*a*f + b*Sqrt[e^2 - 4*d*f])] + 2*Sqrt[-e^2 + 4*d*f]*n^2*PolyLog[3,
 (2*f*(a + b*x))/(2*a*f - b*(e + Sqrt[e^2 - 4*d*f]))])/Sqrt[-(e^2 - 4*d*f)^
2]
```

Maple [**F**]
time = 0.69, size = 0, normalized size = 0.00

$$\int \frac{\ln \left(c(bx+a)^{n}\right)^{2}}{f\,x^{2}+ex+d}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(c*(b*x+a)^n)^2/(f*x^2+e*x+d),x)
```

```
[Out] int(ln(c*(b*x+a)^n)^2/(f*x^2+e*x+d),x)
```

Maxima [**F(-2)**]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(b*x+a)^n)^2/(f*x^2+e*x+d),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*d*f-%e^2>0)', see `assume?` for m
ore det
```

Fricas [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(b*x+a)^n)^2/(f*x^2+e*x+d),x, algorithm="fricas")
```

```
[Out] integral(log((b*x + a)^n*c)^2/(f*x^2 + x*e + d), x)
```

Sympy [F(-1)] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(c*(b*x+a)**n)**2/(f*x**2+e*x+d),x)
```

```
[Out] Timed out
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(b*x+a)^n)^2/(f*x^2+e*x+d),x, algorithm="giac")
```

```
[Out] integrate(log((b*x + a)^n*c)^2/(f*x^2 + x*e + d), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\ln\left(c\,{\left(a+b\,x\right)}^n\right)^2}{f\,x^2+e\,x+d}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(log(c*(a + b*x)^n)^2/(d + e*x + f*x^2),x)
```

```
[Out] int(log(c*(a + b*x)^n)^2/(d + e*x + f*x^2), x)
```

3.349 $\int \frac{\log(c(a+bx)^n)}{d+ex+fx^2} dx$

Optimal. Leaf size=243

$$\frac{\log\left(c(a+bx)^n\right)\log\left(-\frac{b\left(e-\sqrt{e^2-4df}+2fx\right)}{2af-b\left(e-\sqrt{e^2-4df}\right)}\right)}{\sqrt{e^2-4df}}-\frac{\log\left(c(a+bx)^n\right)\log\left(-\frac{b\left(e+\sqrt{e^2-4df}+2fx\right)}{2af-b\left(e+\sqrt{e^2-4df}\right)}\right)}{\sqrt{e^2-4df}}+\frac{n\text{Li}_2\left(\cdots\right.}{\cdots}$$

```
[Out] ln(c*(b*x+a)^n)*ln(-b*(e+2*f*x-(-4*d*f+e^2)^(1/2))/(2*a*f-b*(e-(-4*d*f+e^2)
^(1/2))))/(-4*d*f+e^2)^(1/2)-ln(c*(b*x+a)^n)*ln(-b*(e+2*f*x+(-4*d*f+e^2)^(1
/2))/(2*a*f-b*(e+(-4*d*f+e^2)^(1/2))))/(-4*d*f+e^2)^(1/2)+n*polylog(2,2*f*(
b*x+a)/(2*a*f-b*(e-(-4*d*f+e^2)^(1/2))))/(-4*d*f+e^2)^(1/2)-n*polylog(2,2*f
*(b*x+a)/(2*a*f-b*(e+(-4*d*f+e^2)^(1/2))))/(-4*d*f+e^2)^(1/2)
```

Rubi [A]
time = 0.16, antiderivative size = 243, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 4, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.174$, Rules used = {2465, 2441, 2440, 2438}

$$\frac{n\text{PolyLog}\left(2,\frac{2f(a+bx)}{2af-b\left(e-\sqrt{e^2-4df}\right)}\right)}{\sqrt{e^2-4df}}-\frac{n\text{PolyLog}\left(2,\frac{2f(a+bx)}{2af-b\left(\sqrt{e^2-4df}+e\right)}\right)}{\sqrt{e^2-4df}}+\frac{\log\left(c(a+bx)^n\right)\log\left(-\frac{b\left(-\sqrt{e^2-4df}+e+2fx\right)}{2af-b\left(e-\sqrt{e^2-4df}\right)}\right)}{\sqrt{e^2-4df}}-\frac{\log\left(c(a+bx)^n\right)\log\left(-\frac{b\left(\sqrt{e^2-4df}+e+2fx\right)}{2af-b\left(\sqrt{e^2-4df}+e\right)}\right)}{\sqrt{e^2-4df}}$$

Antiderivative was successfully verified.

```
[In] Int[Log[c*(a + b*x)^n]/(d + e*x + f*x^2),x]
```

```
[Out] (Log[c*(a + b*x)^n]*Log[-((b*(e - Sqrt[e^2 - 4*d*f] + 2*f*x))/(2*a*f - b*(e
 - Sqrt[e^2 - 4*d*f])))])/Sqrt[e^2 - 4*d*f] - (Log[c*(a + b*x)^n]*Log[-((b*
(e + Sqrt[e^2 - 4*d*f] + 2*f*x))/(2*a*f - b*(e + Sqrt[e^2 - 4*d*f])))])/Sqr
t[e^2 - 4*d*f] + (n*PolyLog[2, (2*f*(a + b*x))/(2*a*f - b*(e - Sqrt[e^2 - 4
*d*f]))])/Sqrt[e^2 - 4*d*f] - (n*PolyLog[2, (2*f*(a + b*x))/(2*a*f - b*(e +
 Sqrt[e^2 - 4*d*f]))])/Sqrt[e^2 - 4*d*f]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + c*e*(x/g)])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2441

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d + e*x
)^n])/g), x] - Dist[b*e*(n/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2465

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rubi steps

$$\int \frac{\log\left(c(a+bx)^n\right)}{d+ex+fx^2}\,dx = \int \left(\frac{2f\log\left(c(a+bx)^n\right)}{\sqrt{e^2-4df}\left(e-\sqrt{e^2-4df}+2fx\right)} - \frac{2f\log\left(c(a+bx)^n\right)}{\sqrt{e^2-4df}\left(e+\sqrt{e^2-4df}+2fx\right)}\right.$$

$$= \frac{(2f)\int \frac{\log(c(a+bx)^n)}{e-\sqrt{e^2-4df}+2fx}\,dx}{\sqrt{e^2-4df}} - \frac{(2f)\int \frac{\log(c(a+bx)^n)}{e+\sqrt{e^2-4df}+2fx}\,dx}{\sqrt{e^2-4df}}$$

$$= \frac{\log\left(c(a+bx)^n\right)\log\left(-\frac{b\left(e-\sqrt{e^2-4df}+2fx\right)}{2af-b\left(e-\sqrt{e^2-4df}\right)}\right)}{\sqrt{e^2-4df}} - \frac{\log\left(c(a+bx)^n\right)\log\left(-\frac{b\left(e+\sqrt{e^2\ldots}\right.}{2af-b\left(e+\ldots\right.}\right.}{\sqrt{e^2-4df}}$$

$$= \frac{\log\left(c(a+bx)^n\right)\log\left(-\frac{b\left(e-\sqrt{e^2-4df}+2fx\right)}{2af-b\left(e-\sqrt{e^2-4df}\right)}\right)}{\sqrt{e^2-4df}} - \frac{\log\left(c(a+bx)^n\right)\log\left(-\frac{b\left(e+\sqrt{e^2\ldots}\right.}{2af-b\left(e+\ldots\right.}\right.}{\sqrt{e^2-4df}}$$

$$= \frac{\log\left(c(a+bx)^n\right)\log\left(-\frac{b\left(e-\sqrt{e^2-4df}+2fx\right)}{2af-b\left(e-\sqrt{e^2-4df}\right)}\right)}{\sqrt{e^2-4df}} - \frac{\log\left(c(a+bx)^n\right)\log\left(-\frac{b\left(e+\sqrt{e^2\ldots}\right.}{2af-b\left(e+\ldots\right.}\right.}{\sqrt{e^2-4df}}$$

Mathematica [A]
time = 0.09, size = 324, normalized size = 1.33

$$\frac{-2\sqrt{e^2-4df}\,n\tan^{-1}\left(\frac{e+2fx}{\sqrt{-e^2+4df}}\right)\log(a+bx)+2\sqrt{e^2-4df}\,\tan^{-1}\left(\frac{e+2fx}{\sqrt{-e^2+4df}}\right)\log\left(c(a+bx)^n\right)+\sqrt{-e^2+4df}\,n\log(a+bx)\log\left(1-\frac{2f(a+bx)}{-be+2af+b\sqrt{e^2-4df}}\right)-\sqrt{-e^2+4df}\,n\log(a+bx)\log\left(1+\frac{2f(a+bx)}{-2af+b\left(e+\sqrt{e^2-4df}\right)}\right)+\sqrt{-e^2+4df}\,n\mathrm{Li}_2\left(\frac{2f(a+bx)}{2af+b\left(-e+\sqrt{e^2-4df}\right)}\right)-\sqrt{-e^2+4df}\,n\mathrm{Li}_2\left(\frac{2f(a+bx)}{2af-b\left(e+\sqrt{e^2-4df}\right)}\right)}{\sqrt{-\left(e^2-4df\right)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[c*(a + b*x)^n]/(d + e*x + f*x^2),x]
```

```
[Out] (-2*Sqrt[e^2 - 4*d*f]*n*ArcTan[(e + 2*f*x)/Sqrt[-e^2 + 4*d*f]]*Log[a + b*x]
 + 2*Sqrt[e^2 - 4*d*f]*ArcTan[(e + 2*f*x)/Sqrt[-e^2 + 4*d*f]]*Log[c*(a + b*
x)^n] + Sqrt[-e^2 + 4*d*f]*n*Log[a + b*x]*Log[1 - (2*f*(a + b*x))/(-(b*e) +
 2*a*f + b*Sqrt[e^2 - 4*d*f])] - Sqrt[-e^2 + 4*d*f]*n*Log[a + b*x]*Log[1 +
(2*f*(a + b*x))/(-2*a*f + b*(e + Sqrt[e^2 - 4*d*f]))] + Sqrt[-e^2 + 4*d*f]*
n*PolyLog[2, (2*f*(a + b*x))/(2*a*f + b*(-e + Sqrt[e^2 - 4*d*f]))] - Sqrt[-
e^2 + 4*d*f]*n*PolyLog[2, (2*f*(a + b*x))/(2*a*f - b*(e + Sqrt[e^2 - 4*d*f]
))])/Sqrt[-(e^2 - 4*d*f)^2]
```

Maple [C] Result contains higher order function than in optimal. Order 9 vs. order 4.
time = 0.91, size = 689, normalized size = 2.84

method	result
risch	$\frac{2b(\ln((bx+a)^n)-n\ln(bx+a))\arctan\left(\frac{2(bx+a)f-2af+be}{\sqrt{4b^2df-b^2e^2}}\right)}{\sqrt{4b^2df-b^2e^2}}+\frac{bn\ln(bx+a)\ln\left(\frac{-2(bx+a)f+2af-be+\sqrt{-4b^2df+b^2e^2}}{2af-be+\sqrt{-4b^2df+b^2e^2}}\right)}{\sqrt{-4b^2df+b^2e^2}}-$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(c*(b*x+a)^n)/(f*x^2+e*x+d),x,method=_RETURNVERBOSE)
```

```
[Out] 2*b*(ln((b*x+a)^n)-n*ln(b*x+a))/(4*b^2*d*f-b^2*e^2)^(1/2)*arctan((2*(b*x+a)
*f-2*a*f+b*e)/(4*b^2*d*f-b^2*e^2)^(1/2))+b*n/(-4*b^2*d*f+b^2*e^2)^(1/2)*ln(
b*x+a)*ln((-2*(b*x+a)*f+2*a*f-b*e+(-4*b^2*d*f+b^2*e^2)^(1/2))/(2*a*f-b*e+(-
4*b^2*d*f+b^2*e^2)^(1/2)))-b*n/(-4*b^2*d*f+b^2*e^2)^(1/2)*ln(b*x+a)*ln((2*(
b*x+a)*f-2*a*f+b*e+(-4*b^2*d*f+b^2*e^2)^(1/2))/(-2*a*f+b*e+(-4*b^2*d*f+b^2*
e^2)^(1/2)))+b*n/(-4*b^2*d*f+b^2*e^2)^(1/2)*dilog((-2*(b*x+a)*f+2*a*f-b*e+(
-4*b^2*d*f+b^2*e^2)^(1/2))/(2*a*f-b*e+(-4*b^2*d*f+b^2*e^2)^(1/2)))-b*n/(-4*
b^2*d*f+b^2*e^2)^(1/2)*dilog((2*(b*x+a)*f-2*a*f+b*e+(-4*b^2*d*f+b^2*e^2)^(1
/2))/(-2*a*f+b*e+(-4*b^2*d*f+b^2*e^2)^(1/2)))-I/(4*d*f-e^2)^(1/2)*arctan((2
*f*x+e)/(4*d*f-e^2)^(1/2))*Pi*csgn(I*c*(b*x+a)^n)^3+I/(4*d*f-e^2)^(1/2)*arc
tan((2*f*x+e)/(4*d*f-e^2)^(1/2))*Pi*csgn(I*c*(b*x+a)^n)^2*csgn(I*c)+I/(4*d*
f-e^2)^(1/2)*arctan((2*f*x+e)/(4*d*f-e^2)^(1/2))*Pi*csgn(I*c*(b*x+a)^n)^2*c
sgn(I*(b*x+a)^n)-I/(4*d*f-e^2)^(1/2)*arctan((2*f*x+e)/(4*d*f-e^2)^(1/2))*Pi
*csgn(I*c*(b*x+a)^n)*csgn(I*c)*csgn(I*(b*x+a)^n)+2/(4*d*f-e^2)^(1/2)*arctan
((2*f*x+e)/(4*d*f-e^2)^(1/2))*ln(c)
```

Maxima [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(b*x+a)^n)/(f*x^2+e*x+d),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*d*f-%e^2>0)', see `assume?` for m
ore det
```

Fricas [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(b*x+a)^n)/(f*x^2+e*x+d),x, algorithm="fricas")
```

```
[Out] integral(log((b*x + a)^n*c)/(f*x^2 + x*e + d), x)
```

Sympy [**F(-1)**] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(c*(b*x+a)**n)/(f*x**2+e*x+d),x)
```

```
[Out] Timed out
```

Giac [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(b*x+a)^n)/(f*x^2+e*x+d),x, algorithm="giac")
```

```
[Out] integrate(log((b*x + a)^n*c)/(f*x^2 + x*e + d), x)
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\ln\left(c\,{\left(a+b\,x\right)}^n\right)}{f\,x^2+e\,x+d}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(log(c*(a + b*x)^n)/(d + e*x + f*x^2),x)
```

```
[Out] int(log(c*(a + b*x)^n)/(d + e*x + f*x^2), x)
```

3.350 $\int \frac{1}{(d+ex+fx^2)\log(c(a+bx)^n)}\,dx$

Optimal. Leaf size=105

$$\frac{2f\text{Int}\left(\frac{1}{\left(e-\sqrt{e^2-4df}+2fx\right)\log(c(a+bx)^n)},x\right)}{\sqrt{e^2-4df}}-\frac{2f\text{Int}\left(\frac{1}{\left(e+\sqrt{e^2-4df}+2fx\right)\log(c(a+bx)^n)},x\right)}{\sqrt{e^2-4df}}$$

```
[Out] 2*f*Unintegrable(1/ln(c*(b*x+a)^n)/(e+2*f*x-(-4*d*f+e^2)^(1/2)),x)/(-4*d*f+
e^2)^(1/2)-2*f*Unintegrable(1/ln(c*(b*x+a)^n)/(e+2*f*x+(-4*d*f+e^2)^(1/2)),
x)/(-4*d*f+e^2)^(1/2)
```

Rubi [A]
time = 0.13, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{1}{(d+ex+fx^2)\log(c(a+bx)^n)}\,dx$$

Verification is not applicable to the result.

```
[In] Int[1/((d + e*x + f*x^2)*Log[c*(a + b*x)^n]),x]
```

```
[Out] (2*f*Defer[Int][1/((e - Sqrt[e^2 - 4*d*f] + 2*f*x)*Log[c*(a + b*x)^n]), x])
/Sqrt[e^2 - 4*d*f] - (2*f*Defer[Int][1/((e + Sqrt[e^2 - 4*d*f] + 2*f*x)*Log
[c*(a + b*x)^n]), x])/Sqrt[e^2 - 4*d*f]
```

Rubi steps

$$\int \frac{1}{(d+ex+fx^2)\log(c(a+bx)^n)}\,dx = \int \left(\frac{2f}{\sqrt{e^2-4df}\left(e-\sqrt{e^2-4df}+2fx\right)\log(c(a+bx)^n)}-\ldots\right)$$

$$= \frac{(2f)\int \frac{1}{\left(e-\sqrt{e^2-4df}+2fx\right)\log(c(a+bx)^n)}\,dx}{\sqrt{e^2-4df}}-\frac{(2f)\int \frac{1}{\left(e+\sqrt{e^2-4df}\ldots\right.}}{\sqrt{e^2-\ldots}}$$

Mathematica [A]
time = 0.35, size = 0, normalized size = 0.00

$$\int \frac{1}{(d+ex+fx^2)\log(c(a+bx)^n)}\,dx$$

Verification is not applicable to the result.

```
[In] Integrate[1/((d + e*x + f*x^2)*Log[c*(a + b*x)^n]),x]
```

```
[Out] Integrate[1/((d + e*x + f*x^2)*Log[c*(a + b*x)^n]), x]
```

Maple [A]
time = 0.70, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(f\,x^{2}+ex+d\right)\ln\left(c\left(bx+a\right)^{n}\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(f*x^2+e*x+d)/ln(c*(b*x+a)^n),x)
```

```
[Out] int(1/(f*x^2+e*x+d)/ln(c*(b*x+a)^n),x)
```

Maxima [A]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(f*x^2+e*x+d)/log(c*(b*x+a)^n),x, algorithm="maxima")
```

```
[Out] integrate(1/((f*x^2 + x*e + d)*log((b*x + a)^n*c)), x)
```

Fricas [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(f*x^2+e*x+d)/log(c*(b*x+a)^n),x, algorithm="fricas")
```

```
[Out] integral(1/((f*x^2 + x*e + d)*log((b*x + a)^n*c)), x)
```

Sympy [F(-1)] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(f*x**2+e*x+d)/ln(c*(b*x+a)**n),x)
```

```
[Out] Timed out
```

Giac [**A**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(f*x^2+e*x+d)/log(c*(b*x+a)^n),x, algorithm="giac")
[Out] integrate(1/((f*x^2 + x*e + d)*log((b*x + a)^n*c)), x)
```

Mupad [**A**]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{1}{\ln\left(c\,{\left(a+b\,x\right)}^n\right)\,\left(f\,x^2+e\,x+d\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(log(c*(a + b*x)^n)*(d + e*x + f*x^2)),x)
[Out] int(1/(log(c*(a + b*x)^n)*(d + e*x + f*x^2)), x)
```

3.351 $\int \frac{x^3 \log(x)}{a+bx+cx^2} \, dx$

Optimal. Leaf size=286

$$\frac{bx}{c^2}-\frac{x^2}{4c}-\frac{bx\log(x)}{c^2}+\frac{x^2\log(x)}{2c}+\frac{\left(b^2-ac-\frac{b(b^2-3ac)}{\sqrt{b^2-4ac}}\right)\log(x)\log\left(1+\frac{2cx}{b-\sqrt{b^2-4ac}}\right)}{2c^3}+\frac{\left(b^2-ac+\frac{b(b^2-3ac)}{\sqrt{b^2-4ac}}\right.}{}$$

```
[Out] b*x/c^2-1/4*x^2/c-b*x*ln(x)/c^2+1/2*x^2*ln(x)/c+1/2*ln(x)*ln(1+2*c*x/(b-(-4
*a*c+b^2)^(1/2)))*(b^2-a*c-b*(-3*a*c+b^2)/(-4*a*c+b^2)^(1/2))/c^3+1/2*polyl
og(2,-2*c*x/(b-(-4*a*c+b^2)^(1/2)))*(b^2-a*c-b*(-3*a*c+b^2)/(-4*a*c+b^2)^(1
/2))/c^3+1/2*ln(x)*ln(1+2*c*x/(b+(-4*a*c+b^2)^(1/2)))*(b^2-a*c+b*(-3*a*c+b^
2)/(-4*a*c+b^2)^(1/2))/c^3+1/2*polylog(2,-2*c*x/(b+(-4*a*c+b^2)^(1/2)))*(b^
2-a*c+b*(-3*a*c+b^2)/(-4*a*c+b^2)^(1/2))/c^3
```

Rubi [A]
time = 0.29, antiderivative size = 286, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 5, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}} = 0.278$, Rules used = {2404, 2332, 2341, 2354, 2438}

$$\frac{\left(-\frac{b(b^2-3ac)}{\sqrt{b^2-4ac}}-ac+b^2\right)\text{PolyLog}\left(2,-\frac{2cx}{b-\sqrt{b^2-4ac}}\right)}{2c^3}+\frac{\left(\frac{b(b^2-3ac)}{\sqrt{b^2-4ac}}-ac+b^2\right)\text{PolyLog}\left(2,-\frac{2cx}{\sqrt{b^2-4ac}+b}\right)}{2c^3}+\frac{\log(x)\left(-\frac{b(b^2-3ac)}{\sqrt{b^2-4ac}}-ac+b^2\right)\log\left(\frac{2cx}{b-\sqrt{b^2-4ac}}+1\right)}{2c^3}+\frac{\log(x)\left(\frac{b(b^2-3ac)}{\sqrt{b^2-4ac}}-ac+b^2\right)\log\left(\frac{2cx}{\sqrt{b^2-4ac}+b}+1\right)}{2c^3}+\frac{bx}{c^2}-\frac{bx\log(x)}{c^2}-\frac{x^2}{4c}+\frac{x^2\log(x)}{2c}$$

Antiderivative was successfully verified.

```
[In] Int[(x^3*Log[x])/(a + b*x + c*x^2),x]
```

```
[Out] (b*x)/c^2 - x^2/(4*c) - (b*x*Log[x])/c^2 + (x^2*Log[x])/(2*c) + ((b^2 - a*c
 - (b*(b^2 - 3*a*c))/Sqrt[b^2 - 4*a*c])*Log[x]*Log[1 + (2*c*x)/(b - Sqrt[b^
2 - 4*a*c])])/(2*c^3) + ((b^2 - a*c + (b*(b^2 - 3*a*c))/Sqrt[b^2 - 4*a*c])*
Log[x]*Log[1 + (2*c*x)/(b + Sqrt[b^2 - 4*a*c])])/(2*c^3) + ((b^2 - a*c - (b
*(b^2 - 3*a*c))/Sqrt[b^2 - 4*a*c])*PolyLog[2, (-2*c*x)/(b - Sqrt[b^2 - 4*a*
c])])/(2*c^3) + ((b^2 - a*c + (b*(b^2 - 3*a*c))/Sqrt[b^2 - 4*a*c])*PolyLog[
2, (-2*c*x)/(b + Sqrt[b^2 - 4*a*c])])/(2*c^3)
```

Rule 2332

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2341

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_.)*(x_))^(m_.), x_Symbol] :>
Simp[(d*x)^(m + 1)*((a + b*Log[c*x^n])/(d*(m + 1))), x] - Simp[b*n*((d*x)^(
m + 1)/(d*(m + 1)^2)), x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[m, -1]
```

Rule 2354

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[Log[1 + e*(x/d)]*((a + b*Log[c*x^n])^p/e), x] - Dist[b*n*(p/e),
 Int[Log[1 + e*(x/d)]*((a + b*Log[c*x^n])^(p - 1)/x), x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2404

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*(RFx_), x_Symbol] :> With[{
u = ExpandIntegrand[(a + b*Log[c*x^n])^p, RFx, x]}, Int[u, x] /; SumQ[u]] /
; FreeQ[{a, b, c, n}, x] && RationalFunctionQ[RFx, x] && IGtQ[p, 0]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rubi steps

$$\int \frac{x^3\log(x)}{a+bx+cx^2}\,dx = \int \left(-\frac{b\log(x)}{c^2}+\frac{x\log(x)}{c}+\frac{(ab+(b^2-ac)\,x)\log(x)}{c^2\,(a+bx+cx^2)}\right)dx$$

$$= \frac{\int \frac{(ab+(b^2-ac)x)\log(x)}{a+bx+cx^2}\,dx}{c^2} - \frac{b\int \log(x)\,dx}{c^2} + \frac{\int x\log(x)\,dx}{c}$$

$$= \frac{bx}{c^2} - \frac{x^2}{4c} - \frac{bx\log(x)}{c^2} + \frac{x^2\log(x)}{2c} + \frac{\int\left(\frac{\left(b^2-ac+\frac{b(-b^2+3ac)}{\sqrt{b^2-4ac}}\right)\log(x)}{b-\sqrt{b^2-4ac}+2cx} + \frac{\left(b^2-ac-\frac{b(-b^2+3ac}{\sqrt{b^2-4}}\right.}{b+\sqrt{b^2-4ac}}\right.}{c^2}$$

$$= \frac{bx}{c^2} - \frac{x^2}{4c} - \frac{bx\log(x)}{c^2} + \frac{x^2\log(x)}{2c} + \frac{\left(b^2-ac-\frac{b(b^2-3ac)}{\sqrt{b^2-4ac}}\right)\int\frac{\log(x)}{b-\sqrt{b^2-4ac}+2cx}\,dx}{c^2}$$

$$= \frac{bx}{c^2} - \frac{x^2}{4c} - \frac{bx\log(x)}{c^2} + \frac{x^2\log(x)}{2c} + \frac{\left(b^2-ac-\frac{b(b^2-3ac)}{\sqrt{b^2-4ac}}\right)\log(x)\log\left(1+\frac{2c}{b-\sqrt{b^2}}\right.}{2c^3}$$

$$= \frac{bx}{c^2} - \frac{x^2}{4c} - \frac{bx\log(x)}{c^2} + \frac{x^2\log(x)}{2c} + \frac{\left(b^2-ac-\frac{b(b^2-3ac)}{\sqrt{b^2-4ac}}\right)\log(x)\log\left(1+\frac{2c}{b-\sqrt{b^2}}\right.}{2c^3}$$

Mathematica [A]

time = 0.47, size = 464, normalized size = 1.62

$$\frac{4bcx-c^2x^2-4bcx\log(x)+2c^2x^2\log(x)+\frac{4abc\log(x)\log\left(\frac{b-\sqrt{b^2-4ac}+2cx}{b-\sqrt{b^2-4ac}}\right)}{\sqrt{b^2-4ac}}+2(b^2-ac)\left(1-\frac{b}{\sqrt{b^2-4ac}}\right)\log(x)\log\left(\frac{b-\sqrt{b^2-4ac}+2cx}{b-\sqrt{b^2-4ac}}\right)-\frac{4abc\log(x)\log\left(\frac{b+\sqrt{b^2-4ac}+2cx}{b+\sqrt{b^2-4ac}}\right)}{\sqrt{b^2-4ac}}+2(b^2-ac)\left(1+\frac{b}{\sqrt{b^2-4ac}}\right)\log(x)\log\left(\frac{b+\sqrt{b^2-4ac}+2cx}{b+\sqrt{b^2-4ac}}\right)+\frac{4abc\,\mathrm{Li}_2\left(\frac{2cx}{-b+\sqrt{b^2-4ac}}\right)}{\sqrt{b^2-4ac}}+2(b^2-ac)\left(1-\frac{b}{\sqrt{b^2-4ac}}\right)\mathrm{Li}_2\left(\frac{2cx}{-b+\sqrt{b^2-4ac}}\right)-\frac{4abc\,\mathrm{Li}_2\left(-\frac{2cx}{b+\sqrt{b^2-4ac}}\right)}{\sqrt{b^2-4ac}}+2(b^2-ac)\left(1+\frac{b}{\sqrt{b^2-4ac}}\right)\mathrm{Li}_2\left(-\frac{2cx}{b+\sqrt{b^2-4ac}}\right)}{4c^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^3*Log[x])/(a + b*x + c*x^2),x]
```

```
[Out] (4*b*c*x - c^2*x^2 - 4*b*c*x*Log[x] + 2*c^2*x^2*Log[x] + (4*a*b*c*Log[x]*Lo
g[(b - Sqrt[b^2 - 4*a*c] + 2*c*x)/(b - Sqrt[b^2 - 4*a*c])])/Sqrt[b^2 - 4*a*
c] + 2*(b^2 - a*c)*(1 - b/Sqrt[b^2 - 4*a*c])*Log[x]*Log[(b - Sqrt[b^2 - 4*a
*c] + 2*c*x)/(b - Sqrt[b^2 - 4*a*c])] - (4*a*b*c*Log[x]*Log[(b + Sqrt[b^2 -
 4*a*c] + 2*c*x)/(b + Sqrt[b^2 - 4*a*c])])/Sqrt[b^2 - 4*a*c] + 2*(b^2 - a*c
)*(1 + b/Sqrt[b^2 - 4*a*c])*Log[x]*Log[(b + Sqrt[b^2 - 4*a*c] + 2*c*x)/(b +
 Sqrt[b^2 - 4*a*c])] + (4*a*b*c*PolyLog[2, (2*c*x)/(-b + Sqrt[b^2 - 4*a*c])
])/Sqrt[b^2 - 4*a*c] + 2*(b^2 - a*c)*(1 - b/Sqrt[b^2 - 4*a*c])*PolyLog[2, (
2*c*x)/(-b + Sqrt[b^2 - 4*a*c])] - (4*a*b*c*PolyLog[2, (-2*c*x)/(b + Sqrt[b
^2 - 4*a*c])])/Sqrt[b^2 - 4*a*c] + 2*(b^2 - a*c)*(1 + b/Sqrt[b^2 - 4*a*c])*
PolyLog[2, (-2*c*x)/(b + Sqrt[b^2 - 4*a*c])])/(4*c^3)
```

Maple [B] Leaf count of result is larger than twice the leaf count of optimal. 765 vs. $2(258) = 516$.
time = 0.85, size = 766, normalized size = 2.68

method	result
default	$\frac{\frac{x^2\ln(x)}{2}-\frac{x^2}{4}}{c}-\frac{(\ln(x)x-x)b}{c^2}+\frac{-\frac{\ln(x)\left(\ln\left(\frac{b+2cx+\sqrt{-4ca+b^2}}{b+\sqrt{-4ca+b^2}}\right)\sqrt{-4ca+b^2}\,ac-\ln\left(\frac{b+2cx+\sqrt{-4ca+b^2}}{b+\sqrt{-4ca+b^2}}\right)\sqrt{-4c}}{}}{}$
risch	$\frac{x^2\ln(x)}{2c}-\frac{x^2}{4c}-\frac{bx\ln(x)}{c^2}+\frac{bx}{c^2}-\frac{\ln(x)\ln\left(\frac{b+2cx+\sqrt{-4ca+b^2}}{b+\sqrt{-4ca+b^2}}\right)a}{2c^2}+\frac{\ln(x)\ln\left(\frac{b+2cx+\sqrt{-4ca+b^2}}{b+\sqrt{-4ca+b^2}}\right)b^2}{2c^3}-\frac{3\ln(x)\,l}{}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*ln(x)/(c*x^2+b*x+a),x,method=_RETURNVERBOSE)
```

```
[Out] (1/2*x^2*ln(x)-1/4*x^2)/c-(ln(x)*x-x)*b/c^2+(-1/2*ln(x)*(ln((b+2*c*x+(-4*a*
c+b^2)^(1/2))/(b+(-4*a*c+b^2)^(1/2)))*(-4*a*c+b^2)^(1/2)*a*c-ln((b+2*c*x+(-
4*a*c+b^2)^(1/2))/(b+(-4*a*c+b^2)^(1/2)))*(-4*a*c+b^2)^(1/2)*b^2+3*ln((b+2*
c*x+(-4*a*c+b^2)^(1/2))/(b+(-4*a*c+b^2)^(1/2)))*a*b*c-ln((b+2*c*x+(-4*a*c+b
^2)^(1/2))/(b+(-4*a*c+b^2)^(1/2)))*b^3+ln((-2*c*x+(-4*a*c+b^2)^(1/2)-b)/(-b
+(-4*a*c+b^2)^(1/2)))*(-4*a*c+b^2)^(1/2)*a*c-ln((-2*c*x+(-4*a*c+b^2)^(1/2)-
b)/(-b+(-4*a*c+b^2)^(1/2)))*(-4*a*c+b^2)^(1/2)*b^2-3*ln((-2*c*x+(-4*a*c+b^2
)^(1/2)-b)/(-b+(-4*a*c+b^2)^(1/2)))*a*b*c+ln((-2*c*x+(-4*a*c+b^2)^(1/2)-b)/
(-b+(-4*a*c+b^2)^(1/2)))*b^3)/c/(-4*a*c+b^2)^(1/2)-1/2*(dilog((-2*c*x+(-4*a
*c+b^2)^(1/2)-b)/(-b+(-4*a*c+b^2)^(1/2)))*(-4*a*c+b^2)^(1/2)*a*c-dilog((-2*
c*x+(-4*a*c+b^2)^(1/2)-b)/(-b+(-4*a*c+b^2)^(1/2)))*(-4*a*c+b^2)^(1/2)*b^2-3
*dilog((-2*c*x+(-4*a*c+b^2)^(1/2)-b)/(-b+(-4*a*c+b^2)^(1/2)))*a*b*c+dilog((
-2*c*x+(-4*a*c+b^2)^(1/2)-b)/(-b+(-4*a*c+b^2)^(1/2)))*b^3+dilog((b+2*c*x+(-
4*a*c+b^2)^(1/2))/(b+(-4*a*c+b^2)^(1/2)))*(-4*a*c+b^2)^(1/2)*a*c-dilog((b+2
```

```
*c*x+(-4*a*c+b^2)^(1/2))/(b+(-4*a*c+b^2)^(1/2)))*(-4*a*c+b^2)^(1/2)*b^2+3*d
ilog((b+2*c*x+(-4*a*c+b^2)^(1/2))/(b+(-4*a*c+b^2)^(1/2)))*a*b*c-dilog((b+2*
c*x+(-4*a*c+b^2)^(1/2))/(b+(-4*a*c+b^2)^(1/2)))*b^3)/c/(-4*a*c+b^2)^(1/2))/
c^2
```

Maxima [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*log(x)/(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re deta
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*log(x)/(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] integral(x^3*log(x)/(c*x^2 + b*x + a), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^3 \log(x)}{a + bx + cx^2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*ln(x)/(c*x**2+b*x+a),x)
```

```
[Out] Integral(x**3*log(x)/(a + b*x + c*x**2), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*log(x)/(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] integrate(x^3*log(x)/(c*x^2 + b*x + a), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x^3 \ln (x)}{c x^2 + b x + a} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^3*log(x))/(a + b*x + c*x^2),x)
```

```
[Out] int((x^3*log(x))/(a + b*x + c*x^2), x)
```

3.352 $\int \frac{x^2 \log(x)}{a+bx+cx^2} \, dx$

Optimal. Leaf size=234

$$-\frac{x}{c}+\frac{x\log(x)}{c}-\frac{\left(b-\frac{b^2-2ac}{\sqrt{b^2-4ac}}\right)\log(x)\log\left(1+\frac{2cx}{b-\sqrt{b^2-4ac}}\right)}{2c^2}-\frac{\left(b+\frac{b^2-2ac}{\sqrt{b^2-4ac}}\right)\log(x)\log\left(1+\frac{\quad}{b+\cdots}\right.}{2c^2}$$

```
[Out] -x/c+x*ln(x)/c-1/2*ln(x)*ln(1+2*c*x/(b-(-4*a*c+b^2)^(1/2)))*(b+(2*a*c-b^2)/
(-4*a*c+b^2)^(1/2))/c^2-1/2*polylog(2,-2*c*x/(b-(-4*a*c+b^2)^(1/2)))*(b+(2*
a*c-b^2)/(-4*a*c+b^2)^(1/2))/c^2-1/2*ln(x)*ln(1+2*c*x/(b+(-4*a*c+b^2)^(1/2)
))*(b+(-2*a*c+b^2)/(-4*a*c+b^2)^(1/2))/c^2-1/2*polylog(2,-2*c*x/(b+(-4*a*c+
b^2)^(1/2)))*(b+(-2*a*c+b^2)/(-4*a*c+b^2)^(1/2))/c^2
```

Rubi [A]

time = 0.24, antiderivative size = 234, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 4, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}} = 0.222$, Rules used = {2404, 2332, 2354, 2438}

$$-\frac{\left(b-\frac{b^2-2ac}{\sqrt{b^2-4ac}}\right)\text{PolyLog}\left(2,-\frac{2cx}{b-\sqrt{b^2-4ac}}\right)}{2c^2}-\frac{\left(\frac{b^2-2ac}{\sqrt{b^2-4ac}}+b\right)\text{PolyLog}\left(2,-\frac{2cx}{\sqrt{b^2-4ac}+b}\right)}{2c^2}-\frac{\log(x)\left(b-\frac{b^2-2ac}{\sqrt{b^2-4ac}}\right)\log\left(\frac{2cx}{b-\sqrt{b^2-4ac}}+1\right)}{2c^2}-\frac{\log(x)\left(\frac{b^2-2ac}{\sqrt{b^2-4ac}}+b\right)\log\left(\frac{2cx}{\sqrt{b^2-4ac}+b}+1\right)}{2c^2}-\frac{x}{c}+\frac{x\log(x)}{c}$$

Antiderivative was successfully verified.

```
[In] Int[(x^2*Log[x])/(a + b*x + c*x^2),x]
```

```
[Out] -(x/c) + (x*Log[x])/c - ((b - (b^2 - 2*a*c)/Sqrt[b^2 - 4*a*c])*Log[x]*Log[1
 + (2*c*x)/(b - Sqrt[b^2 - 4*a*c])])/(2*c^2) - ((b + (b^2 - 2*a*c)/Sqrt[b^2
 - 4*a*c])*Log[x]*Log[1 + (2*c*x)/(b + Sqrt[b^2 - 4*a*c])])/(2*c^2) - ((b -
 (b^2 - 2*a*c)/Sqrt[b^2 - 4*a*c])*PolyLog[2, (-2*c*x)/(b - Sqrt[b^2 - 4*a*c
])])/(2*c^2) - ((b + (b^2 - 2*a*c)/Sqrt[b^2 - 4*a*c])*PolyLog[2, (-2*c*x)/(
b + Sqrt[b^2 - 4*a*c])])/(2*c^2)
```

Rule 2332

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2354

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[Log[1 + e*(x/d)]*((a + b*Log[c*x^n])^p/e), x] - Dist[b*n*(p/e),
 Int[Log[1 + e*(x/d)]*((a + b*Log[c*x^n])^(p - 1)/x), x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2404

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*(RFx_), x_Symbol] :> With[{
u = ExpandIntegrand[(a + b*Log[c*x^n])^p, RFx, x]}, Int[u, x] /; SumQ[u]] /
```

```
; FreeQ[{a, b, c, n}, x] && RationalFunctionQ[RFx, x] && IGtQ[p, 0]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rubi steps

$$\begin{aligned}
\int \frac{x^2\log(x)}{a+bx+cx^2}\,dx &= \int \left(\frac{\log(x)}{c}-\frac{(a+bx)\log(x)}{c\,(a+bx+cx^2)}\right)dx\\
&= \frac{\int \log(x)\,dx}{c}-\frac{\int \frac{(a+bx)\log(x)}{a+bx+cx^2}\,dx}{c}\\
&= -\frac{x}{c}+\frac{x\log(x)}{c}-\frac{\int \left(\frac{\left(b+\frac{-b^2+2ac}{\sqrt{b^2-4ac}}\right)\log(x)}{b-\sqrt{b^2-4ac}+2cx}+\frac{\left(b-\frac{-b^2+2ac}{\sqrt{b^2-4ac}}\right)\log(x)}{b+\sqrt{b^2-4ac}+2cx}\right)dx}{c}\\
&= -\frac{x}{c}+\frac{x\log(x)}{c}-\frac{\left(b-\frac{b^2-2ac}{\sqrt{b^2-4ac}}\right)\int \frac{\log(x)}{b-\sqrt{b^2-4ac}+2cx}\,dx}{c}-\frac{\left(b+\frac{b^2-2ac}{\sqrt{b^2-4ac}}\right)\int -}{c}\\
&= -\frac{x}{c}+\frac{x\log(x)}{c}-\frac{\left(b-\frac{b^2-2ac}{\sqrt{b^2-4ac}}\right)\log(x)\log\left(1+\frac{2cx}{b-\sqrt{b^2-4ac}}\right)}{2c^2}-\frac{\left(b+\frac{b^2-2ac}{\sqrt{b^2-4}\right.}}{}\\
&= -\frac{x}{c}+\frac{x\log(x)}{c}-\frac{\left(b-\frac{b^2-2ac}{\sqrt{b^2-4ac}}\right)\log(x)\log\left(1+\frac{2cx}{b-\sqrt{b^2-4ac}}\right)}{2c^2}-\frac{\left(b+\frac{b^2-2ac}{\sqrt{b^2-4}\right.}}{}
\end{aligned}$$

Mathematica [A]
time = 0.19, size = 434, normalized size = 1.85

$$-\frac{x}{c}+\frac{x\log(x)}{c}-\frac{a\log(x)\log\left(\frac{b-\sqrt{b^2-4ac}+2cx}{b-\sqrt{b^2-4ac}}\right)}{c\sqrt{b^2-4ac}}-\frac{b\left(1-\frac{b}{\sqrt{b^2-4ac}}\right)\log(x)\log\left(\frac{b-\sqrt{b^2-4ac}+2cx}{b-\sqrt{b^2-4ac}}\right)}{2c^2}+\frac{a\log(x)\log\left(\frac{b+\sqrt{b^2-4ac}+2cx}{b+\sqrt{b^2-4ac}}\right)}{c\sqrt{b^2-4ac}}-\frac{b\left(1+\frac{b}{\sqrt{b^2-4ac}}\right)\log(x)\log\left(\frac{b+\sqrt{b^2-4ac}+2cx}{b+\sqrt{b^2-4ac}}\right)}{2c^2}-\frac{a\text{Li}_2\left(-\frac{2cx}{b-\sqrt{b^2-4ac}}\right)}{c\sqrt{b^2-4ac}}-\frac{b\left(1-\frac{b}{\sqrt{b^2-4ac}}\right)\text{Li}_2\left(-\frac{2cx}{b-\sqrt{b^2-4ac}}\right)}{2c^2}+\frac{a\text{Li}_2\left(-\frac{2cx}{b+\sqrt{b^2-4ac}}\right)}{c\sqrt{b^2-4ac}}-\frac{b\left(1+\frac{b}{\sqrt{b^2-4ac}}\right)\text{Li}_2\left(-\frac{2cx}{b+\sqrt{b^2-4ac}}\right)}{2c^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^2*Log[x])/(a + b*x + c*x^2),x]
```

```
[Out] -(x/c) + (x*Log[x])/c - (a*Log[x]*Log[(b - Sqrt[b^2 - 4*a*c] + 2*c*x)/(b -
Sqrt[b^2 - 4*a*c])])/(c*Sqrt[b^2 - 4*a*c]) - (b*(1 - b/Sqrt[b^2 - 4*a*c])*L
og[x]*Log[(b - Sqrt[b^2 - 4*a*c] + 2*c*x)/(b - Sqrt[b^2 - 4*a*c])])/(2*c^2)
 + (a*Log[x]*Log[(b + Sqrt[b^2 - 4*a*c] + 2*c*x)/(b + Sqrt[b^2 - 4*a*c])])/
(c*Sqrt[b^2 - 4*a*c]) - (b*(1 + b/Sqrt[b^2 - 4*a*c])*Log[x]*Log[(b + Sqrt[b
```

```
^2 - 4*a*c] + 2*c*x)/(b + Sqrt[b^2 - 4*a*c])])/(2*c^2) - (a*PolyLog[2, (-2*
c*x)/(b - Sqrt[b^2 - 4*a*c])])/(c*Sqrt[b^2 - 4*a*c]) - (b*(1 - b/Sqrt[b^2 -
 4*a*c])*PolyLog[2, (-2*c*x)/(b - Sqrt[b^2 - 4*a*c])])/(2*c^2) + (a*PolyLog
[2, (-2*c*x)/(b + Sqrt[b^2 - 4*a*c])])/(c*Sqrt[b^2 - 4*a*c]) - (b*(1 + b/Sq
rt[b^2 - 4*a*c])*PolyLog[2, (-2*c*x)/(b + Sqrt[b^2 - 4*a*c])])/(2*c^2)
```

Maple [B] Leaf count of result is larger than twice the leaf count of optimal. 542 vs. $2(212) = 424$.

time = 0.82, size = 543, normalized size = 2.32

method	result
default	$\frac{\ln(x)x-x}{c}+\frac{-\ln(x)\left(\ln\left(\frac{-2cx+\sqrt{-4ca+b^2}-b}{-b+\sqrt{-4ca+b^2}}\right)\sqrt{-4ca+b^2}\,b+2\ln\left(\frac{-2cx+\sqrt{-4ca+b^2}-b}{-b+\sqrt{-4ca+b^2}}\right)ac-\ln\left(\frac{-2cx+\sqrt{-4c}}{-b+\sqrt{-4c}}\right.\right.}{}$
risch	$\frac{x\ln(x)}{c}-\frac{x}{c}-\frac{\ln(x)\ln\left(\frac{-2cx+\sqrt{-4ca+b^2}-b}{-b+\sqrt{-4ca+b^2}}\right)b}{2c^2}-\frac{\ln(x)\ln\left(\frac{-2cx+\sqrt{-4ca+b^2}-b}{-b+\sqrt{-4ca+b^2}}\right)a}{c\sqrt{-4ca+b^2}}+\frac{\ln(x)\ln\left(\frac{-2cx+\sqrt{-4ca}}{-b+\sqrt{-4ca}}\right.}{2c^2\sqrt{-4ca+}}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*ln(x)/(c*x^2+b*x+a),x,method=_RETURNVERBOSE)
```

```
[Out] 1/c*(ln(x)*x-x)+(-1/2*ln(x)*(ln((-2*c*x+(-4*a*c+b^2)^(1/2)-b)/(-b+(-4*a*c+b
^2)^(1/2)))*(-4*a*c+b^2)^(1/2)*b+2*ln((-2*c*x+(-4*a*c+b^2)^(1/2)-b)/(-b+(-4
*a*c+b^2)^(1/2)))*a*c-ln((-2*c*x+(-4*a*c+b^2)^(1/2)-b)/(-b+(-4*a*c+b^2)^(1/
2)))*b^2+ln((b+2*c*x+(-4*a*c+b^2)^(1/2))/(b+(-4*a*c+b^2)^(1/2)))*(-4*a*c+b^
2)^(1/2)*b-2*ln((b+2*c*x+(-4*a*c+b^2)^(1/2))/(b+(-4*a*c+b^2)^(1/2)))*a*c+ln
((b+2*c*x+(-4*a*c+b^2)^(1/2))/(b+(-4*a*c+b^2)^(1/2)))*b^2)/c/(-4*a*c+b^2)^(
1/2)-1/2*(dilog((-2*c*x+(-4*a*c+b^2)^(1/2)-b)/(-b+(-4*a*c+b^2)^(1/2)))*(-4*
a*c+b^2)^(1/2)*b+2*dilog((-2*c*x+(-4*a*c+b^2)^(1/2)-b)/(-b+(-4*a*c+b^2)^(1/
2)))*a*c-dilog((-2*c*x+(-4*a*c+b^2)^(1/2)-b)/(-b+(-4*a*c+b^2)^(1/2)))*b^2+d
ilog((b+2*c*x+(-4*a*c+b^2)^(1/2))/(b+(-4*a*c+b^2)^(1/2)))*(-4*a*c+b^2)^(1/2
)*b-2*dilog((b+2*c*x+(-4*a*c+b^2)^(1/2))/(b+(-4*a*c+b^2)^(1/2)))*a*c+dilog(
(b+2*c*x+(-4*a*c+b^2)^(1/2))/(b+(-4*a*c+b^2)^(1/2)))*b^2)/c/(-4*a*c+b^2)^(1
/2))/c
```

Maxima [F(-2)]

time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*log(x)/(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
```

```
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re deta
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*log(x)/(c*x^2+b*x+a),x, algorithm="fricas")
[Out] integral(x^2*log(x)/(c*x^2 + b*x + a), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^2 \log{(x)}}{a + bx + cx^2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*ln(x)/(c*x**2+b*x+a),x)
[Out] Integral(x**2*log(x)/(a + b*x + c*x**2), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*log(x)/(c*x^2+b*x+a),x, algorithm="giac")
[Out] integrate(x^2*log(x)/(c*x^2 + b*x + a), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x^2\,\ln\left(x\right)}{c\,x^2+b\,x+a} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^2*log(x))/(a + b*x + c*x^2),x)
[Out] int((x^2*log(x))/(a + b*x + c*x^2), x)
```

3.353 $\int \frac{x\log(x)}{a+bx+cx^2}\,dx$

Optimal. Leaf size=193

$$\frac{\left(1-\frac{b}{\sqrt{b^2-4ac}}\right)\log(x)\log\left(1+\frac{2cx}{b-\sqrt{b^2-4ac}}\right)}{2c}+\frac{\left(1+\frac{b}{\sqrt{b^2-4ac}}\right)\log(x)\log\left(1+\frac{2cx}{b+\sqrt{b^2-4ac}}\right)}{2c}+$$

```
[Out] 1/2*ln(x)*ln(1+2*c*x/(b-(-4*a*c+b^2)^(1/2)))*(1-b/(-4*a*c+b^2)^(1/2))/c+1/2
*polylog(2,-2*c*x/(b-(-4*a*c+b^2)^(1/2)))*(1-b/(-4*a*c+b^2)^(1/2))/c+1/2*ln
(x)*ln(1+2*c*x/(b+(-4*a*c+b^2)^(1/2)))*(1+b/(-4*a*c+b^2)^(1/2))/c+1/2*polyl
og(2,-2*c*x/(b+(-4*a*c+b^2)^(1/2)))*(1+b/(-4*a*c+b^2)^(1/2))/c
```

Rubi [A]

time = 0.13, antiderivative size = 193, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 3, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.188, Rules used = {2404, 2354, 2438}

$$\frac{\left(1-\frac{b}{\sqrt{b^2-4ac}}\right)\text{PolyLog}\left(2,-\frac{2cx}{b-\sqrt{b^2-4ac}}\right)}{2c}+\frac{\left(\frac{b}{\sqrt{b^2-4ac}}+1\right)\text{PolyLog}\left(2,-\frac{2cx}{\sqrt{b^2-4ac}+b}\right)}{2c}+\frac{\log(x)\left(1-\frac{b}{\sqrt{b^2-4ac}}\right)\log\left(\frac{2cx}{b-\sqrt{b^2-4ac}}+1\right)}{2c}+\frac{\log(x)\left(\frac{b}{\sqrt{b^2-4ac}}+1\right)\log\left(\frac{2cx}{\sqrt{b^2-4ac}+b}+1\right)}{2c}$$

Antiderivative was successfully verified.

```
[In] Int[(x*Log[x])/(a + b*x + c*x^2),x]
```

```
[Out] ((1 - b/Sqrt[b^2 - 4*a*c])*Log[x]*Log[1 + (2*c*x)/(b - Sqrt[b^2 - 4*a*c])])
/(2*c) + ((1 + b/Sqrt[b^2 - 4*a*c])*Log[x]*Log[1 + (2*c*x)/(b + Sqrt[b^2 -
4*a*c])])/(2*c) + ((1 - b/Sqrt[b^2 - 4*a*c])*PolyLog[2, (-2*c*x)/(b - Sqrt[
b^2 - 4*a*c])])/(2*c) + ((1 + b/Sqrt[b^2 - 4*a*c])*PolyLog[2, (-2*c*x)/(b +
 Sqrt[b^2 - 4*a*c])])/(2*c)
```

Rule 2354

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[Log[1 + e*(x/d)]*((a + b*Log[c*x^n])^p/e), x] - Dist[b*n*(p/e),
 Int[Log[1 + e*(x/d)]*((a + b*Log[c*x^n])^(p - 1)/x), x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2404

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*(RFx_), x_Symbol] :> With[{
u = ExpandIntegrand[(a + b*Log[c*x^n])^p, RFx, x]}, Int[u, x] /; SumQ[u]] /
; FreeQ[{a, b, c, n}, x] && RationalFunctionQ[RFx, x] && IGtQ[p, 0]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rubi steps

$$\int \frac{x\log(x)}{a+bx+cx^2}\,dx = \int \left(\frac{\left(1-\frac{b}{\sqrt{b^2-4ac}}\right)\log(x)}{b-\sqrt{b^2-4ac}+2cx}+\frac{\left(1+\frac{b}{\sqrt{b^2-4ac}}\right)\log(x)}{b+\sqrt{b^2-4ac}+2cx}\right)dx$$

$$= \left(1-\frac{b}{\sqrt{b^2-4ac}}\right)\int \frac{\log(x)}{b-\sqrt{b^2-4ac}+2cx}\,dx+\left(1+\frac{b}{\sqrt{b^2-4ac}}\right)\int \frac{\log(x}{b+\sqrt{b^2-4a}}$$

$$= \frac{\left(1-\frac{b}{\sqrt{b^2-4ac}}\right)\log(x)\log\left(1+\frac{2cx}{b-\sqrt{b^2-4ac}}\right)}{2c}+\frac{\left(1+\frac{b}{\sqrt{b^2-4ac}}\right)\log(x)\log\left(\right.}{2c}$$

$$= \frac{\left(1-\frac{b}{\sqrt{b^2-4ac}}\right)\log(x)\log\left(1+\frac{2cx}{b-\sqrt{b^2-4ac}}\right)}{2c}+\frac{\left(1+\frac{b}{\sqrt{b^2-4ac}}\right)\log(x)\log\left(\right.}{2c}$$

Mathematica [A]
time = 0.10, size = 182, normalized size = 0.94

$$\frac{\log(x)\left(\left(-b+\sqrt{b^2-4ac}\right)\log\left(1+\frac{2cx}{b-\sqrt{b^2-4ac}}\right)+\left(b+\sqrt{b^2-4ac}\right)\log\left(1+\frac{2cx}{b+\sqrt{b^2-4ac}}\right)\right)+\left(-b+\sqrt{b^2-4ac}\right)\mathrm{Li}_2\left(\frac{2cx}{-b+\sqrt{b^2-4ac}}\right)+\left(b+\sqrt{b^2-4ac}\right)\mathrm{Li}_2\left(-\frac{2cx}{b+\sqrt{b^2-4ac}}\right)}{2c\sqrt{b^2-4ac}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x*Log[x])/(a + b*x + c*x^2),x]
```

```
[Out] (Log[x]*((-b + Sqrt[b^2 - 4*a*c])*Log[1 + (2*c*x)/(b - Sqrt[b^2 - 4*a*c])]
+ (b + Sqrt[b^2 - 4*a*c])*Log[1 + (2*c*x)/(b + Sqrt[b^2 - 4*a*c])]) + (-b +
 Sqrt[b^2 - 4*a*c])*PolyLog[2, (2*c*x)/(-b + Sqrt[b^2 - 4*a*c])] + (b + Sqr
t[b^2 - 4*a*c])*PolyLog[2, (-2*c*x)/(b + Sqrt[b^2 - 4*a*c])])/(2*c*Sqrt[b^2
 - 4*a*c])
```

Maple [B] Leaf count of result is larger than twice the leaf count of optimal. 361 vs. $2(169) = 338$.
time = 0.81, size = 362, normalized size = 1.88

method	result
risch	$\frac{\ln(x)\left(\ln\left(\frac{-2cx+\sqrt{-4ca+b^2}-b}{-b+\sqrt{-4ca+b^2}}\right)\sqrt{-4ca+b^2}-\ln\left(\frac{-2cx+\sqrt{-4ca+b^2}-b}{-b+\sqrt{-4ca+b^2}}\right)b+\ln\left(\frac{b+2cx+\sqrt{-4ca+b^2}}{b+\sqrt{-4ca+b^2}}\right)\sqrt{-4\right.}{2c\sqrt{-4ca+b^2}}$
default	$\frac{\ln(x)\left(\ln\left(\frac{-2cx+\sqrt{-4ca+b^2}-b}{-b+\sqrt{-4ca+b^2}}\right)\sqrt{-4ca+b^2}-\ln\left(\frac{-2cx+\sqrt{-4ca+b^2}-b}{-b+\sqrt{-4ca+b^2}}\right)b+\ln\left(\frac{b+2cx+\sqrt{-4ca+b^2}}{b+\sqrt{-4ca+b^2}}\right)\sqrt{-4\right.}{2c\sqrt{-4ca+b^2}}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*ln(x)/(c*x^2+b*x+a),x,method=_RETURNVERBOSE)
```

```
[Out] 1/2*ln(x)*(ln((-2*c*x+(-4*a*c+b^2)^(1/2)-b)/(-b+(-4*a*c+b^2)^(1/2)))*(-4*a*
c+b^2)^(1/2)-ln((-2*c*x+(-4*a*c+b^2)^(1/2)-b)/(-b+(-4*a*c+b^2)^(1/2)))*b+ln
((b+2*c*x+(-4*a*c+b^2)^(1/2))/(b+(-4*a*c+b^2)^(1/2)))*(-4*a*c+b^2)^(1/2)+ln
((b+2*c*x+(-4*a*c+b^2)^(1/2))/(b+(-4*a*c+b^2)^(1/2)))*b)/c/(-4*a*c+b^2)^(1/
2)+1/2*(dilog((-2*c*x+(-4*a*c+b^2)^(1/2)-b)/(-b+(-4*a*c+b^2)^(1/2)))*(-4*a*
c+b^2)^(1/2)-dilog((-2*c*x+(-4*a*c+b^2)^(1/2)-b)/(-b+(-4*a*c+b^2)^(1/2)))*b
+dilog((b+2*c*x+(-4*a*c+b^2)^(1/2))/(b+(-4*a*c+b^2)^(1/2)))*(-4*a*c+b^2)^(1
/2)+dilog((b+2*c*x+(-4*a*c+b^2)^(1/2))/(b+(-4*a*c+b^2)^(1/2)))*b)/c/(-4*a*c
+b^2)^(1/2)
```

Maxima [**F(-2)**]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*log(x)/(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re deta
```

Fricas [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*log(x)/(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] integral(x*log(x)/(c*x^2 + b*x + a), x)
```

Sympy [**F**]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x\log(x)}{a+bx+cx^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*ln(x)/(c*x**2+b*x+a),x)
```

```
[Out] Integral(x*log(x)/(a + b*x + c*x**2), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*log(x)/(c*x^2+b*x+a),x, algorithm="giac")
[Out] integrate(x*log(x)/(c*x^2 + b*x + a), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{x\,\ln\left(x\right)}{c\,x^2+b\,x+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x*log(x))/(a + b*x + c*x^2),x)
[Out] int((x*log(x))/(a + b*x + c*x^2), x)
```

3.354 $\int \frac{\log(x)}{a+bx+cx^2} dx$

Optimal. Leaf size=153

$$\frac{\log(x)\log\left(1+\frac{2cx}{b-\sqrt{b^2-4ac}}\right)}{\sqrt{b^2-4ac}}-\frac{\log(x)\log\left(1+\frac{2cx}{b+\sqrt{b^2-4ac}}\right)}{\sqrt{b^2-4ac}}+\frac{\text{Li}_2\left(-\frac{2cx}{b-\sqrt{b^2-4ac}}\right)}{\sqrt{b^2-4ac}}-\frac{\text{Li}_2\left(-\frac{2cx}{b+\sqrt{b^2-4ac}}\right)}{\sqrt{b^2-4ac}}$$

```
[Out] ln(x)*ln(1+2*c*x/(b-(-4*a*c+b^2)^(1/2)))/(-4*a*c+b^2)^(1/2)-ln(x)*ln(1+2*c*
x/(b+(-4*a*c+b^2)^(1/2)))/(-4*a*c+b^2)^(1/2)+polylog(2,-2*c*x/(b-(-4*a*c+b^
2)^(1/2)))/(-4*a*c+b^2)^(1/2)-polylog(2,-2*c*x/(b+(-4*a*c+b^2)^(1/2)))/(-4*
a*c+b^2)^(1/2)
```

Rubi [A]
time = 0.10, antiderivative size = 153, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 3, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}} = 0.200$, Rules used = {2404, 2354, 2438}

$$\frac{\text{PolyLog}\left(2,-\frac{2cx}{b-\sqrt{b^2-4ac}}\right)}{\sqrt{b^2-4ac}}-\frac{\text{PolyLog}\left(2,-\frac{2cx}{\sqrt{b^2-4ac}+b}\right)}{\sqrt{b^2-4ac}}+\frac{\log(x)\log\left(\frac{2cx}{b-\sqrt{b^2-4ac}}+1\right)}{\sqrt{b^2-4ac}}-\frac{\log(x)\log\left(\frac{2cx}{\sqrt{b^2-4ac}+b}+1\right)}{\sqrt{b^2-4ac}}$$

Antiderivative was successfully verified.

```
[In] Int[Log[x]/(a + b*x + c*x^2),x]
```

```
[Out] (Log[x]*Log[1 + (2*c*x)/(b - Sqrt[b^2 - 4*a*c])])/Sqrt[b^2 - 4*a*c] - (Log[
x]*Log[1 + (2*c*x)/(b + Sqrt[b^2 - 4*a*c])])/Sqrt[b^2 - 4*a*c] + PolyLog[2,
 (-2*c*x)/(b - Sqrt[b^2 - 4*a*c])]/Sqrt[b^2 - 4*a*c] - PolyLog[2, (-2*c*x)/
(b + Sqrt[b^2 - 4*a*c])]/Sqrt[b^2 - 4*a*c]
```

Rule 2354

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[Log[1 + e*(x/d)]*((a + b*Log[c*x^n])^p/e), x] - Dist[b*n*(p/e),
 Int[Log[1 + e*(x/d)]*((a + b*Log[c*x^n])^(p - 1)/x), x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2404

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*(RFx_), x_Symbol] :> With[{
u = ExpandIntegrand[(a + b*Log[c*x^n])^p, RFx, x]}, Int[u, x] /; SumQ[u]] /
; FreeQ[{a, b, c, n}, x] && RationalFunctionQ[RFx, x] && IGtQ[p, 0]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rubi steps

$$\int \frac{\log(x)}{a+bx+cx^2}\,dx = \int \left(\frac{2c\log(x)}{\sqrt{b^2-4ac}\left(b-\sqrt{b^2-4ac}+2cx\right)} - \frac{2c\log(x)}{\sqrt{b^2-4ac}\left(b+\sqrt{b^2-4ac}+2cx\right)}\right) dx$$

$$= \frac{(2c)\int \frac{\log(x)}{b-\sqrt{b^2-4ac}+2cx}\,dx}{\sqrt{b^2-4ac}} - \frac{(2c)\int \frac{\log(x)}{b+\sqrt{b^2-4ac}+2cx}\,dx}{\sqrt{b^2-4ac}}$$

$$= \frac{\log(x)\log\left(1+\frac{2cx}{b-\sqrt{b^2-4ac}}\right)}{\sqrt{b^2-4ac}} - \frac{\log(x)\log\left(1+\frac{2cx}{b+\sqrt{b^2-4ac}}\right)}{\sqrt{b^2-4ac}} - \frac{\int \frac{\log\left(1+\frac{2cx}{b-\sqrt{b^2-\ldots}}\right.}{x}}{\sqrt{b^2-4a\ldots}}$$

$$= \frac{\log(x)\log\left(1+\frac{2cx}{b-\sqrt{b^2-4ac}}\right)}{\sqrt{b^2-4ac}} - \frac{\log(x)\log\left(1+\frac{2cx}{b+\sqrt{b^2-4ac}}\right)}{\sqrt{b^2-4ac}} + \frac{\text{Li}_2\left(-\frac{2cx}{b-\sqrt{b^2-4\ldots}}\right.}{\sqrt{b^2-4ac}}$$

Mathematica [A]
time = 0.02, size = 116, normalized size = 0.76

$$\frac{\log(x)\left(\log\left(1+\frac{2cx}{b-\sqrt{b^2-4ac}}\right)-\log\left(1+\frac{2cx}{b+\sqrt{b^2-4ac}}\right)\right)+\text{Li}_2\left(\frac{2cx}{-b+\sqrt{b^2-4ac}}\right)-\text{Li}_2\left(-\frac{2cx}{b+\sqrt{b^2-4ac}}\right)}{\sqrt{b^2-4ac}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[x]/(a + b*x + c*x^2),x]
```

```
[Out] (Log[x]*(Log[1 + (2*c*x)/(b - Sqrt[b^2 - 4*a*c])] - Log[1 + (2*c*x)/(b + Sq
rt[b^2 - 4*a*c])]) + PolyLog[2, (2*c*x)/(-b + Sqrt[b^2 - 4*a*c])] - PolyLog
[2, (-2*c*x)/(b + Sqrt[b^2 - 4*a*c])])/Sqrt[b^2 - 4*a*c]
```

Maple [A]
time = 0.75, size = 168, normalized size = 1.10

method	result
default	$\frac{\ln(x)\left(\ln\left(\frac{-2cx+\sqrt{-4ca+b^2}-b}{-b+\sqrt{-4ca+b^2}}\right)-\ln\left(\frac{b+2cx+\sqrt{-4ca+b^2}}{b+\sqrt{-4ca+b^2}}\right)\right)}{\sqrt{-4ca+b^2}}+\frac{\text{dilog}\left(\frac{-2cx+\sqrt{-4ca+b^2}-b}{-b+\sqrt{-4ca+b^2}}\right)-\text{dilog}\left(\frac{b+2cx+\sqrt{\ldots}}{b+\sqrt{\ldots}}\right.}{\sqrt{-4ca+b^2}}$
risch	$\frac{\ln(x)\left(\ln\left(\frac{-2cx+\sqrt{-4ca+b^2}-b}{-b+\sqrt{-4ca+b^2}}\right)-\ln\left(\frac{b+2cx+\sqrt{-4ca+b^2}}{b+\sqrt{-4ca+b^2}}\right)\right)}{\sqrt{-4ca+b^2}}+\frac{\text{dilog}\left(\frac{-2cx+\sqrt{-4ca+b^2}-b}{-b+\sqrt{-4ca+b^2}}\right)}{\sqrt{-4ca+b^2}}-\frac{\text{dilog}\left(\frac{b+2cx\ldots}{b+\ldots}\right.}{\sqrt{-\ldots}}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(x)/(c*x^2+b*x+a),x,method=_RETURNVERBOSE)
```

```
[Out] ln(x)*(ln((-2*c*x+(-4*a*c+b^2)^(1/2)-b)/(-b+(-4*a*c+b^2)^(1/2)))-ln((b+2*c*
x+(-4*a*c+b^2)^(1/2))/(b+(-4*a*c+b^2)^(1/2))))/(-4*a*c+b^2)^(1/2)+(dilog((-
2*c*x+(-4*a*c+b^2)^(1/2)-b)/(-b+(-4*a*c+b^2)^(1/2)))-dilog((b+2*c*x+(-4*a*c
+b^2)^(1/2))/(b+(-4*a*c+b^2)^(1/2))))/(-4*a*c+b^2)^(1/2)
```

Maxima [**F(-2)**]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(x)/(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re deta
```

Fricas [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(x)/(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] integral(log(x)/(c*x^2 + b*x + a), x)
```

Sympy [**F**]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\log(x)}{a+bx+cx^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(x)/(c*x**2+b*x+a),x)
```

```
[Out] Integral(log(x)/(a + b*x + c*x**2), x)
```

Giac [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(x)/(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] integrate(log(x)/(c*x^2 + b*x + a), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\ln(x)}{c\,x^2+b\,x+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(log(x)/(a + b*x + c*x^2),x)
```

```
[Out] int(log(x)/(a + b*x + c*x^2), x)
```

3.355 $\int \frac{\log(x)}{x(a+bx+cx^2)}\,dx$

Optimal. Leaf size=204

$$\frac{\log^2(x)}{2a}-\frac{\left(1+\frac{b}{\sqrt{b^2-4ac}}\right)\log(x)\log\left(1+\frac{2cx}{b-\sqrt{b^2-4ac}}\right)}{2a}-\frac{\left(1-\frac{b}{\sqrt{b^2-4ac}}\right)\log(x)\log\left(1+\frac{2cx}{b+\sqrt{b^2-}}\right.}{2a}$$

```
[Out] 1/2*ln(x)^2/a-1/2*ln(x)*ln(1+2*c*x/(b+(-4*a*c+b^2)^(1/2)))*(1-b/(-4*a*c+b^2
)^(1/2))/a-1/2*polylog(2,-2*c*x/(b+(-4*a*c+b^2)^(1/2)))*(1-b/(-4*a*c+b^2)^(
1/2))/a-1/2*ln(x)*ln(1+2*c*x/(b-(-4*a*c+b^2)^(1/2)))*(1+b/(-4*a*c+b^2)^(1/2
))/a-1/2*polylog(2,-2*c*x/(b-(-4*a*c+b^2)^(1/2)))*(1+b/(-4*a*c+b^2)^(1/2))/
a
```

Rubi [A]
time = 0.20, antiderivative size = 204, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 4, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}} = 0.222$, Rules used = {2404, 2338, 2354, 2438}

$$-\frac{\left(\frac{b}{\sqrt{b^2-4ac}}+1\right)\text{PolyLog}\left(2,-\frac{2cx}{b-\sqrt{b^2-4ac}}\right)}{2a}-\frac{\left(1-\frac{b}{\sqrt{b^2-4ac}}\right)\text{PolyLog}\left(2,-\frac{2cx}{\sqrt{b^2-4ac}+b}\right)}{2a}-\frac{\log(x)\left(\frac{b}{\sqrt{b^2-4ac}}+1\right)\log\left(\frac{2cx}{b-\sqrt{b^2-4ac}}+1\right)}{2a}-\frac{\log(x)\left(1-\frac{b}{\sqrt{b^2-4ac}}\right)\log\left(\frac{2cx}{\sqrt{b^2-4ac}+b}+1\right)}{2a}+\frac{\log^2(x)}{2a}$$

Antiderivative was successfully verified.

```
[In] Int[Log[x]/(x*(a + b*x + c*x^2)),x]
```

```
[Out] Log[x]^2/(2*a) - ((1 + b/Sqrt[b^2 - 4*a*c])*Log[x]*Log[1 + (2*c*x)/(b - Sqr
t[b^2 - 4*a*c])])/(2*a) - ((1 - b/Sqrt[b^2 - 4*a*c])*Log[x]*Log[1 + (2*c*x)
/(b + Sqrt[b^2 - 4*a*c])])/(2*a) - ((1 + b/Sqrt[b^2 - 4*a*c])*PolyLog[2, (-
2*c*x)/(b - Sqrt[b^2 - 4*a*c])])/(2*a) - ((1 - b/Sqrt[b^2 - 4*a*c])*PolyLog
[2, (-2*c*x)/(b + Sqrt[b^2 - 4*a*c])])/(2*a)
```

Rule 2338

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2354

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[Log[1 + e*(x/d)]*((a + b*Log[c*x^n])^p/e), x] - Dist[b*n*(p/e),
 Int[Log[1 + e*(x/d)]*((a + b*Log[c*x^n])^(p - 1)/x), x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2404

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*(RFx_), x_Symbol] :> With[{
u = ExpandIntegrand[(a + b*Log[c*x^n])^p, RFx, x]}, Int[u, x] /; SumQ[u]] /
```

```
; FreeQ[{a, b, c, n}, x] && RationalFunctionQ[RFx, x] && IGtQ[p, 0]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rubi steps

$$\int \frac{\log(x)}{x\left(a+bx+cx^2\right)}\,dx=\int\left(\frac{\log(x)}{ax}+\frac{(-b-cx)\log(x)}{a\left(a+bx+cx^2\right)}\right)dx$$

$$=\frac{\int\frac{\log(x)}{x}\,dx}{a}+\frac{\int\frac{(-b-cx)\log(x)}{a+bx+cx^2}\,dx}{a}$$

$$=\frac{\log^2(x)}{2a}+\frac{\int\left(\frac{\left(-c-\frac{bc}{\sqrt{b^2-4ac}}\right)\log(x)}{b-\sqrt{b^2-4ac}+2cx}+\frac{\left(-c+\frac{bc}{\sqrt{b^2-4ac}}\right)\log(x)}{b+\sqrt{b^2-4ac}+2cx}\right)dx}{a}$$

$$=\frac{\log^2(x)}{2a}-\frac{\left(c\left(1-\frac{b}{\sqrt{b^2-4ac}}\right)\right)\int\frac{\log(x)}{b+\sqrt{b^2-4ac}+2cx}\,dx}{a}-\frac{\left(c\left(1+\frac{b}{\sqrt{b^2-4ac}}\right)\right.}{}$$

$$=\frac{\log^2(x)}{2a}-\frac{\left(1+\frac{b}{\sqrt{b^2-4ac}}\right)\log(x)\log\left(1+\frac{2cx}{b-\sqrt{b^2-4ac}}\right)}{2a}-\frac{\left(1-\frac{b}{\sqrt{b^2-4ac}}\right.}{}$$

$$=\frac{\log^2(x)}{2a}-\frac{\left(1+\frac{b}{\sqrt{b^2-4ac}}\right)\log(x)\log\left(1+\frac{2cx}{b-\sqrt{b^2-4ac}}\right)}{2a}-\frac{\left(1-\frac{b}{\sqrt{b^2-4ac}}\right.}{}$$

Mathematica [A]

time = 0.15, size = 227, normalized size = 1.11

$$\frac{\log(x)\left(\sqrt{b^2-4ac}\log(x)-\left(b+\sqrt{b^2-4ac}\right)\log\left(\frac{b-\sqrt{b^2-4ac}+2cx}{b-\sqrt{b^2-4ac}}\right)+\left(b-\sqrt{b^2-4ac}\right)\log\left(\frac{b+\sqrt{b^2-4ac}+2cx}{b+\sqrt{b^2-4ac}}\right)\right)-\left(b+\sqrt{b^2-4ac}\right)\text{Li}_2\left(\frac{2cx}{-b+\sqrt{b^2-4ac}}\right)+\left(b-\sqrt{b^2-4ac}\right)\text{Li}_2\left(-\frac{2cx}{b+\sqrt{b^2-4ac}}\right)}{2a\sqrt{b^2-4ac}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[x]/(x*(a + b*x + c*x^2)),x]
```

```
[Out] (Log[x]*(Sqrt[b^2 - 4*a*c]*Log[x] - (b + Sqrt[b^2 - 4*a*c])*Log[(b - Sqrt[b
^2 - 4*a*c] + 2*c*x)/(b - Sqrt[b^2 - 4*a*c])] + (b - Sqrt[b^2 - 4*a*c])*Log
[(b + Sqrt[b^2 - 4*a*c] + 2*c*x)/(b + Sqrt[b^2 - 4*a*c])]) - (b + Sqrt[b^2
- 4*a*c])*PolyLog[2, (2*c*x)/(-b + Sqrt[b^2 - 4*a*c])] + (b - Sqrt[b^2 - 4*
a*c])*PolyLog[2, (-2*c*x)/(b + Sqrt[b^2 - 4*a*c])])/(2*a*Sqrt[b^2 - 4*a*c])
```

Maple [B] Leaf count of result is larger than twice the leaf count of optimal. 369 vs. $2(178) = 356$.
time = 0.83, size = 370, normalized size = 1.81

method	result
default	$\frac{\ln(x)^2}{2a} + \frac{-\frac{\ln(x)\left(\ln\left(\frac{-2cx+\sqrt{-4ca+b^2}-b}{-b+\sqrt{-4ca+b^2}}\right)\sqrt{-4ca+b^2}+\ln\left(\frac{-2cx+\sqrt{-4ca+b^2}-b}{-b+\sqrt{-4ca+b^2}}\right)b+\ln\left(\frac{b+2cx+\sqrt{-4ca+b^2}}{b+\sqrt{-4ca+b^2}}\right.\right.}{2\sqrt{-4ca+b^2}}}{}$
risch	$\frac{\ln(x)^2}{2a} - \frac{\ln(x)\ln\left(\frac{-2cx+\sqrt{-4ca+b^2}-b}{-b+\sqrt{-4ca+b^2}}\right)}{2a} - \frac{\ln(x)\ln\left(\frac{-2cx+\sqrt{-4ca+b^2}-b}{-b+\sqrt{-4ca+b^2}}\right)b}{2a\sqrt{-4ca+b^2}} - \frac{\ln(x)\ln\left(\frac{b+2cx+\sqrt{-4ca+b^2}}{b+\sqrt{-4ca+b^2}}\right.}{2a}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(x)/x/(c*x^2+b*x+a),x,method=_RETURNVERBOSE)
```

```
[Out] 1/2*ln(x)^2/a+(-1/2*ln(x)*(ln((-2*c*x+(-4*a*c+b^2)^(1/2)-b)/(-b+(-4*a*c+b^2
)^(1/2)))*(-4*a*c+b^2)^(1/2)+ln((-2*c*x+(-4*a*c+b^2)^(1/2)-b)/(-b+(-4*a*c+b
^2)^(1/2)))*b+ln((b+2*c*x+(-4*a*c+b^2)^(1/2))/(b+(-4*a*c+b^2)^(1/2)))*(-4*a
*c+b^2)^(1/2)-ln((b+2*c*x+(-4*a*c+b^2)^(1/2))/(b+(-4*a*c+b^2)^(1/2)))*b)/(-
4*a*c+b^2)^(1/2)-1/2*(dilog((-2*c*x+(-4*a*c+b^2)^(1/2)-b)/(-b+(-4*a*c+b^2)^
(1/2)))*(-4*a*c+b^2)^(1/2)+dilog((-2*c*x+(-4*a*c+b^2)^(1/2)-b)/(-b+(-4*a*c+
b^2)^(1/2)))*b+dilog((b+2*c*x+(-4*a*c+b^2)^(1/2))/(b+(-4*a*c+b^2)^(1/2)))*(
-4*a*c+b^2)^(1/2)-dilog((b+2*c*x+(-4*a*c+b^2)^(1/2))/(b+(-4*a*c+b^2)^(1/2))
)*b)/(-4*a*c+b^2)^(1/2))/a
```

Maxima [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(x)/x/(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re deta
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(x)/x/(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] integral(log(x)/(c*x^3 + b*x^2 + a*x), x)
```

Sympy [**F(-1)**] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(x)/x/(c*x**2+b*x+a),x)
```

```
[Out] Timed out
```

Giac [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(x)/x/(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] integrate(log(x)/((c*x^2 + b*x + a)*x), x)
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\ln(x)}{x\,\left(c\,x^2+b\,x+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(log(x)/(x*(a + b*x + c*x^2)),x)
```

```
[Out] int(log(x)/(x*(a + b*x + c*x^2)), x)
```

3.356 $\int \frac{\log(x)}{x^2(a+bx+cx^2)} dx$

Optimal. Leaf size=251

$$-\frac{1}{ax}-\frac{\log(x)}{ax}-\frac{b\log^2(x)}{2a^2}+\frac{\left(b+\frac{b^2-2ac}{\sqrt{b^2-4ac}}\right)\log(x)\log\left(1+\frac{2cx}{b-\sqrt{b^2-4ac}}\right)}{2a^2}+\frac{\left(b-\frac{b^2-2ac}{\sqrt{b^2-4ac}}\right)\log(x)\log}{2a^2}$$

```
[Out] -1/a/x-ln(x)/a/x-1/2*b*ln(x)^2/a^2+1/2*ln(x)*ln(1+2*c*x/(b+(-4*a*c+b^2)^(1/
2)))*(b+(2*a*c-b^2)/(-4*a*c+b^2)^(1/2))/a^2+1/2*polylog(2,-2*c*x/(b+(-4*a*c
+b^2)^(1/2)))*(b+(2*a*c-b^2)/(-4*a*c+b^2)^(1/2))/a^2+1/2*ln(x)*ln(1+2*c*x/(
b-(-4*a*c+b^2)^(1/2)))*(b+(-2*a*c+b^2)/(-4*a*c+b^2)^(1/2))/a^2+1/2*polylog(
2,-2*c*x/(b-(-4*a*c+b^2)^(1/2)))*(b+(-2*a*c+b^2)/(-4*a*c+b^2)^(1/2))/a^2
```

Rubi [A]

time = 0.26, antiderivative size = 251, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 5, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}} = 0.278$, Rules used = {2404, 2341, 2338, 2354, 2438}

$$\frac{\left(\frac{b^2-2ac}{\sqrt{b^2-4ac}}+b\right)\text{PolyLog}\left(2,-\frac{2cx}{b-\sqrt{b^2-4ac}}\right)}{2a^2}+\frac{\left(b-\frac{b^2-2ac}{\sqrt{b^2-4ac}}\right)\text{PolyLog}\left(2,-\frac{2cx}{\sqrt{b^2-4ac}+b}\right)}{2a^2}+\frac{\log(x)\left(\frac{b^2-2ac}{\sqrt{b^2-4ac}}+b\right)\log\left(\frac{2cx}{b-\sqrt{b^2-4ac}}+1\right)}{2a^2}+\frac{\log(x)\left(b-\frac{b^2-2ac}{\sqrt{b^2-4ac}}\right)\log\left(\frac{2cx}{\sqrt{b^2-4ac}+b}+1\right)}{2a^2}-\frac{b\log^2(x)}{2a^2}-\frac{1}{ax}-\frac{\log(x)}{ax}$$

Antiderivative was successfully verified.

```
[In] Int[Log[x]/(x^2*(a + b*x + c*x^2)),x]
```

```
[Out] -(1/(a*x)) - Log[x]/(a*x) - (b*Log[x]^2)/(2*a^2) + ((b + (b^2 - 2*a*c)/Sqrt
[b^2 - 4*a*c])*Log[x]*Log[1 + (2*c*x)/(b - Sqrt[b^2 - 4*a*c])])/(2*a^2) + (
(b - (b^2 - 2*a*c)/Sqrt[b^2 - 4*a*c])*Log[x]*Log[1 + (2*c*x)/(b + Sqrt[b^2
- 4*a*c])])/(2*a^2) + ((b + (b^2 - 2*a*c)/Sqrt[b^2 - 4*a*c])*PolyLog[2, (-2
*c*x)/(b - Sqrt[b^2 - 4*a*c])])/(2*a^2) + ((b - (b^2 - 2*a*c)/Sqrt[b^2 - 4*
a*c])*PolyLog[2, (-2*c*x)/(b + Sqrt[b^2 - 4*a*c])])/(2*a^2)
```

Rule 2338

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2341

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_.)*(x_))^(m_.), x_Symbol] :>
Simp[(d*x)^(m + 1)*((a + b*Log[c*x^n])/(d*(m + 1))), x] - Simp[b*n*((d*x)^(
m + 1)/(d*(m + 1)^2)), x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[m, -1]
```

Rule 2354

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[Log[1 + e*(x/d)]*((a + b*Log[c*x^n])^p/e), x] - Dist[b*n*(p/e),
```

```
Int[Log[1 + e*(x/d)]*((a + b*Log[c*x^n])^(p - 1)/x), x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2404

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*(RFx_), x_Symbol] :> With[{
u = ExpandIntegrand[(a + b*Log[c*x^n])^p, RFx, x]}, Int[u, x] /; SumQ[u]] /
; FreeQ[{a, b, c, n}, x] && RationalFunctionQ[RFx, x] && IGtQ[p, 0]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rubi steps

$$\int \frac{\log(x)}{x^2\left(a+bx+cx^2\right)}\,dx = \int \left(\frac{\log(x)}{ax^2}-\frac{b\log(x)}{a^2x}+\frac{\left(b^2-ac+bcx\right)\log(x)}{a^2\left(a+bx+cx^2\right)}\right)dx$$

$$= \frac{\int \frac{\left(b^2-ac+bcx\right)\log(x)}{a+bx+cx^2}\,dx}{a^2}+\frac{\int \frac{\log(x)}{x^2}\,dx}{a}-\frac{b\int \frac{\log(x)}{x}\,dx}{a^2}$$

$$= -\frac{1}{ax}-\frac{\log(x)}{ax}-\frac{b\log^2(x)}{2a^2}+\frac{\int \left(\frac{\left(bc+\frac{c\left(b^2-2ac\right)}{\sqrt{b^2-4ac}}\right)\log(x)}{b-\sqrt{b^2-4ac}+2cx}+\frac{\left(bc-\frac{c\left(b^2-2ac\right)}{\sqrt{b^2-4ac}}\right)\log(x)}{b+\sqrt{b^2-4ac}+2cx}\right.}{a^2}$$

$$= -\frac{1}{ax}-\frac{\log(x)}{ax}-\frac{b\log^2(x)}{2a^2}+\frac{\left(c\left(b-\frac{b^2-2ac}{\sqrt{b^2-4ac}}\right)\right)\int \frac{\log(x)}{b+\sqrt{b^2-4ac}+2cx}\,dx}{a^2}+$$

$$= -\frac{1}{ax}-\frac{\log(x)}{ax}-\frac{b\log^2(x)}{2a^2}+\frac{\left(b+\frac{b^2-2ac}{\sqrt{b^2-4ac}}\right)\log(x)\log\left(1+\frac{2cx}{b-\sqrt{b^2-4ac}}\right)}{2a^2}$$

$$= -\frac{1}{ax}-\frac{\log(x)}{ax}-\frac{b\log^2(x)}{2a^2}+\frac{\left(b+\frac{b^2-2ac}{\sqrt{b^2-4ac}}\right)\log(x)\log\left(1+\frac{2cx}{b-\sqrt{b^2-4ac}}\right)}{2a^2}$$

Mathematica [A]

time = 0.26, size = 255, normalized size = 1.02

$$\frac{-\frac{2a}{x}-\frac{2a\log(x)}{x}-b\log^2(x)+\left(b+\frac{b^2-2ac}{\sqrt{b^2-4ac}}\right)\log(x)\log\left(\frac{b-\sqrt{b^2-4ac}+2cx}{b-\sqrt{b^2-4ac}}\right)+\left(b+\frac{-b^2+2ac}{\sqrt{b^2-4ac}}\right)\log(x)\log\left(\frac{b+\sqrt{b^2-4ac}+2cx}{b+\sqrt{b^2-4ac}}\right)+\left(b+\frac{b^2-2ac}{\sqrt{b^2-4ac}}\right)\text{Li}_2\left(\frac{2cx}{-b+\sqrt{b^2-4ac}}\right)+\left(b+\frac{-b^2+2ac}{\sqrt{b^2-4ac}}\right)\text{Li}_2\left(-\frac{2cx}{b+\sqrt{b^2-4ac}}\right)}{2a^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[x]/(x^2*(a + b*x + c*x^2)),x]
```

```
[Out] ((-2*a)/x - (2*a*Log[x])/x - b*Log[x]^2 + (b + (b^2 - 2*a*c)/Sqrt[b^2 - 4*a
*c])*Log[x]*Log[(b - Sqrt[b^2 - 4*a*c] + 2*c*x)/(b - Sqrt[b^2 - 4*a*c])] +
(b + (-b^2 + 2*a*c)/Sqrt[b^2 - 4*a*c])*Log[x]*Log[(b + Sqrt[b^2 - 4*a*c] +
2*c*x)/(b + Sqrt[b^2 - 4*a*c])] + (b + (b^2 - 2*a*c)/Sqrt[b^2 - 4*a*c])*Pol
yLog[2, (2*c*x)/(-b + Sqrt[b^2 - 4*a*c])] + (b + (-b^2 + 2*a*c)/Sqrt[b^2 -
4*a*c])*PolyLog[2, (-2*c*x)/(b + Sqrt[b^2 - 4*a*c])])/(2*a^2)
```

Maple [**B**] Leaf count of result is larger than twice the leaf count of optimal. 551 vs. $2(227) = 454$.
time = 0.78, size = 552, normalized size = 2.20

method	result
default	$\frac{-\frac{\ln(x)}{x}-\frac{1}{x}}{a}-\frac{b\ln(x)^2}{2a^2}+\frac{\ln(x)\left(\ln\left(\frac{-2cx+\sqrt{-4ca+b^2}-b}{-b+\sqrt{-4ca+b^2}}\right)\sqrt{-4ca+b^2}\,b-2\ln\left(\frac{-2cx+\sqrt{-4ca+b^2}-b}{-b+\sqrt{-4ca+b^2}}\right)ac+\ln\left(\frac{-2c}{}\right.\right.}{}$
risch	$-\frac{\ln(x)}{ax}-\frac{1}{ax}-\frac{b\ln(x)^2}{2a^2}+\frac{\ln(x)\ln\left(\frac{-2cx+\sqrt{-4ca+b^2}-b}{-b+\sqrt{-4ca+b^2}}\right)b}{2a^2}-\frac{\ln(x)\ln\left(\frac{-2cx+\sqrt{-4ca+b^2}-b}{-b+\sqrt{-4ca+b^2}}\right)c}{a\sqrt{-4ca+b^2}}+\frac{\ln(x)\ln\left(\right.}{2}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(x)/x^2/(c*x^2+b*x+a),x,method=_RETURNVERBOSE)
```

```
[Out] (-1/x*ln(x)-1/x)/a-1/2*b*ln(x)^2/a^2+(1/2*ln(x)*(ln((-2*c*x+(-4*a*c+b^2)^(1
/2)-b)/(-b+(-4*a*c+b^2)^(1/2)))*(-4*a*c+b^2)^(1/2)*b-2*ln((-2*c*x+(-4*a*c+b
^2)^(1/2)-b)/(-b+(-4*a*c+b^2)^(1/2)))*a*c+ln((-2*c*x+(-4*a*c+b^2)^(1/2)-b)/
(-b+(-4*a*c+b^2)^(1/2)))*b^2+ln((b+2*c*x+(-4*a*c+b^2)^(1/2))/(b+(-4*a*c+b^2
)^(1/2)))*(-4*a*c+b^2)^(1/2)*b+2*ln((b+2*c*x+(-4*a*c+b^2)^(1/2))/(b+(-4*a*c
+b^2)^(1/2)))*a*c-ln((b+2*c*x+(-4*a*c+b^2)^(1/2))/(b+(-4*a*c+b^2)^(1/2)))*b
^2)/(-4*a*c+b^2)^(1/2)+1/2*(dilog((-2*c*x+(-4*a*c+b^2)^(1/2)-b)/(-b+(-4*a*c
+b^2)^(1/2)))*(-4*a*c+b^2)^(1/2)*b-2*dilog((-2*c*x+(-4*a*c+b^2)^(1/2)-b)/(-
b+(-4*a*c+b^2)^(1/2)))*a*c+dilog((-2*c*x+(-4*a*c+b^2)^(1/2)-b)/(-b+(-4*a*c+
b^2)^(1/2)))*b^2+dilog((b+2*c*x+(-4*a*c+b^2)^(1/2))/(b+(-4*a*c+b^2)^(1/2)))
*(-4*a*c+b^2)^(1/2)*b+2*dilog((b+2*c*x+(-4*a*c+b^2)^(1/2))/(b+(-4*a*c+b^2)^
(1/2)))*a*c-dilog((b+2*c*x+(-4*a*c+b^2)^(1/2))/(b+(-4*a*c+b^2)^(1/2)))*b^2)
/(-4*a*c+b^2)^(1/2))/a^2
```

Maxima [**F(-2)**]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(x)/x^2/(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re deta
```

Fricas [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(x)/x^2/(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] integral(log(x)/(c*x^4 + b*x^3 + a*x^2), x)
```

Sympy [**F(-1)**] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(x)/x**2/(c*x**2+b*x+a),x)
```

```
[Out] Timed out
```

Giac [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(x)/x^2/(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] integrate(log(x)/((c*x^2 + b*x + a)*x^2), x)
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\ln(x)}{x^2\,\left(c\,x^2+b\,x+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(log(x)/(x^2*(a + b*x + c*x^2)),x)
```

```
[Out] int(log(x)/(x^2*(a + b*x + c*x^2)), x)
```

3.357 $\int \frac{\log(x)}{x^3(a+bx+cx^2)}\,dx$

Optimal. Leaf size=308

$$-\frac{1}{4ax^2}+\frac{b}{a^2x}-\frac{\log(x)}{2ax^2}+\frac{b\log(x)}{a^2x}+\frac{(b^2-ac)\log^2(x)}{2a^3}-\frac{\left(b^2-ac+\frac{b(b^2-3ac)}{\sqrt{b^2-4ac}}\right)\log(x)\log\left(1+\frac{2cx}{b-\sqrt{b^2-4ac}}\right.}{2a^3}$$

```
[Out] -1/4/a/x^2+b/a^2/x-1/2*ln(x)/a/x^2+b*ln(x)/a^2/x+1/2*(-a*c+b^2)*ln(x)^2/a^3
-1/2*ln(x)*ln(1+2*c*x/(b+(-4*a*c+b^2)^(1/2)))*(b^2-a*c-b*(-3*a*c+b^2)/(-4*a
*c+b^2)^(1/2))/a^3-1/2*polylog(2,-2*c*x/(b+(-4*a*c+b^2)^(1/2)))*(b^2-a*c-b*
(-3*a*c+b^2)/(-4*a*c+b^2)^(1/2))/a^3-1/2*ln(x)*ln(1+2*c*x/(b-(-4*a*c+b^2)^(
1/2)))*(b^2-a*c+b*(-3*a*c+b^2)/(-4*a*c+b^2)^(1/2))/a^3-1/2*polylog(2,-2*c*x
/(b-(-4*a*c+b^2)^(1/2)))*(b^2-a*c+b*(-3*a*c+b^2)/(-4*a*c+b^2)^(1/2))/a^3
```

Rubi [A]
time = 0.36, antiderivative size = 308, normalized size of antiderivative = 1.00, number of steps used = 11, number of rules used = 5, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}} = 0.278$, Rules used = {2404, 2341, 2338, 2354, 2438}

$$-\frac{\left(\frac{b(b^2-3ac)}{\sqrt{b^2-4ac}}-ac+b^2\right)\text{PolyLog}\left(2,-\frac{2cx}{b-\sqrt{b^2-4ac}}\right)}{2a^3}-\frac{\left(-\frac{b(b^2-3ac)}{\sqrt{b^2-4ac}}-ac+b^2\right)\text{PolyLog}\left(2,-\frac{2cx}{\sqrt{b^2-4ac}+b}\right)}{2a^3}+\frac{\log^2(x)(b^2-ac)}{2a^3}-\frac{\log(x)\left(\frac{b(b^2-3ac)}{\sqrt{b^2-4ac}}-ac+b^2\right)\log\left(\frac{2cx}{b-\sqrt{b^2-4ac}}+1\right)}{2a^3}-\frac{\log(x)\left(-\frac{b(b^2-3ac)}{\sqrt{b^2-4ac}}-ac+b^2\right)\log\left(\frac{2cx}{\sqrt{b^2-4ac}+b}+1\right)}{2a^3}+\frac{b}{a^2x}+\frac{b\log(x)}{a^2x}-\frac{1}{4ax^2}-\frac{\log(x)}{2ax^2}$$

Antiderivative was successfully verified.

```
[In] Int[Log[x]/(x^3*(a + b*x + c*x^2)),x]
```

```
[Out] -1/4*1/(a*x^2) + b/(a^2*x) - Log[x]/(2*a*x^2) + (b*Log[x])/(a^2*x) + ((b^2
- a*c)*Log[x]^2)/(2*a^3) - ((b^2 - a*c + (b*(b^2 - 3*a*c))/Sqrt[b^2 - 4*a*c
])*Log[x]*Log[1 + (2*c*x)/(b - Sqrt[b^2 - 4*a*c])])/(2*a^3) - ((b^2 - a*c -
 (b*(b^2 - 3*a*c))/Sqrt[b^2 - 4*a*c])*Log[x]*Log[1 + (2*c*x)/(b + Sqrt[b^2
- 4*a*c])])/(2*a^3) - ((b^2 - a*c + (b*(b^2 - 3*a*c))/Sqrt[b^2 - 4*a*c])*Po
lyLog[2, (-2*c*x)/(b - Sqrt[b^2 - 4*a*c])])/(2*a^3) - ((b^2 - a*c - (b*(b^2
 - 3*a*c))/Sqrt[b^2 - 4*a*c])*PolyLog[2, (-2*c*x)/(b + Sqrt[b^2 - 4*a*c])])
/(2*a^3)
```

Rule 2338

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2341

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_.)*(x_))^(m_.), x_Symbol] :>
Simp[(d*x)^(m + 1)*((a + b*Log[c*x^n])/(d*(m + 1))), x] - Simp[b*n*((d*x)^(
m + 1)/(d*(m + 1)^2)), x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[m, -1]
```

Rule 2354

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[Log[1 + e*(x/d)]*((a + b*Log[c*x^n])^p/e), x] - Dist[b*n*(p/e),
 Int[Log[1 + e*(x/d)]*((a + b*Log[c*x^n])^(p - 1)/x), x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2404

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*(RFx_), x_Symbol] :> With[{
u = ExpandIntegrand[(a + b*Log[c*x^n])^p, RFx, x]}, Int[u, x] /; SumQ[u]] /
; FreeQ[{a, b, c, n}, x] && RationalFunctionQ[RFx, x] && IGtQ[p, 0]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rubi steps

$$\int \frac{\log(x)}{x^3\left(a+bx+cx^2\right)}\,dx=\int\left(\frac{\log(x)}{ax^3}-\frac{b\log(x)}{a^2x^2}+\frac{(b^2-ac)\log(x)}{a^3x}+\frac{(-b(b^2-2ac)-c(b^2-ac)\,x)\log(x)}{a^3\left(a+bx+cx^2\right)}\right)$$

$$=\frac{\int\frac{(-b(b^2-2ac)-c(b^2-ac)x)\log(x)}{a+bx+cx^2}\,dx}{a^3}+\frac{\int\frac{\log(x)}{x^3}\,dx}{a}-\frac{b\int\frac{\log(x)}{x^2}\,dx}{a^2}+\frac{(b^2-ac)\int\frac{\log(x)}{x}\,dx}{a^3}$$

$$=-\frac{1}{4ax^2}+\frac{b}{a^2x}-\frac{\log(x)}{2ax^2}+\frac{b\log(x)}{a^2x}+\frac{(b^2-ac)\log^2(x)}{2a^3}+\frac{\int\left(\frac{\left(-\frac{bc(b^2-3ac)}{\sqrt{b^2-4ac}}-c(b^2-\ldots\right.}{b-\sqrt{b^2-4ac}+\ldots}\right.}{\ldots}$$

$$=-\frac{1}{4ax^2}+\frac{b}{a^2x}-\frac{\log(x)}{2ax^2}+\frac{b\log(x)}{a^2x}+\frac{(b^2-ac)\log^2(x)}{2a^3}-\frac{\left(c\left(b^2-ac-\frac{b(b^2-3ac)}{\sqrt{b^2-4a\ldots}}\right.\right.}{\ldots}$$

$$=-\frac{1}{4ax^2}+\frac{b}{a^2x}-\frac{\log(x)}{2ax^2}+\frac{b\log(x)}{a^2x}+\frac{(b^2-ac)\log^2(x)}{2a^3}-\frac{\left(b^2-ac+\frac{b(b^2-3ac)}{\sqrt{b^2-4ac}}\right)\ldots}{\ldots}$$

$$=-\frac{1}{4ax^2}+\frac{b}{a^2x}-\frac{\log(x)}{2ax^2}+\frac{b\log(x)}{a^2x}+\frac{(b^2-ac)\log^2(x)}{2a^3}-\frac{\left(b^2-ac+\frac{b(b^2-3ac)}{\sqrt{b^2-4ac}}\right)\ldots}{\ldots}$$

Mathematica [A]
time = 0.32, size = 311, normalized size = 1.01

$$-\frac{\frac{a^2}{x^2}-\frac{4ab}{x}+\frac{2a^2\log(x)}{x^2}-\frac{4ab\log(x)}{x}-2(b^2-ac)\log^2(x)+2\left(b^2-ac+\frac{b(b^2-3ac)}{\sqrt{b^2-4ac}}\right)\log(x)\log\left(\frac{b-\sqrt{b^2-4ac}+2cx}{b-\sqrt{b^2-4ac}}\right)+2\left(b^2-ac-\frac{b(b^2-3ac)}{\sqrt{b^2-4ac}}\right)\log(x)\log\left(\frac{b+\sqrt{b^2-4ac}+2cx}{b+\sqrt{b^2-4ac}}\right)+2\left(b^2-ac+\frac{b(b^2-3ac)}{\sqrt{b^2-4ac}}\right)\mathrm{Li}_2\left(\frac{2cx}{-b+\sqrt{b^2-4ac}}\right)+2\left(b^2-ac-\frac{b(b^2-3ac)}{\sqrt{b^2-4ac}}\right)\mathrm{Li}_2\left(-\frac{2cx}{b+\sqrt{b^2-4ac}}\right)}{4a^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[x]/(x^3*(a + b*x + c*x^2)),x]
```

```
[Out] -1/4*(a^2/x^2 - (4*a*b)/x + (2*a^2*Log[x])/x^2 - (4*a*b*Log[x])/x - 2*(b^2
- a*c)*Log[x]^2 + 2*(b^2 - a*c + (b*(b^2 - 3*a*c))/Sqrt[b^2 - 4*a*c])*Log[x
]*Log[(b - Sqrt[b^2 - 4*a*c] + 2*c*x)/(b - Sqrt[b^2 - 4*a*c])] + 2*(b^2 - a
*c - (b*(b^2 - 3*a*c))/Sqrt[b^2 - 4*a*c])*Log[x]*Log[(b + Sqrt[b^2 - 4*a*c]
 + 2*c*x)/(b + Sqrt[b^2 - 4*a*c])] + 2*(b^2 - a*c + (b*(b^2 - 3*a*c))/Sqrt[
b^2 - 4*a*c])*PolyLog[2, (2*c*x)/(-b + Sqrt[b^2 - 4*a*c])] + 2*(b^2 - a*c -
 (b*(b^2 - 3*a*c))/Sqrt[b^2 - 4*a*c])*PolyLog[2, (-2*c*x)/(b + Sqrt[b^2 - 4
*a*c])])/a^3
```

Maple [B] Leaf count of result is larger than twice the leaf count of optimal. 781 vs. $2(278) = 556$.

time = 0.96, size = 782, normalized size = 2.54

method	result
default	$\frac{-\frac{\ln(x)}{2x^2}-\frac{1}{4x^2}}{a} - \frac{\left(-\frac{\ln(x)}{x}-\frac{1}{x}\right)b}{a^2} + \frac{(-ca+b^2)\ln(x)^2}{2a^3} + \frac{\ln(x)\left(\ln\left(\frac{-2cx+\sqrt{-4ca+b^2}-b}{-b+\sqrt{-4ca+b^2}}\right)\sqrt{-4ca+b^2}\,ac-\ln\left(\frac{-2cx+\sqrt{}}{-b+\sqrt{}}\right.\right.}{}$
risch	$-\frac{\ln(x)}{2x^2a}-\frac{1}{4x^2a}+\frac{b\ln(x)}{a^2x}+\frac{b}{a^2x}-\frac{\ln(x)^2c}{2a^2}+\frac{\ln(x)^2b^2}{2a^3}+\frac{\ln(x)\ln\left(\frac{-2cx+\sqrt{-4ca+b^2}-b}{-b+\sqrt{-4ca+b^2}}\right)c}{2a^2}-\frac{\ln(x)\ln\left(\frac{-2cx+\sqrt{-}}{-b+\sqrt{-}}\right.}{2a}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(x)/x^3/(c*x^2+b*x+a),x,method=_RETURNVERBOSE)
```

```
[Out] (-1/2/x^2*ln(x)-1/4/x^2)/a-(-1/x*ln(x)-1/x)/a^2*b+1/2*(-a*c+b^2)*ln(x)^2/a^
3+(1/2*ln(x)*(ln((-2*c*x+(-4*a*c+b^2)^(1/2)-b)/(-b+(-4*a*c+b^2)^(1/2)))*(-4
*a*c+b^2)^(1/2)*a*c-ln((-2*c*x+(-4*a*c+b^2)^(1/2)-b)/(-b+(-4*a*c+b^2)^(1/2)
))*(-4*a*c+b^2)^(1/2)*b^2+3*ln((-2*c*x+(-4*a*c+b^2)^(1/2)-b)/(-b+(-4*a*c+b^
2)^(1/2)))*a*b*c-ln((-2*c*x+(-4*a*c+b^2)^(1/2)-b)/(-b+(-4*a*c+b^2)^(1/2)))*
b^3+ln((b+2*c*x+(-4*a*c+b^2)^(1/2))/(b+(-4*a*c+b^2)^(1/2)))*(-4*a*c+b^2)^(1
/2)*a*c-ln((b+2*c*x+(-4*a*c+b^2)^(1/2))/(b+(-4*a*c+b^2)^(1/2)))*(-4*a*c+b^2
)^(1/2)*b^2-3*ln((b+2*c*x+(-4*a*c+b^2)^(1/2))/(b+(-4*a*c+b^2)^(1/2)))*a*b*c
+ln((b+2*c*x+(-4*a*c+b^2)^(1/2))/(b+(-4*a*c+b^2)^(1/2)))*b^3)/(-4*a*c+b^2)^
(1/2)+1/2*(dilog((-2*c*x+(-4*a*c+b^2)^(1/2)-b)/(-b+(-4*a*c+b^2)^(1/2)))*(-4
*a*c+b^2)^(1/2)*a*c-dilog((-2*c*x+(-4*a*c+b^2)^(1/2)-b)/(-b+(-4*a*c+b^2)^(1
/2)))*(-4*a*c+b^2)^(1/2)*b^2+3*dilog((-2*c*x+(-4*a*c+b^2)^(1/2)-b)/(-b+(-4*
a*c+b^2)^(1/2)))*a*b*c-dilog((-2*c*x+(-4*a*c+b^2)^(1/2)-b)/(-b+(-4*a*c+b^2)
^(1/2)))*b^3+dilog((b+2*c*x+(-4*a*c+b^2)^(1/2))/(b+(-4*a*c+b^2)^(1/2)))*(-4
*a*c+b^2)^(1/2)*a*c-dilog((b+2*c*x+(-4*a*c+b^2)^(1/2))/(b+(-4*a*c+b^2)^(1/2
)))*(-4*a*c+b^2)^(1/2)*b^2-3*dilog((b+2*c*x+(-4*a*c+b^2)^(1/2))/(b+(-4*a*c+
```

```
b^2)^(1/2)))*a*b*c+dilog((b+2*c*x+(-4*a*c+b^2)^(1/2))/(b+(-4*a*c+b^2)^(1/2)
))*b^3)/(-4*a*c+b^2)^(1/2))/a^3
```

Maxima [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(x)/x^3/(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re deta
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(x)/x^3/(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] integral(log(x)/(c*x^5 + b*x^4 + a*x^3), x)
```

Sympy [F(-1)] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(x)/x**3/(c*x**2+b*x+a),x)
```

```
[Out] Timed out
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(x)/x^3/(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] integrate(log(x)/((c*x^2 + b*x + a)*x^3), x)
```

Mupad [F]

time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\ln(x)}{x^3\ (c\,x^2+b\,x+a)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(log(x)/(x^3*(a + b*x + c*x^2)),x)
[Out] int(log(x)/(x^3*(a + b*x + c*x^2)), x)
```

3.358 $\int x^3 \log(fx^m) (a + b\log(c(d+ex)^n)) \, dx$

Optimal. Leaf size=232

$$-\frac{5bd^3mnx}{16e^3}+\frac{3bd^2mnx^2}{32e^2}-\frac{7bdmnx^3}{144e}+\frac{1}{32}bmnx^4+\frac{bd^3nx\log(fx^m)}{4e^3}-\frac{bd^2nx^2\log(fx^m)}{8e^2}+\frac{bdnx^3\log(fx^m)}{12e}-\frac{1}{16}b$$

```
[Out] -5/16*b*d^3*m*n*x/e^3+3/32*b*d^2*m*n*x^2/e^2-7/144*b*d*m*n*x^3/e+1/32*b*m*n
*x^4+1/4*b*d^3*n*x*ln(f*x^m)/e^3-1/8*b*d^2*n*x^2*ln(f*x^m)/e^2+1/12*b*d*n*x
^3*ln(f*x^m)/e-1/16*b*n*x^4*ln(f*x^m)+1/16*b*d^4*m*n*ln(e*x+d)/e^4-1/16*(m*
x^4-4*x^4*ln(f*x^m))*(a+b*ln(c*(e*x+d)^n))-1/4*b*d^4*n*ln(f*x^m)*ln(1+e*x/d
)/e^4-1/4*b*d^4*m*n*polylog(2,-e*x/d)/e^4
```

Rubi [A]
time = 0.15, antiderivative size = 232, normalized size of antiderivative = 1.00, number of steps used = 11, number of rules used = 7, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.292$, Rules used = {2473, 45, 2393, 2332, 2341, 2354, 2438}

$$-\frac{bd^4mn\text{PolyLog}\left(2,-\frac{ex}{d}\right)}{4e^4}-\frac{1}{16}\left(mx^4-4x^4\log(fx^m)\right)(a+b\log(c(d+ex)^n))-\frac{bd^4n\log\left(\frac{ex}{d}+1\right)\log(fx^m)}{4e^4}+\frac{bd^4mn\log(d+ex)}{16e^4}+\frac{bd^3nx\log(fx^m)}{4e^3}-\frac{5bd^3mnx}{16e^3}-\frac{bd^2nx^2\log(fx^m)}{8e^2}+\frac{3bd^2mnx^2}{32e^2}+\frac{bdnx^3\log(fx^m)}{12e}-\frac{7bdmnx^3}{144e}-\frac{1}{16}bnx^4\log(fx^m)+\frac{1}{32}bmnx^4$$

Antiderivative was successfully verified.

```
[In] Int[x^3*Log[f*x^m]*(a + b*Log[c*(d + e*x)^n]),x]
```

```
[Out] (-5*b*d^3*m*n*x)/(16*e^3) + (3*b*d^2*m*n*x^2)/(32*e^2) - (7*b*d*m*n*x^3)/(1
44*e) + (b*m*n*x^4)/32 + (b*d^3*n*x*Log[f*x^m])/(4*e^3) - (b*d^2*n*x^2*Log[
f*x^m])/(8*e^2) + (b*d*n*x^3*Log[f*x^m])/(12*e) - (b*n*x^4*Log[f*x^m])/16 +
 (b*d^4*m*n*Log[d + e*x])/(16*e^4) - ((m*x^4 - 4*x^4*Log[f*x^m])*(a + b*Log
[c*(d + e*x)^n]))/16 - (b*d^4*n*Log[f*x^m]*Log[1 + (e*x)/d])/(4*e^4) - (b*d
^4*m*n*PolyLog[2, -((e*x)/d)])/(4*e^4)
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2332

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2341

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_.)*(x_))^(m_.), x_Symbol] :>
Simp[(d*x)^(m + 1)*((a + b*Log[c*x^n])/(d*(m + 1))), x] - Simp[b*n*((d*x)^(
```

```
m + 1)/(d*(m + 1)^2)), x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[m, -1]
```

Rule 2354

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[Log[1 + e*(x/d)]*((a + b*Log[c*x^n])^p/e), x] - Dist[b*n*(p/e),
 Int[Log[1 + e*(x/d)]*((a + b*Log[c*x^n])^(p - 1)/x), x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((f_.)*(x_))^(m_.)*((d_) + (e_.)*
(x_)^(r_.))^(q_.), x_Symbol] :> With[{u = ExpandIntegrand[a + b*Log[c*x^n],
 (f*x)^m*(d + e*x^r)^q, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e,
 f, m, n, q, r}, x] && IntegerQ[q] && (GtQ[q, 0] || (IntegerQ[m] && Integer
Q[r]))
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2473

```
Int[Log[(f_.)*(x_)^(m_.)]*((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_
.))*((g_.)*(x_))^(q_.), x_Symbol] :> Simp[(-(g*(q + 1))^(-1))*(m*((g*x)^(q
+ 1)/(q + 1)) - (g*x)^(q + 1)*Log[f*x^m])*(a + b*Log[c*(d + e*x)^n]), x] +
(-Dist[b*e*(n/(g*(q + 1))), Int[(g*x)^(q + 1)*(Log[f*x^m]/(d + e*x)), x], x
] + Dist[b*e*m*(n/(g*(q + 1)^2)), Int[(g*x)^(q + 1)/(d + e*x), x], x]) /; F
reeQ[{a, b, c, d, e, f, g, m, n, q}, x] && NeQ[q, -1]
```

Rubi steps

$$\int x^3 \log\left(fx^m\right)\left(a+b\log\left(c(d+ex)^n\right)\right)\,dx = -\frac{1}{16}\left(mx^4-4x^4\log\left(fx^m\right)\right)\left(a+b\log\left(c(d+ex)^n\right)\right)-\frac{1}{4}(ben)$$

$$= -\frac{1}{16}\left(mx^4-4x^4\log\left(fx^m\right)\right)\left(a+b\log\left(c(d+ex)^n\right)\right)-\frac{1}{4}(ben)$$

$$= -\frac{bd^3mnx}{16e^3}+\frac{bd^2mnx^2}{32e^2}-\frac{bdmnx^3}{48e}+\frac{1}{64}bmnx^4+\frac{bd^4mn\log(d}{16e^4}$$

$$= -\frac{5bd^3mnx}{16e^3}+\frac{3bd^2mnx^2}{32e^2}-\frac{7bdmnx^3}{144e}+\frac{1}{32}bmnx^4+\frac{bd^3nx\log}{4e}$$

$$= -\frac{5bd^3mnx}{16e^3}+\frac{3bd^2mnx^2}{32e^2}-\frac{7bdmnx^3}{144e}+\frac{1}{32}bmnx^4+\frac{bd^3nx\log}{4e}$$

Mathematica [A]
time = 0.13, size = 221, normalized size = 0.95

$$\frac{-6\log(fx^m)\left(-12ae^4x^4+benx(-12d^3+6d^2ex-4de^2x^2+3e^3x^3)+12bd^4n\log(d+ex)-12be^4x^4\log(c(d+ex)^n)\right)+m\left(-90bd^3enx+27bd^2e^2nx^2-14bde^3nx^3-18ae^4x^4+9be^4nx^4+18bd^4n(1+4\log(x))\log(d+ex)-18be^4x^4\log(c(d+ex)^n)-72bd^4n\log(x)\log\left(1+\frac{ex}{d}\right)\right)-72bd^4mn\mathrm{Li}_2\left(-\frac{ex}{d}\right)}{288e^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^3*Log[f*x^m]*(a + b*Log[c*(d + e*x)^n]),x]
```

```
[Out] (-6*Log[f*x^m]*(-12*a*e^4*x^4 + b*e*n*x*(-12*d^3 + 6*d^2*e*x - 4*d*e^2*x^2
+ 3*e^3*x^3) + 12*b*d^4*n*Log[d + e*x] - 12*b*e^4*x^4*Log[c*(d + e*x)^n]) +
 m*(-90*b*d^3*e*n*x + 27*b*d^2*e^2*n*x^2 - 14*b*d*e^3*n*x^3 - 18*a*e^4*x^4
+ 9*b*e^4*n*x^4 + 18*b*d^4*n*(1 + 4*Log[x])*Log[d + e*x] - 18*b*e^4*x^4*Log
[c*(d + e*x)^n] - 72*b*d^4*n*Log[x]*Log[1 + (e*x)/d]) - 72*b*d^4*m*n*PolyLo
g[2, -((e*x)/d)])/(288*e^4)
```

Maple [C] Result contains higher order function than in optimal. Order 9 vs. order 4.
time = 1.18, size = 2330, normalized size = 10.04

method	result	size
risch	Expression too large to display	2330

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*ln(f*x^m)*(a+b*ln(c*(e*x+d)^n)),x,method=_RETURNVERBOSE)
```

```
[Out] 1/4*m/e^4*b*d^4*n*dilog(-e*x/d)-1/16*b*Pi^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2
*x^4*csgn(I*f)*csgn(I*f*x^m)^2-1/16*b*Pi^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*
x^4*csgn(I*x^m)*csgn(I*f*x^m)^2+1/8*I*x^4*Pi*a*csgn(I*x^m)*csgn(I*f*x^m)^2+
1/32*b*m*n*x^4+1/16*I/e^2*Pi*x^2*b*d^2*n*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m
)-1/8*I/e^3*Pi*b*d^3*n*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)*x+1/8*I/e^4*b*d^
4*n*ln(e*x+d)*Pi*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)+1/8*I/e^3*Pi*b*d^3*n*c
sgn(I*f)*csgn(I*f*x^m)^2*x+1/8*I*x^4*Pi*a*csgn(I*f)*csgn(I*f*x^m)^2+1/8*I/e
^3*Pi*b*d^3*n*csgn(I*x^m)*csgn(I*f*x^m)^2*x-1/8*I/e^4*b*d^4*n*ln(e*x+d)*Pi*
csgn(I*f)*csgn(I*f*x^m)^2-1/16*x^4*a*m-1/8*I*x^4*Pi*ln(f)*b*csgn(I*c*(e*x+d
)^n)^3+1/16*b*Pi^2*csgn(I*c*(e*x+d)^n)^3*x^4*csgn(I*f)*csgn(I*f*x^m)^2+1/12
/e*n*b*ln(x^m)*d*x^3-1/8/e^2*n*b*ln(x^m)*x^2*d^2+1/4/e^3*n*b*ln(x^m)*x*d^3-
1/4/e^4*n*b*ln(x^m)*d^4*ln(e*x+d)+1/8*I/e^4*b*d^4*n*ln(e*x+d)*Pi*csgn(I*f*x
^m)^3-1/24*I/e*Pi*x^3*b*d*n*csgn(I*f*x^m)^3-1/8*I*x^4*Pi*ln(c)*b*csgn(I*f)*
csgn(I*x^m)*csgn(I*f*x^m)+1/32*I*m*Pi*b*x^4*csgn(I*c*(e*x+d)^n)^3+1/32*I*x^
4*Pi*b*n*csgn(I*f*x^m)^3-1/8*I*x^4*Pi*ln(c)*b*csgn(I*f*x^m)^3-1/16*I/e^2*Pi
*x^2*b*d^2*n*csgn(I*x^m)*csgn(I*f*x^m)^2-1/8*I/e^4*b*d^4*n*ln(e*x+d)*Pi*csg
n(I*x^m)*csgn(I*f*x^m)^2+1/24*I/e*Pi*x^3*b*d*n*csgn(I*x^m)*csgn(I*f*x^m)^2+
1/4*x^4*ln(f)*a+1/16*b*Pi^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*x^4*csgn(I*f)*c
sgn(I*x^m)*csgn(I*f*x^m)+1/16*b*Pi^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^
2*x^4*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)+1/16*b*Pi^2*csgn(I*c)*csgn(I*(e*x
+d)^n)*csgn(I*c*(e*x+d)^n)*x^4*csgn(I*f)*csgn(I*f*x^m)^2+(1/4*x^4*b*ln(x^m)
```

```
+1/16*x^4*b*(-2*I*Pi*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)+2*I*Pi*csgn(I*f)*c
sgn(I*f*x^m)^2+2*I*Pi*csgn(I*x^m)*csgn(I*f*x^m)^2-2*I*Pi*csgn(I*f*x^m)^3+4*
ln(f)-m))*ln((e*x+d)^n)-1/16*b*Pi^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e
*x+d)^n)*x^4*csgn(I*f*x^m)^3+1/8*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^
n)^2*x^4*ln(x^m)-1/32*I*x^4*Pi*b*n*csgn(I*f)*csgn(I*f*x^m)^2-1/8*I*x^4*Pi*a
*csgn(I*f*x^m)^3-1/16*b*Pi^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n
)*x^4*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)+1/24*I/e*Pi*x^3*b*d*n*csgn(I*f)*c
sgn(I*f*x^m)^2-1/16*I/e^2*Pi*x^2*b*d^2*n*csgn(I*f)*csgn(I*f*x^m)^2-1/16*x^4
*ln(c)*b*m-1/24*I/e*Pi*x^3*b*d*n*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)-1/16*b
*Pi^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2*x^4*csgn(I*f)*csgn(I*f*x^m)^2
-1/16*b*Pi^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2*x^4*csgn(I*x^m)*csgn(I
*f*x^m)^2-1/16*b*Pi^2*csgn(I*c*(e*x+d)^n)^3*x^4*csgn(I*f)*csgn(I*x^m)*csgn(
I*f*x^m)+1/4*x^4*ln(c)*ln(f)*b-1/16*x^4*ln(f)*b*n+1/8*I*x^4*Pi*ln(c)*b*csgn
(I*x^m)*csgn(I*f*x^m)^2+1/8*I*x^4*Pi*ln(c)*b*csgn(I*f)*csgn(I*f*x^m)^2-1/32
*I*m*Pi*b*x^4*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-1/16*n*b*ln(x^m)*x^4+1/4*b*ln
(c)*x^4*ln(x^m)-1/8*I*b*Pi*csgn(I*c*(e*x+d)^n)^3*x^4*ln(x^m)-1/8*I*b*Pi*csg
n(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)*x^4*ln(x^m)+1/16*I/e^2*Pi*x^2*
b*d^2*n*csgn(I*f*x^m)^3+1/32*I*m*Pi*b*x^4*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(
I*c*(e*x+d)^n)-1/8*I*x^4*Pi*ln(f)*b*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e
*x+d)^n)+1/32*I*x^4*Pi*b*n*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)+1/16*b*Pi^2*
csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)*x^4*csgn(I*x^m)*csgn(I*f*x^
m)^2+1/16*b*Pi^2*csgn(I*c*(e*x+d)^n)^3*x^4*csgn(I*x^m)*csgn(I*f*x^m)^2+1/16
*b*Pi^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*x^4*csgn(I*f*x^m)^3+1/16*b*Pi^2*csg
n(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2*x^4*csgn(I*f*x^m)^3-1/8*I/e^3*Pi*b*d^3
*n*csgn(I*f*x^m)^3*x-205/576*b*d^4*m*n/e^4+1/12/e*ln(f)*x^3*b*d*n-1/8/e^2*l
n(f)*x^2*b*d^2*n-1/32*I*m*Pi*b*x^4*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+
1/8*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*x^4*ln(x^m)-1/4/e^4*b*d^4*n*ln(e
*x+d)*ln(f)+1/4/e^3*ln(f)*b*d^3*n*x+1/4*a*x^4*ln(x^m)-1/16*b*Pi^2*csgn(I*c*
(e*x+d)^n)^3*x^4*csgn(I*f*x^m)^3+1/4*m/e^4*b*d^4*n*ln(e*x+d)*ln(-e*x/d)-1/3
2*I*x^4*Pi*b*n*csgn(I*x^m)*csgn(I*f*x^m)^2+1/8*I*x^4*Pi*ln(f)*b*csgn(I*c)*c
sgn(I*c*(e*x+d)^n)^2+1/8*I*x^4*Pi*ln(f)*b*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d
)^n)^2-1/8*I*x^4*Pi*a*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)+1/16*b*d^4*m*n*ln
(e*x+d)/e^4-5/16*b*d^3*m*n*x/e^3+3/32*b*d^2*m*n*x^2/e^2-7/144*b*d*m*n*x^3/e
```

<u>Maxima</u> [A]
time = 0.33, size = 223, normalized size = 0.96

$$\frac{1}{288}\left(72\left(\log\left(xe+d\right)\log\left(-\frac{xe+d}{d}+1\right)+\mathrm{Li}_2\left(\frac{xe+d}{d}\right)\right)bd^4ne^{(-4)}-\left(14\,bdnx^3e^3-27\,bd^2nx^2e^2+90\,bd^3nxe-18\,bd^4n\log\left(xe+d\right)+18\,bx^4e^4\log\left(\left(xe+d\right)^n\right)-9\left(b(n-2\,\log\left(c\right))-2\,a\right)x^4e^4\right)e^{(-4)}\right)m+\frac{1}{48}\left(12\,bx^4\log\left(\left(xe+d\right)^nc\right)+12\,ax^4-\left(12\,d^4e^{(-5)}\log\left(xe+d\right)+\left(3\,x^4e^3-4\,dx^3e^2+6\,d^2x^2e-12\,d^3x\right)e^{(-4)}\right)bne\right)\log\left(fx^m\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*log(f*x^m)*(a+b*log(c*(e*x+d)^n)),x, algorithm="maxima")
```

```
[Out] 1/288*(72*(log(x*e + d)*log(-(x*e + d)/d + 1) + dilog((x*e + d)/d))*b*d^4*n
*e^(-4) - (14*b*d*n*x^3*e^3 - 27*b*d^2*n*x^2*e^2 + 90*b*d^3*n*x*e - 18*b*d^
4*n*log(x*e + d) + 18*b*x^4*e^4*log((x*e + d)^n) - 9*(b*(n - 2*log(c)) - 2*
```

```
a)*x^4*e^4)*e^(-4))*m + 1/48*(12*b*x^4*log((x*e + d)^n*c) + 12*a*x^4 - (12*
d^4*e^(-5)*log(x*e + d) + (3*x^4*e^3 - 4*d*x^3*e^2 + 6*d^2*x^2*e - 12*d^3*x
)*e^(-4))*b*n*e)*log(f*x^m)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*log(f*x^m)*(a+b*log(c*(e*x+d)^n)),x, algorithm="fricas")
[Out] integral(b*x^3*log((x*e + d)^n*c)*log(f*x^m) + a*x^3*log(f*x^m), x)
```

Sympy [F(-1)] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*ln(f*x**m)*(a+b*ln(c*(e*x+d)**n)),x)
[Out] Timed out
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*log(f*x^m)*(a+b*log(c*(e*x+d)^n)),x, algorithm="giac")
[Out] integrate((b*log((x*e + d)^n*c) + a)*x^3*log(f*x^m), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int x^3\,\ln\left(f\,x^m\right)\,\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*log(f*x^m)*(a + b*log(c*(d + e*x)^n)),x)
[Out] int(x^3*log(f*x^m)*(a + b*log(c*(d + e*x)^n)), x)
```

3.359 $\int x^2 \log(fx^m) (a + b \log(c(d + ex)^n)) \, dx$

Optimal. Leaf size=195

$$\frac{4bd^2mnx}{9e^2} - \frac{5bdmnx^2}{36e} + \frac{2}{27}bmnx^3 - \frac{bd^2nx\log(fx^m)}{3e^2} + \frac{bdnx^2\log(fx^m)}{6e} - \frac{1}{9}bnx^3\log(fx^m) - \frac{bd^3mn\log(d+ex}{9e^3}$$

```
[Out] 4/9*b*d^2*m*n*x/e^2-5/36*b*d*m*n*x^2/e+2/27*b*m*n*x^3-1/3*b*d^2*n*x*ln(f*x^
m)/e^2+1/6*b*d*n*x^2*ln(f*x^m)/e-1/9*b*n*x^3*ln(f*x^m)-1/9*b*d^3*m*n*ln(e*x
+d)/e^3-1/9*(m*x^3-3*x^3*ln(f*x^m))*(a+b*ln(c*(e*x+d)^n))+1/3*b*d^3*n*ln(f*
x^m)*ln(1+e*x/d)/e^3+1/3*b*d^3*m*n*polylog(2,-e*x/d)/e^3
```

Rubi [A]
time = 0.13, antiderivative size = 195, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 7, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.292$, Rules used = {2473, 45, 2393, 2332, 2341, 2354, 2438}

$$\frac{bd^3mn\text{PolyLog}\left(2,-\frac{ex}{d}\right)}{3e^3} - \frac{1}{9}\left(mx^3 - 3x^3\log(fx^m)\right)\left(a + b\log\left(c(d+ex)^n\right)\right) + \frac{bd^3n\log\left(\frac{ex}{d}+1\right)\log(fx^m)}{3e^3} - \frac{bd^3mn\log(d+ex)}{9e^3} - \frac{bd^2nx\log(fx^m)}{3e^2} + \frac{4bd^2mnx}{9e^2} + \frac{bdnx^2\log(fx^m)}{6e} - \frac{5bdmnx^2}{36e} - \frac{1}{9}bnx^3\log(fx^m) + \frac{2}{27}bmnx^3$$

Antiderivative was successfully verified.

```
[In] Int[x^2*Log[f*x^m]*(a + b*Log[c*(d + e*x)^n]),x]
```

```
[Out] (4*b*d^2*m*n*x)/(9*e^2) - (5*b*d*m*n*x^2)/(36*e) + (2*b*m*n*x^3)/27 - (b*d^
2*n*x*Log[f*x^m])/(3*e^2) + (b*d*n*x^2*Log[f*x^m])/(6*e) - (b*n*x^3*Log[f*x
^m])/9 - (b*d^3*m*n*Log[d + e*x])/(9*e^3) - ((m*x^3 - 3*x^3*Log[f*x^m])*(a
+ b*Log[c*(d + e*x)^n]))/9 + (b*d^3*n*Log[f*x^m]*Log[1 + (e*x)/d])/(3*e^3)
+ (b*d^3*m*n*PolyLog[2, -((e*x)/d)])/(3*e^3)
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2332

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2341

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_.)*(x_))^(m_.), x_Symbol] :>
Simp[(d*x)^(m + 1)*((a + b*Log[c*x^n])/(d*(m + 1))), x] - Simp[b*n*((d*x)^(
m + 1)/(d*(m + 1)^2)), x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[m, -1]
```

Rule 2354

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[Log[1 + e*(x/d)]*((a + b*Log[c*x^n])^p/e), x] - Dist[b*n*(p/e),
 Int[Log[1 + e*(x/d)]*((a + b*Log[c*x^n])^(p - 1)/x), x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((f_.)*(x_))^(m_.)*((d_) + (e_.)*
(x_)^(r_.))^(q_.), x_Symbol] :> With[{u = ExpandIntegrand[a + b*Log[c*x^n],
 (f*x)^m*(d + e*x^r)^q, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e,
 f, m, n, q, r}, x] && IntegerQ[q] && (GtQ[q, 0] || (IntegerQ[m] && Integer
Q[r]))
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2473

```
Int[Log[(f_.)*(x_)^(m_.)]*((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_
.))*((g_.)*(x_))^(q_.), x_Symbol] :> Simp[(-(g*(q + 1))^(-1))*(m*((g*x)^(q
+ 1)/(q + 1)) - (g*x)^(q + 1)*Log[f*x^m])*(a + b*Log[c*(d + e*x)^n]), x] +
(-Dist[b*e*(n/(g*(q + 1))), Int[(g*x)^(q + 1)*(Log[f*x^m]/(d + e*x)), x], x
] + Dist[b*e*m*(n/(g*(q + 1)^2)), Int[(g*x)^(q + 1)/(d + e*x), x], x]) /; F
reeQ[{a, b, c, d, e, f, g, m, n, q}, x] && NeQ[q, -1]
```

Rubi steps

$$\int x^2\log\left(fx^m\right)\left(a+b\log\left(c(d+ex)^n\right)\right)\,dx=-\frac{1}{9}\left(mx^3-3x^3\log\left(fx^m\right)\right)\left(a+b\log\left(c(d+ex)^n\right)\right)-\frac{1}{3}(ben)\int$$

$$=-\frac{1}{9}\left(mx^3-3x^3\log\left(fx^m\right)\right)\left(a+b\log\left(c(d+ex)^n\right)\right)-\frac{1}{3}(ben)\int$$

$$=\frac{bd^2mnx}{9e^2}-\frac{bdmnx^2}{18e}+\frac{1}{27}bmnx^3-\frac{bd^3mn\log(d+ex)}{9e^3}-\frac{1}{9}(mx$$

$$=\frac{4bd^2mnx}{9e^2}-\frac{5bdmnx^2}{36e}+\frac{2}{27}bmnx^3-\frac{bd^2nx\log\left(fx^m\right)}{3e^2}+\frac{bdnx^2}{}$$

$$=\frac{4bd^2mnx}{9e^2}-\frac{5bdmnx^2}{36e}+\frac{2}{27}bmnx^3-\frac{bd^2nx\log\left(fx^m\right)}{3e^2}+\frac{bdnx^2}{}$$

Mathematica [A]
time = 0.13, size = 197, normalized size = 1.01

$$\frac{6\log(fx^m)\left(6ae^3x^3+benx(-6d^2+3dex-2e^2x^2)+6bd^3n\log(d+ex)+6be^3x^3\log(c(d+ex)^n)\right)+m\left(48bd^2enx-15bde^2nx^2-12ae^3x^3+8be^3nx^3-12bd^3n(1+3\log(x))\log(d+ex)-12be^3x^3\log(c(d+ex)^n)+36bd^3n\log(x)\log\left(1+\frac{ex}{d}\right)\right)+36bd^3mn\operatorname{Li}_2\left(-\frac{ex}{d}\right)}{108e^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2*Log[f*x^m]*(a + b*Log[c*(d + e*x)^n]),x]
```

```
[Out] (6*Log[f*x^m]*(6*a*e^3*x^3 + b*e*n*x*(-6*d^2 + 3*d*e*x - 2*e^2*x^2) + 6*b*d
^3*n*Log[d + e*x] + 6*b*e^3*x^3*Log[c*(d + e*x)^n]) + m*(48*b*d^2*e*n*x - 1
5*b*d*e^2*n*x^2 - 12*a*e^3*x^3 + 8*b*e^3*n*x^3 - 12*b*d^3*n*(1 + 3*Log[x])*
Log[d + e*x] - 12*b*e^3*x^3*Log[c*(d + e*x)^n] + 36*b*d^3*n*Log[x]*Log[1 +
(e*x)/d]) + 36*b*d^3*m*n*PolyLog[2, -((e*x)/d)])/(108*e^3)
```

Maple [C] Result contains higher order function than in optimal. Order 9 vs. order 4.
time = 0.82, size = 2162, normalized size = 11.09

method	result	size
risch	Expression too large to display	2162

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*ln(f*x^m)*(a+b*ln(c*(e*x+d)^n)),x,method=_RETURNVERBOSE)
```

```
[Out] 2/27*b*m*n*x^3-1/9*x^3*a*m-1/3*m/e^3*b*d^3*n*ln(e*x+d)*ln(-e*x/d)-1/6*I*x^3
*ln(c)*Pi*b*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)-1/6*I*x^3*ln(f)*Pi*b*csgn(I
*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+1/18*I*x^3*Pi*b*n*csgn(I*f)*csgn(
I*x^m)*csgn(I*f*x^m)-1/12*I/e*Pi*x^2*b*d*n*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x
^m)+1/6*I/e^2*Pi*b*d^2*n*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)*x+1/6*I*x^3*ln
(c)*Pi*b*csgn(I*f)*csgn(I*f*x^m)^2+1/6*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)
^2*x^3*ln(x^m)-1/12*b*Pi^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2*x^3*csgn
(I*x^m)*csgn(I*f*x^m)^2-1/12*b*Pi^2*csgn(I*c*(e*x+d)^n)^3*x^3*csgn(I*f)*csg
n(I*x^m)*csgn(I*f*x^m)-1/18*I*x^3*Pi*b*n*csgn(I*f)*csgn(I*f*x^m)^2-1/12*b*P
i^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*x^3*csgn(I*x^m)*csgn(I*f*x^m)^2-1/12*b*
Pi^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2*x^3*csgn(I*f)*csgn(I*f*x^m)^2+
1/6*I*x^3*ln(f)*Pi*b*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+1/18*I*m*Pi*b*
x^3*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-1/6*I/e^3*b*d^3*n*ln(e*
x+d)*Pi*csgn(I*f*x^m)^3-1/12*I/e*Pi*x^2*b*d*n*csgn(I*f*x^m)^3-1/12*b*Pi^2*c
sgn(I*c*(e*x+d)^n)^3*x^3*csgn(I*f*x^m)^3+1/6*I*x^3*ln(f)*Pi*b*csgn(I*c)*csg
n(I*c*(e*x+d)^n)^2-1/12*b*Pi^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)
^n)*x^3*csgn(I*f*x^m)^3-1/12*b*Pi^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*x^3*csg
n(I*f)*csgn(I*f*x^m)^2+1/18*I*m*Pi*b*x^3*csgn(I*c*(e*x+d)^n)^3+1/18*I*x^3*P
i*b*n*csgn(I*f*x^m)^3-1/9*x^3*ln(c)*b*m-1/6*I/e^3*b*d^3*n*ln(e*x+d)*Pi*csgn
(I*f)*csgn(I*x^m)*csgn(I*f*x^m)+1/12*b*Pi^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csg
n(I*c*(e*x+d)^n)*x^3*csgn(I*f)*csgn(I*f*x^m)^2+1/3*x^3*ln(c)*ln(f)*b-1/9*x^
3*ln(f)*b*n+1/6*I/e^2*Pi*b*d^2*n*csgn(I*f*x^m)^3*x-1/6*I*b*Pi*csgn(I*c)*csg
```

```
n(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)*x^3*ln(x^m)-1/6*I*x^3*Pi*a*csgn(I*f*x^m)
^3+1/3/e^3*b*d^3*n*ln(e*x+d)*ln(f)+(1/3*x^3*b*ln(x^m)+1/18*b*x^3*(-3*I*Pi*c
sgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)+3*I*Pi*csgn(I*f)*csgn(I*f*x^m)^2+3*I*Pi*
csgn(I*x^m)*csgn(I*f*x^m)^2-3*I*Pi*csgn(I*f*x^m)^3+6*ln(f)-2*m))*ln((e*x+d)
^n)+1/6*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2*x^3*ln(x^m)-1/6*I*x^
3*Pi*a*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)+1/6*I*x^3*ln(c)*Pi*b*csgn(I*x^m)
*csgn(I*f*x^m)^2-1/12*b*Pi^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n
)*x^3*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)+1/6*I/e^3*b*d^3*n*ln(e*x+d)*Pi*cs
gn(I*x^m)*csgn(I*f*x^m)^2-1/6*I/e^2*Pi*b*d^2*n*csgn(I*f)*csgn(I*f*x^m)^2*x+
1/6*I*x^3*Pi*a*csgn(I*x^m)*csgn(I*f*x^m)^2+1/12*b*Pi^2*csgn(I*c)*csgn(I*c*(
e*x+d)^n)^2*x^3*csgn(I*f*x^m)^3+1/12*b*Pi^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x
+d)^n)^2*x^3*csgn(I*f*x^m)^3+1/12*b*Pi^2*csgn(I*c*(e*x+d)^n)^3*x^3*csgn(I*f
)*csgn(I*f*x^m)^2+1/12*b*Pi^2*csgn(I*c*(e*x+d)^n)^3*x^3*csgn(I*x^m)*csgn(I*
f*x^m)^2-1/3/e^2*n*b*ln(x^m)*x*d^2+1/3*a*x^3*ln(x^m)+1/3*x^3*ln(f)*a-1/3*m/
e^3*b*d^3*n*dilog(-e*x/d)-1/6*I*x^3*ln(c)*Pi*b*csgn(I*f*x^m)^3-1/6*I*x^3*ln
(f)*Pi*b*csgn(I*c*(e*x+d)^n)^3+1/6*I*x^3*Pi*a*csgn(I*f)*csgn(I*f*x^m)^2-1/6
*I*b*Pi*csgn(I*c*(e*x+d)^n)^3*x^3*ln(x^m)+1/12*b*Pi^2*csgn(I*c)*csgn(I*(e*x
+d)^n)*csgn(I*c*(e*x+d)^n)*x^3*csgn(I*x^m)*csgn(I*f*x^m)^2+1/12*b*Pi^2*csgn
(I*c)*csgn(I*c*(e*x+d)^n)^2*x^3*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)+1/12*b*
Pi^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2*x^3*csgn(I*f)*csgn(I*x^m)*csgn
(I*f*x^m)+1/12*I/e*Pi*x^2*b*d*n*csgn(I*f)*csgn(I*f*x^m)^2+1/6/e*ln(f)*x^2*b
*d*n-1/3/e^2*ln(f)*b*d^2*n*x+49/108*b*d^3*m*n/e^3+1/12*I/e*Pi*x^2*b*d*n*csg
n(I*x^m)*csgn(I*f*x^m)^2+1/6*I/e^3*b*d^3*n*ln(e*x+d)*Pi*csgn(I*f)*csgn(I*f*
x^m)^2-1/18*I*m*Pi*b*x^3*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-1/18*I*m*Pi*b*x^3*
csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-1/18*I*x^3*Pi*b*n*csgn(I*x^m)*csgn(
I*f*x^m)^2-1/9*n*b*ln(x^m)*x^3+1/3*b*ln(c)*x^3*ln(x^m)+1/3/e^3*n*b*ln(x^m)*
d^3*ln(e*x+d)+1/6/e*n*b*ln(x^m)*d*x^2-1/6*I/e^2*Pi*b*d^2*n*csgn(I*x^m)*csgn
(I*f*x^m)^2*x-1/9*b*d^3*m*n*ln(e*x+d)/e^3+4/9*b*d^2*m*n*x/e^2-5/36*b*d*m*n*
x^2/e
```

Maxima [A]
time = 0.35, size = 202, normalized size = 1.04

$$-\frac{1}{108}\left(36\left(\log\left(xe+d\right)\log\left(-\frac{xe+d}{d}+1\right)+\mathrm{Li}_2\left(\frac{xe+d}{d}\right)\right)bd^3ne^{(-3)}+\left(15\,bdnx^2e^2-48\,bd^2nxe+12\,bd^3n\log\left(xe+d\right)+12\,bx^3e^3\log\left(\left(xe+d\right)^n\right)-4\left(b(2\,n-3\,\log\left(c\right))-3\,a\right)x^3e^3\right)e^{(-3)}\right)m+\frac{1}{18}\left(6\,bx^3\log\left(\left(xe+d\right)^nc\right)+6\,ax^3+\left(6\,d^3e^{(-4)}\log\left(xe+d\right)-\left(2\,x^3e^2-3\,dx^2e+6\,d^2x\right)e^{(-3)}\right)bne\right)\log\left(fx^m\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*log(f*x^m)*(a+b*log(c*(e*x+d)^n)),x, algorithm="maxima")
```

```
[Out] -1/108*(36*(log(x*e + d)*log(-(x*e + d)/d + 1) + dilog((x*e + d)/d))*b*d^3*
n*e^(-3) + (15*b*d*n*x^2*e^2 - 48*b*d^2*n*x*e + 12*b*d^3*n*log(x*e + d) + 1
2*b*x^3*e^3*log((x*e + d)^n) - 4*(b*(2*n - 3*log(c)) - 3*a)*x^3*e^3)*e^(-3)
)*m + 1/18*(6*b*x^3*log((x*e + d)^n*c) + 6*a*x^3 + (6*d^3*e^(-4)*log(x*e +
d) - (2*x^3*e^2 - 3*d*x^2*e + 6*d^2*x)*e^(-3))*b*n*e)*log(f*x^m)
```

Fricas [F]

time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*log(f*x^m)*(a+b*log(c*(e*x+d)^n)),x, algorithm="fricas")
[Out] integral(b*x^2*log((x*e + d)^n*c)*log(f*x^m) + a*x^2*log(f*x^m), x)
```

Sympy [**F(-1)**] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*ln(f*x**m)*(a+b*ln(c*(e*x+d)**n)),x)
[Out] Timed out
```

Giac [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*log(f*x^m)*(a+b*log(c*(e*x+d)^n)),x, algorithm="giac")
[Out] integrate((b*log((x*e + d)^n*c) + a)*x^2*log(f*x^m), x)
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.01

$$\int x^2\,\ln\left(f\,x^m\right)\,\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*log(f*x^m)*(a + b*log(c*(d + e*x)^n)),x)
[Out] int(x^2*log(f*x^m)*(a + b*log(c*(d + e*x)^n)), x)
```

3.360 $\int x \log(fx^m)(a+b\log(c(d+ex)^n))\,dx$

Optimal. Leaf size=158

$$-\frac{3bdmnx}{4e}+\frac{1}{4}bmnx^2+\frac{bdnx\log(fx^m)}{2e}-\frac{1}{4}bnx^2\log(fx^m)+\frac{bd^2mn\log(d+ex)}{4e^2}-\frac{1}{4}(mx^2-2x^2\log(fx^m))(a+$$

```
[Out] -3/4*b*d*m*n*x/e+1/4*b*m*n*x^2+1/2*b*d*n*x*ln(f*x^m)/e-1/4*b*n*x^2*ln(f*x^m
)+1/4*b*d^2*m*n*ln(e*x+d)/e^2-1/4*(m*x^2-2*x^2*ln(f*x^m))*(a+b*ln(c*(e*x+d)
^n))-1/2*b*d^2*n*ln(f*x^m)*ln(1+e*x/d)/e^2-1/2*b*d^2*m*n*polylog(2,-e*x/d)/
e^2
```

Rubi [A]
time = 0.10, antiderivative size = 158, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 7, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.318$, Rules used = {2473, 45, 2393, 2332, 2341, 2354, 2438}

$$-\frac{bd^2mn\text{PolyLog}(2,-\frac{ex}{d})}{2e^2}-\frac{1}{4}(mx^2-2x^2\log(fx^m))(a+b\log(c(d+ex)^n))-\frac{bd^2n\log(\frac{ex}{d}+1)\log(fx^m)}{2e^2}+\frac{bd^2mn\log(d+ex)}{4e^2}+\frac{bdnx\log(fx^m)}{2e}-\frac{3bdmnx}{4e}-\frac{1}{4}bnx^2\log(fx^m)+\frac{1}{4}bmnx^2$$

Antiderivative was successfully verified.

```
[In] Int[x*Log[f*x^m]*(a + b*Log[c*(d + e*x)^n]),x]
```

```
[Out] (-3*b*d*m*n*x)/(4*e) + (b*m*n*x^2)/4 + (b*d*n*x*Log[f*x^m])/(2*e) - (b*n*x^
2*Log[f*x^m])/4 + (b*d^2*m*n*Log[d + e*x])/(4*e^2) - ((m*x^2 - 2*x^2*Log[f*
x^m])*(a + b*Log[c*(d + e*x)^n]))/4 - (b*d^2*n*Log[f*x^m]*Log[1 + (e*x)/d])
/(2*e^2) - (b*d^2*m*n*PolyLog[2, -((e*x)/d)])/(2*e^2)
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2332

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2341

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_.)*(x_))^(m_.), x_Symbol] :>
Simp[(d*x)^(m + 1)*((a + b*Log[c*x^n])/(d*(m + 1))), x] - Simp[b*n*((d*x)^(
m + 1)/(d*(m + 1)^2)), x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[m, -1]
```

Rule 2354

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[Log[1 + e*(x/d)]*((a + b*Log[c*x^n])^p/e), x] - Dist[b*n*(p/e),
 Int[Log[1 + e*(x/d)]*((a + b*Log[c*x^n])^(p - 1)/x), x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((f_.)*(x_))^(m_.)*((d_) + (e_.)*
(x_)^(r_.))^(q_.), x_Symbol] :> With[{u = ExpandIntegrand[a + b*Log[c*x^n],
 (f*x)^m*(d + e*x^r)^q, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e,
 f, m, n, q, r}, x] && IntegerQ[q] && (GtQ[q, 0] || (IntegerQ[m] && Integer
Q[r]))
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2473

```
Int[Log[(f_.)*(x_)^(m_.)]*((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_
.))*((g_.)*(x_))^(q_.), x_Symbol] :> Simp[(-(g*(q + 1))^(-1))*(m*((g*x)^(q
+ 1)/(q + 1)) - (g*x)^(q + 1)*Log[f*x^m])*(a + b*Log[c*(d + e*x)^n]), x] +
(-Dist[b*e*(n/(g*(q + 1))), Int[(g*x)^(q + 1)*(Log[f*x^m]/(d + e*x)), x], x
] + Dist[b*e*m*(n/(g*(q + 1)^2)), Int[(g*x)^(q + 1)/(d + e*x), x], x]) /; F
reeQ[{a, b, c, d, e, f, g, m, n, q}, x] && NeQ[q, -1]
```

Rubi steps

$$\begin{aligned}\int x\log\left(fx^m\right)\left(a+b\log\left(c(d+ex)^n\right)\right)\,dx &= -\frac{1}{4}\left(mx^2-2x^2\log\left(fx^m\right)\right)\left(a+b\log\left(c(d+ex)^n\right)\right)-\frac{1}{2}(ben)\int\\ &= -\frac{1}{4}\left(mx^2-2x^2\log\left(fx^m\right)\right)\left(a+b\log\left(c(d+ex)^n\right)\right)-\frac{1}{2}(ben)\int\\ &= -\frac{bdmnx}{4e}+\frac{1}{8}bmnx^2+\frac{bd^2mn\log(d+ex)}{4e^2}-\frac{1}{4}\left(mx^2-2x^2\log\right.\\ &= -\frac{3bdmnx}{4e}+\frac{1}{4}bmnx^2+\frac{bdnx\log\left(fx^m\right)}{2e}-\frac{1}{4}bnx^2\log\left(fx^m\right)+\\ &= -\frac{3bdmnx}{4e}+\frac{1}{4}bmnx^2+\frac{bdnx\log\left(fx^m\right)}{2e}-\frac{1}{4}bnx^2\log\left(fx^m\right)+\end{aligned}$$

Mathematica [A]

time = 0.09, size = 164, normalized size = 1.04

$$\frac{\log(fx^m)\left(-2bd^2n\log(d+ex)+ex(2bdn+2aex-benx+2bex\log(c(d+ex)^n))\right)+m\left(-3bdenx-ae^2x^2+be^2nx^2+bd^2n(1+2\log(x))\log(d+ex)-be^2x^2\log(c(d+ex)^n)-2bd^2n\log(x)\log\left(1+\frac{ex}{d}\right)\right)-2bd^2mn\text{Li}_2\left(-\frac{ex}{d}\right)}{4e^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[x*Log[f*x^m]*(a + b*Log[c*(d + e*x)^n]),x]
```

```
[Out] (Log[f*x^m]*(-2*b*d^2*n*Log[d + e*x] + e*x*(2*b*d*n + 2*a*e*x - b*e*n*x + 2
*b*e*x*Log[c*(d + e*x)^n])) + m*(-3*b*d*e*n*x - a*e^2*x^2 + b*e^2*n*x^2 + b
*d^2*n*(1 + 2*Log[x])*Log[d + e*x] - b*e^2*x^2*Log[c*(d + e*x)^n] - 2*b*d^2
*n*Log[x]*Log[1 + (e*x)/d]) - 2*b*d^2*m*n*PolyLog[2, -((e*x)/d)])/(4*e^2)
```

Maple [C] Result contains higher order function than in optimal. Order 9 vs. order 4.
time = 1.04, size = 1994, normalized size = 12.62

method	result	size
risch	Expression too large to display	1994

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*ln(f*x^m)*(a+b*ln(c*(e*x+d)^n)),x,method=_RETURNVERBOSE)
```

```
[Out] 1/4*b*m*n*x^2-1/4*I*x^2*Pi*ln(c)*b*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)+1/8*
I*m*Pi*b*x^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-1/4*I*x^2*ln(f
)*Pi*b*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+1/4*I*x^2*Pi*a*csgn(
I*x^m)*csgn(I*f*x^m)^2+1/2/e*n*b*ln(x^m)*d*x-1/2/e^2*n*b*ln(x^m)*d^2*ln(e*x
+d)+1/2*a*x^2*ln(x^m)+1/2*x^2*ln(f)*a+(1/2*b*x^2*ln(x^m)+1/4*b*x^2*(-I*Pi*c
sgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)+I*Pi*csgn(I*f)*csgn(I*f*x^m)^2+I*Pi*csgn
(I*x^m)*csgn(I*f*x^m)^2-I*Pi*csgn(I*f*x^m)^3+2*ln(f)-m))*ln((e*x+d)^n)-1/4*
x^2*a*m+1/4*I/e^2*b*d^2*n*ln(e*x+d)*Pi*csgn(I*f*x^m)^3-1/4*I/e*Pi*b*d*n*csg
n(I*f*x^m)^3*x+1/8*Pi^2*x^2*b*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)*csgn(I*c)
*csgn(I*c*(e*x+d)^n)^2+1/8*I*m*Pi*b*x^2*csgn(I*c*(e*x+d)^n)^3-1/4*I*x^2*ln(
f)*Pi*b*csgn(I*c*(e*x+d)^n)^3-1/4*I*x^2*Pi*ln(c)*b*csgn(I*f*x^m)^3+1/8*I*x^
2*Pi*b*n*csgn(I*f*x^m)^3+1/4*I*x^2*Pi*a*csgn(I*f)*csgn(I*f*x^m)^2-1/8*Pi^2*
x^2*b*csgn(I*f)*csgn(I*f*x^m)^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-1/8
*Pi^2*x^2*b*csgn(I*x^m)*csgn(I*f*x^m)^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-1/8
*Pi^2*x^2*b*csgn(I*x^m)*csgn(I*f*x^m)^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^
n)^2+1/4*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*x^2*ln(x^m)+1/8*I*x^2*Pi*b*
n*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)-1/4*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n
)*csgn(I*c*(e*x+d)^n)*x^2*ln(x^m)-1/8*Pi^2*x^2*b*csgn(I*f*x^m)^3*csgn(I*c*(
e*x+d)^n)^3+1/8*Pi^2*x^2*b*csgn(I*f)*csgn(I*f*x^m)^2*csgn(I*c*(e*x+d)^n)^3+
1/8*Pi^2*x^2*b*csgn(I*x^m)*csgn(I*f*x^m)^2*csgn(I*c*(e*x+d)^n)^3+1/8*Pi^2*x
^2*b*csgn(I*f*x^m)^3*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+1/8*Pi^2*x^2*b*csgn(I*
f*x^m)^3*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-1/4*I*b*Pi*csgn(I*c*(e*x+d
)^n)^3*x^2*ln(x^m)-1/4*x^2*ln(c)*b*m-1/8*Pi^2*x^2*b*csgn(I*f)*csgn(I*f*x^m)
^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-1/4*I*x^2*Pi*a*csgn(I*f*x^m)^3-1/8*I*x^2
```

```
*Pi*b*n*csgn(I*f)*csgn(I*f*x^m)^2+1/4*I/e^2*b*d^2*n*ln(e*x+d)*Pi*csgn(I*f)*
csgn(I*x^m)*csgn(I*f*x^m)-1/4*I/e*Pi*b*d*n*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x
^m)*x-1/8*I*x^2*Pi*b*n*csgn(I*x^m)*csgn(I*f*x^m)^2+1/4*I/e*Pi*b*d*n*csgn(I*
f)*csgn(I*f*x^m)^2*x-1/8*Pi^2*x^2*b*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)*csg
n(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-1/4*n*b*ln(x^m)*x^2+1/2*b*ln(c
)*x^2*ln(x^m)-1/8*Pi^2*x^2*b*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)*csgn(I*c*(
e*x+d)^n)^3+1/2*x^2*ln(f)*ln(c)*b-1/4*x^2*ln(f)*b*n+1/2*m/e^2*b*d^2*n*dilog
(-e*x/d)-1/4*I*x^2*Pi*a*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)+1/4*I*b*Pi*csgn
(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2*x^2*ln(x^m)-1/8*Pi^2*x^2*b*csgn(I*f*x^m
)^3*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-5/8*b*d^2*m*n/e^2-1/2/e
^2*b*d^2*n*ln(e*x+d)*ln(f)+1/2/e*ln(f)*b*d*n*x+1/4*I/e*Pi*b*d*n*csgn(I*x^m)
*csgn(I*f*x^m)^2*x-1/4*I/e^2*b*d^2*n*ln(e*x+d)*Pi*csgn(I*f)*csgn(I*f*x^m)^2
-1/4*I/e^2*b*d^2*n*ln(e*x+d)*Pi*csgn(I*x^m)*csgn(I*f*x^m)^2+1/4*I*x^2*ln(f)
*Pi*b*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+1/4*I*x^2*Pi*ln(c)*b*csgn(I*f
)*csgn(I*f*x^m)^2+1/4*I*x^2*Pi*ln(c)*b*csgn(I*x^m)*csgn(I*f*x^m)^2+1/4*I*x^
2*ln(f)*Pi*b*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+1/8*Pi^2*x^2*b*csgn(I*x^m)*csg
n(I*f*x^m)^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+1/2*m/e^2*b*d^
2*n*ln(e*x+d)*ln(-e*x/d)+1/8*Pi^2*x^2*b*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)
*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+1/8*Pi^2*x^2*b*csgn(I*f)*csgn(I*f*
x^m)^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-1/8*I*m*Pi*b*x^2*csg
n(I*c)*csgn(I*c*(e*x+d)^n)^2-1/8*I*m*Pi*b*x^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e
*x+d)^n)^2+1/4*b*d^2*m*n*ln(e*x+d)/e^2-3/4*b*d*m*n*x/e
```

Maxima [A]
time = 0.32, size = 176, normalized size = 1.11

$$\frac{1}{4}\left(2\left(\log\left(xe+d\right)\log\left(-\frac{xe+d}{d}+1\right)+\mathrm{Li}_2\left(\frac{xe+d}{d}\right)\right)bd^2ne^{(-2)}-\left(3\,bdnxe-bd^2n\log\left(xe+d\right)+bx^2e^2\log\left(\left(xe+d\right)^n\right)-\left(b(n-\log\left(c\right))-a\right)x^2e^2\right)e^{(-2)}\right)m-\frac{1}{4}\left(\left(2\,d^2e^{(-3)}\log\left(xe+d\right)+\left(x^2e-2\,dx\right)e^{(-2)}\right)bne-2\,bx^2\log\left(\left(xe+d\right)^nc\right)-2\,ax^2\right)\log\left(fx^m\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*log(f*x^m)*(a+b*log(c*(e*x+d)^n)),x, algorithm="maxima")
```

```
[Out] 1/4*(2*(log(x*e + d)*log(-(x*e + d)/d + 1) + dilog((x*e + d)/d))*b*d^2*n*e^
(-2) - (3*b*d*n*x*e - b*d^2*n*log(x*e + d) + b*x^2*e^2*log((x*e + d)^n) - (
b*(n - log(c)) - a)*x^2*e^2)*e^(-2))*m - 1/4*((2*d^2*e^(-3)*log(x*e + d) +
(x^2*e - 2*d*x)*e^(-2))*b*n*e - 2*b*x^2*log((x*e + d)^n*c) - 2*a*x^2)*log(f
*x^m)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*log(f*x^m)*(a+b*log(c*(e*x+d)^n)),x, algorithm="fricas")
```

```
[Out] integral(b*x*log((x*e + d)^n*c)*log(f*x^m) + a*x*log(f*x^m), x)
```

Sympy [**F(-1)**] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*ln(f*x**m)*(a+b*ln(c*(e*x+d)**n)),x)
[Out] Timed out
```

Giac [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*log(f*x^m)*(a+b*log(c*(e*x+d)^n)),x, algorithm="giac")
[Out] integrate((b*log((x*e + d)^n*c) + a)*x*log(f*x^m), x)
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.01

$$\int x \ln\left(f\,x^m\right)\,\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right) \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*log(f*x^m)*(a + b*log(c*(d + e*x)^n)),x)
[Out] int(x*log(f*x^m)*(a + b*log(c*(d + e*x)^n)), x)
```

3.361 $\int \log(fx^m)\left(a+b\log\left(c(d+ex)^n\right)\right)\,dx$

Optimal. Leaf size=99

$$2bmnx-bnx\log(fx^m)-\frac{bdmn\log(d+ex)}{e}-x(m-\log(fx^m))\left(a+b\log\left(c(d+ex)^n\right)\right)+\frac{bdn\log(fx^m)\log(1$$

```
[Out] 2*b*m*n*x-b*n*x*ln(f*x^m)-b*d*m*n*ln(e*x+d)/e-x*(m-ln(f*x^m))*(a+b*ln(c*(e*
x+d)^n))+b*d*n*ln(f*x^m)*ln(1+e*x/d)/e+b*d*m*n*polylog(2,-e*x/d)/e
```

Rubi [A]
time = 0.07, antiderivative size = 99, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}} = 0.286$, Rules used = {2469, 45, 2393, 2332, 2354, 2438}

$$\frac{bdmn\text{PolyLog}\left(2,-\frac{ex}{d}\right)}{e}-x(m-\log(fx^m))\left(a+b\log\left(c(d+ex)^n\right)\right)+\frac{bdn\log\left(\frac{ex}{d}+1\right)\log(fx^m)}{e}-\frac{bdmn\log(d+ex)}{e}-bnx\log(fx^m)+2bmnx$$

Antiderivative was successfully verified.

```
[In] Int[Log[f*x^m]*(a + b*Log[c*(d + e*x)^n]),x]
```

```
[Out] 2*b*m*n*x - b*n*x*Log[f*x^m] - (b*d*m*n*Log[d + e*x])/e - x*(m - Log[f*x^m]
)*(a + b*Log[c*(d + e*x)^n]) + (b*d*n*Log[f*x^m]*Log[1 + (e*x)/d])/e + (b*d
*m*n*PolyLog[2, -((e*x)/d)])/e
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2332

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2354

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[Log[1 + e*(x/d)]*((a + b*Log[c*x^n])^p/e), x] - Dist[b*n*(p/e),
 Int[Log[1 + e*(x/d)]*((a + b*Log[c*x^n])^(p - 1)/x), x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((f_.)*(x_))^(m_.)*((d_) + (e_.)*
(x_)^(r_.))^(q_.), x_Symbol] :> With[{u = ExpandIntegrand[a + b*Log[c*x^n],
```

```
 (f*x)^m*(d + e*x^r)^q, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e,
 f, m, n, q, r}, x] && IntegerQ[q] && (GtQ[q, 0] || (IntegerQ[m] && Integer
Q[r]))
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2469

```
Int[Log[(f_.)*(x_)^(m_.)]*((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_
.)), x_Symbol] :> Simp[(-x)*(m - Log[f*x^m])*(a + b*Log[c*(d + e*x)^n]), x]
 + (-Dist[b*e*n, Int[(x*Log[f*x^m])/(d + e*x), x], x] + Dist[b*e*m*n, Int[x
/(d + e*x), x], x]) /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rubi steps

$$\int \log\left(fx^m\right)\left(a+b\log\left(c(d+ex)^n\right)\right)\,dx = -x(m-\log\left(fx^m\right))\left(a+b\log\left(c(d+ex)^n\right)\right)-(ben)\int\frac{x\log\left(fx^m\right)}{d+ex}$$

$$= -x(m-\log\left(fx^m\right))\left(a+b\log\left(c(d+ex)^n\right)\right)-(ben)\int\left(\frac{\log\left(fx^m\right)}{e}\right.$$

$$= bmnx-\frac{bdmn\log(d+ex)}{e}-x(m-\log\left(fx^m\right))\left(a+b\log\left(c(d+e\right.\right.$$

$$= 2bmnx-bnx\log\left(fx^m\right)-\frac{bdmn\log(d+ex)}{e}-x(m-\log\left(fx^m\right))$$

$$= 2bmnx-bnx\log\left(fx^m\right)-\frac{bdmn\log(d+ex)}{e}-x(m-\log\left(fx^m\right))$$

Mathematica [A]
time = 0.06, size = 116, normalized size = 1.17

$$\frac{\log\left(fx^m\right)\left(bdn\log(d+ex)+ex\left(a-bn+b\log\left(c(d+ex)^n\right)\right)\right)-m\left(aex-2benx+bdn(1+\log(x))\log(d+ex)+bex\log\left(c(d+ex)^n\right)-bdn\log(x)\log\left(1+\frac{ex}{d}\right)\right)+bdmn\text{Li}_2\left(-\frac{ex}{d}\right)}{e}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[f*x^m]*(a + b*Log[c*(d + e*x)^n]),x]
```

```
[Out] (Log[f*x^m]*(b*d*n*Log[d + e*x] + e*x*(a - b*n + b*Log[c*(d + e*x)^n])) - m
*(a*e*x - 2*b*e*n*x + b*d*n*(1 + Log[x])*Log[d + e*x] + b*e*x*Log[c*(d + e*
x)^n] - b*d*n*Log[x]*Log[1 + (e*x)/d]) + b*d*m*n*PolyLog[2, -((e*x)/d)])/e
```

Maple [C] Result contains higher order function than in optimal. Order 9 vs. order 4.
time = 0.68, size = 1724, normalized size = 17.41

method	result	size
risch	Expression too large to display	1724

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(f*x^m)*(a+b*ln(c*(e*x+d)^n)),x,method=_RETURNVERBOSE)
```

```
[Out] ln(f)*a*x-x*a*m+1/4*Pi^2*x*b*csgn(I*x^m)*csgn(I*f*x^m)^2*csgn(I*c)*csgn(I*(
e*x+d)^n)*csgn(I*c*(e*x+d)^n)+1/4*Pi^2*x*b*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x
^m)*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+1/4*Pi^2*x*b*csgn(I*f)*csgn(I*x^m)*csgn
(I*f*x^m)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+1/2*I*n*Pi*b*x*csgn(I*f)*
csgn(I*x^m)*csgn(I*f*x^m)+2*b*m*n*x-1/2*I*n*Pi*b*x*csgn(I*f)*csgn(I*f*x^m)^
2-m*ln(c)*b*x+1/2*I*b*d*n/e*ln(e*x+d)*Pi*csgn(I*x^m)*csgn(I*f*x^m)^2+1/2*I*
b*d*n/e*ln(e*x+d)*Pi*csgn(I*f)*csgn(I*f*x^m)^2-1/4*Pi^2*x*b*csgn(I*f*x^m)^3
*csgn(I*c*(e*x+d)^n)^3+1/2*I*ln(c)*Pi*b*x*csgn(I*x^m)*csgn(I*f*x^m)^2-1/2*I
*Pi*a*x*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)-1/2*I*Pi*ln(x^m)*x*b*csgn(I*c)*
csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+1/4*Pi^2*x*b*csgn(I*f)*csgn(I*f*x^m)^
2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+b*d*m*n/e-1/4*Pi^2*x*b*cs
gn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x
+d)^n)+(b*x*ln(x^m)+1/2*b*(-I*Pi*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)+I*Pi*c
sgn(I*f)*csgn(I*f*x^m)^2+I*Pi*csgn(I*x^m)*csgn(I*f*x^m)^2-I*Pi*csgn(I*f*x^m
)^3+2*ln(f)-2*m)*x)*ln((e*x+d)^n)+ln(x^m)*x*a-1/4*Pi^2*x*b*csgn(I*f)*csgn(I
*f*x^m)^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-1/4*Pi^2*x*b*csgn(I*x^m)*
csgn(I*f*x^m)^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-m*b*d*n/e*ln(e*x+d)
*ln(-e*x/d)-m*b*d*n/e*dilog(-e*x/d)+1/2*I*ln(f)*Pi*b*x*csgn(I*c)*csgn(I*c*(
e*x+d)^n)^2+1/2*I*Pi*ln(x^m)*x*b*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+1/2*I*ln(f
)*Pi*b*x*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+1/2*I*ln(c)*Pi*b*x*csgn(I*
f)*csgn(I*f*x^m)^2+b*d*n/e*ln(e*x+d)*ln(f)-1/2*I*n*Pi*b*x*csgn(I*x^m)*csgn(
I*f*x^m)^2+1/2*I*Pi*a*x*csgn(I*x^m)*csgn(I*f*x^m)^2+1/2*I*n*Pi*b*x*csgn(I*f
*x^m)^3+1/4*Pi^2*x*b*csgn(I*f*x^m)^3*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^
2+1/4*Pi^2*x*b*csgn(I*f)*csgn(I*f*x^m)^2*csgn(I*c*(e*x+d)^n)^3+1/4*Pi^2*x*b
*csgn(I*x^m)*csgn(I*f*x^m)^2*csgn(I*c*(e*x+d)^n)^3+1/4*Pi^2*x*b*csgn(I*f*x^
m)^3*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-1/2*I*Pi*ln(x^m)*x*b*csgn(I*c*(e*x+d)^
n)^3+1/2*I*m*Pi*b*x*csgn(I*c*(e*x+d)^n)^3-1/2*I*ln(f)*Pi*b*x*csgn(I*c*(e*x+
d)^n)^3-1/2*I*b*d*n/e*ln(e*x+d)*Pi*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)+1/2*
I*Pi*a*x*csgn(I*f)*csgn(I*f*x^m)^2+1/e*n*b*ln(x^m)*d*ln(e*x+d)-1/2*I*b*d*n/
e*ln(e*x+d)*Pi*csgn(I*f*x^m)^3-1/2*I*ln(f)*Pi*b*x*csgn(I*c)*csgn(I*(e*x+d)^
n)*csgn(I*c*(e*x+d)^n)-1/2*I*ln(c)*Pi*b*x*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^
m)+1/2*I*m*Pi*b*x*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-1/2*I*Pi*
a*x*csgn(I*f*x^m)^3+1/2*I*Pi*ln(x^m)*x*b*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)
^n)^2-1/2*I*m*Pi*b*x*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-1/2*I*m*Pi*b*x*csgn(I*
(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-1/4*Pi^2*x*b*csgn(I*f*x^m)^3*csgn(I*c)*csg
n(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-1/4*Pi^2*x*b*csgn(I*f)*csgn(I*f*x^m)^2*c
sgn(I*c)*csgn(I*c*(e*x+d)^n)^2-1/4*Pi^2*x*b*csgn(I*x^m)*csgn(I*f*x^m)^2*csg
```

```
n(I*c)*csgn(I*c*(e*x+d)^n)^2-n*b*ln(x^m)*x+ln(c)*ln(x^m)*x*b-n*ln(f)*b*x+ln
(f)*ln(c)*b*x-1/4*Pi^2*x*b*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)*csgn(I*c*(e*
x+d)^n)^3-1/2*I*ln(c)*Pi*b*x*csgn(I*f*x^m)^3-b*d*m*n*ln(e*x+d)/e
```

Maxima [A]
time = 0.33, size = 140, normalized size = 1.41

$$-\left(\left(\log\left(xe+d\right)\log\left(-\frac{xe+d}{d}+1\right)+\mathrm{Li}_2\left(\frac{xe+d}{d}\right)\right)bdne^{(-1)}+\left(bdn\log\left(xe+d\right)+bxe\log\left(\left(xe+d\right)^n\right)-\left(b(2\,n-\log\left(c\right))-a\right)xe\right)e^{(-1)}\right)m+\left(\left(de^{(-2)}\log\left(xe+d\right)-xe^{(-1)}\right)bne+bx\log\left(\left(xe+d\right)^nc\right)+ax\right)\log\left(fx^m\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(f*x^m)*(a+b*log(c*(e*x+d)^n)),x, algorithm="maxima")
```

```
[Out] -((log(x*e + d)*log(-(x*e + d)/d + 1) + dilog((x*e + d)/d))*b*d*n*e^(-1) +
(b*d*n*log(x*e + d) + b*x*e*log((x*e + d)^n) - (b*(2*n - log(c)) - a)*x*e)*
e^(-1))*m + ((d*e^(-2)*log(x*e + d) - x*e^(-1))*b*n*e + b*x*log((x*e + d)^n
*c) + a*x)*log(f*x^m)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(f*x^m)*(a+b*log(c*(e*x+d)^n)),x, algorithm="fricas")
```

```
[Out] integral(b*log((x*e + d)^n*c)*log(f*x^m) + a*log(f*x^m), x)
```

Sympy [F(-1)] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(f*x**m)*(a+b*ln(c*(e*x+d)**n)),x)
```

```
[Out] Timed out
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(f*x^m)*(a+b*log(c*(e*x+d)^n)),x, algorithm="giac")
```

```
[Out] integrate((b*log((x*e + d)^n*c) + a)*log(f*x^m), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int \ln \left(f\,x^m\right)\,\left(a+b\,\ln \left(c\,{\left(d+e\,x\right)}^n\right)\right) \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(log(f*x^m)*(a + b*log(c*(d + e*x)^n)),x)
[Out] int(log(f*x^m)*(a + b*log(c*(d + e*x)^n)), x)
```

3.362 $\int \frac{\log(fx^m)(a+b\log(c(d+ex)^n))}{x}\,dx$

Optimal. Leaf size=88

$$\frac{\log^2(fx^m)(a+b\log(c(d+ex)^n))}{2m}-\frac{bn\log^2(fx^m)\log\left(1+\frac{ex}{d}\right)}{2m}-bn\log(fx^m)\,\text{Li}_2\left(-\frac{ex}{d}\right)+bmn\text{Li}_3\left(-\frac{ex}{d}\right)$$

```
[Out] 1/2*ln(f*x^m)^2*(a+b*ln(c*(e*x+d)^n))/m-1/2*b*n*ln(f*x^m)^2*ln(1+e*x/d)/m-b
*n*ln(f*x^m)*polylog(2,-e*x/d)+b*m*n*polylog(3,-e*x/d)
```

Rubi [A]
time = 0.05, antiderivative size = 88, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.167$, Rules used = {2472, 2354, 2421, 6724}

$$-bn\log(fx^m)\,\text{PolyLog}\left(2,-\frac{ex}{d}\right)+bmn\text{PolyLog}\left(3,-\frac{ex}{d}\right)+\frac{\log^2(fx^m)(a+b\log(c(d+ex)^n))}{2m}-\frac{bn\log\left(\frac{ex}{d}+1\right)\log^2(fx^m)}{2m}$$

Antiderivative was successfully verified.

```
[In] Int[(Log[f*x^m]*(a + b*Log[c*(d + e*x)^n]))/x,x]
```

```
[Out] (Log[f*x^m]^2*(a + b*Log[c*(d + e*x)^n]))/(2*m) - (b*n*Log[f*x^m]^2*Log[1 +
 (e*x)/d])/(2*m) - b*n*Log[f*x^m]*PolyLog[2, -((e*x)/d)] + b*m*n*PolyLog[3,
 -((e*x)/d)]
```

Rule 2354

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[Log[1 + e*(x/d)]*((a + b*Log[c*x^n])^p/e), x] - Dist[b*n*(p/e),
 Int[Log[1 + e*(x/d)]*((a + b*Log[c*x^n])^(p - 1)/x), x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2421

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> Simp[(-PolyLog[2, (-d)*f*x^m])*((a + b*Log[c
*x^n])^p/m), x] + Dist[b*n*(p/m), Int[PolyLog[2, (-d)*f*x^m]*((a + b*Log[c*
x^n])^(p - 1)/x), x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0
] && EqQ[d*e, 1]
```

Rule 2472

```
Int[(Log[(f_.)*(x_)^(m_.)]*((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b
_.)))/(x_), x_Symbol] :> Simp[Log[f*x^m]^2*((a + b*Log[c*(d + e*x)^n])/(2*m
)), x] - Dist[b*e*(n/(2*m)), Int[Log[f*x^m]^2/(d + e*x), x], x] /; FreeQ[{a
, b, c, d, e, f, m, n}, x]
```

Rule 6724

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\begin{aligned}\int \frac{\log(fx^m)(a+b\log(c(d+ex)^n))}{x}\,dx &= \frac{\log^2(fx^m)(a+b\log(c(d+ex)^n))}{2m} - \frac{(ben)\int \frac{\log^2(fx^m)}{d+ex}\,dx}{2m}\\ &= \frac{\log^2(fx^m)(a+b\log(c(d+ex)^n))}{2m} - \frac{bn\log^2(fx^m)\log\left(1+\frac{ex}{d}\right)}{2m}\\ &= \frac{\log^2(fx^m)(a+b\log(c(d+ex)^n))}{2m} - \frac{bn\log^2(fx^m)\log\left(1+\frac{ex}{d}\right)}{2m}\\ &= \frac{\log^2(fx^m)(a+b\log(c(d+ex)^n))}{2m} - \frac{bn\log^2(fx^m)\log\left(1+\frac{ex}{d}\right)}{2m}\end{aligned}$$

Mathematica [A]
time = 0.05, size = 128, normalized size = 1.45

$$\frac{1}{2}\left(\frac{a\log^2(fx^m)}{m} - bm\log^2(x)\log(c(d+ex)^n) + 2b\log(x)\log(fx^m)\log(c(d+ex)^n) + bmn\log^2(x)\log\left(1+\frac{ex}{d}\right) - 2bn\log(x)\log(fx^m)\log\left(1+\frac{ex}{d}\right) - 2bn\log(fx^m)\,\mathrm{Li}_2\left(-\frac{ex}{d}\right) + 2bmn\mathrm{Li}_3\left(-\frac{ex}{d}\right)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(Log[f*x^m]*(a + b*Log[c*(d + e*x)^n]))/x,x]
```

```
[Out] ((a*Log[f*x^m]^2)/m - b*m*Log[x]^2*Log[c*(d + e*x)^n] + 2*b*Log[x]*Log[f*x^
m]*Log[c*(d + e*x)^n] + b*m*n*Log[x]^2*Log[1 + (e*x)/d] - 2*b*n*Log[x]*Log[
f*x^m]*Log[1 + (e*x)/d] - 2*b*n*Log[f*x^m]*PolyLog[2, -((e*x)/d)] + 2*b*m*n
*PolyLog[3, -((e*x)/d)])/2
```

Maple [C] Result contains higher order function than in optimal. Order 9 vs. order 4.
time = 0.47, size = 1749, normalized size = 19.88

method	result	size
risch	Expression too large to display	1749

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(f*x^m)*(a+b*ln(c*(e*x+d)^n))/x,x,method=_RETURNVERBOSE)
```

```
[Out] -n*b*dilog((e*x+d)/d)*ln(f)+b*ln(c)*ln(x)*ln(f)-1/2*I*b*ln(c)*ln(x)*Pi*csgn
(I*f)*csgn(I*x^m)*csgn(I*f*x^m)+1/2*I*b*ln(c)*ln(x)*Pi*csgn(I*x^m)*csgn(I*f
```

```
*x^m)^2+1/2*I*n*b*dilog((e*x+d)/d)*Pi*csgn(I*f*x^m)^3-1/2*I*a*ln(x)*Pi*csgn
(I*f*x^m)^3-1/4*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/m*ln
(x^m)^2-1/2*I*n*b*dilog((e*x+d)/d)*Pi*csgn(I*f)*csgn(I*f*x^m)^2-1/4*b*Pi^2*
csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*ln(x)*csgn(I*f)*csgn(I*f*x^m)^2+1/4*b*Pi^2*
csgn(I*c*(e*x+d)^n)^3*ln(x)*csgn(I*f)*csgn(I*f*x^m)^2-n*b*dilog((e*x+d)/d)*
ln(x^m)-1/2*n*b*m*ln(x)^2*ln(1+e*x/d)+1/4*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)
^n)^2/m*ln(x^m)^2+1/2*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2*ln(x)*
ln(f)-1/4*b*Pi^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*ln(x)*csgn(I*x^m)*csgn(I*f
*x^m)^2+(b*ln(x)*ln(x^m)-1/2*b*m*ln(x)^2-1/2*I*ln(x)*Pi*b*csgn(I*f)*csgn(I*
x^m)*csgn(I*f*x^m)+1/2*I*ln(x)*Pi*b*csgn(I*f)*csgn(I*f*x^m)^2+1/2*I*ln(x)*P
i*b*csgn(I*x^m)*csgn(I*f*x^m)^2-1/2*I*ln(x)*Pi*b*csgn(I*f*x^m)^3+ln(x)*ln(f
)*b)*ln((e*x+d)^n)-1/4*b*Pi^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^
n)*ln(x)*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)-n*b*ln(x)*ln((e*x+d)/d)*ln(x^m
)-1/2*I*n*b*ln(x)*ln((e*x+d)/d)*Pi*csgn(I*x^m)*csgn(I*f*x^m)^2+1/2*b*ln(c)/
m*ln(x^m)^2-1/2*I*a*ln(x)*Pi*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)+1/2*I*b*Pi
*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*ln(x)*ln(f)+1/2*I*n*b*ln(x)*ln((e*x+d)/d)*
Pi*csgn(I*f*x^m)^3+1/2*I*n*b*ln(x)*ln((e*x+d)/d)*Pi*csgn(I*f)*csgn(I*x^m)*c
sgn(I*f*x^m)+1/2*I*n*b*dilog((e*x+d)/d)*Pi*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x
^m)-1/4*b*Pi^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2*ln(x)*csgn(I*x^m)*cs
gn(I*f*x^m)^2+1/4*b*Pi^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*ln(x)*csgn(I*f*x^m
)^3+a*ln(x)*ln(f)-1/4*I*b*Pi*csgn(I*c*(e*x+d)^n)^3/m*ln(x^m)^2-1/4*b*Pi^2*c
sgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2*ln(x)*csgn(I*f)*csgn(I*f*x^m)^2-1/4*
b*Pi^2*csgn(I*c*(e*x+d)^n)^3*ln(x)*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)+1/4*
b*Pi^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*ln(x)*csgn(I*f)*csgn(I*x^m)*csgn(I*f
*x^m)+1/4*b*Pi^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2*ln(x)*csgn(I*f)*cs
gn(I*x^m)*csgn(I*f*x^m)-1/2*I*n*b*ln(x)*ln((e*x+d)/d)*Pi*csgn(I*f)*csgn(I*f
*x^m)^2-n*b*ln(x)*ln((e*x+d)/d)*ln(f)-1/4*b*Pi^2*csgn(I*c)*csgn(I*(e*x+d)^n
)*csgn(I*c*(e*x+d)^n)*ln(x)*csgn(I*f*x^m)^3-1/2*I*n*b*dilog((e*x+d)/d)*Pi*c
sgn(I*x^m)*csgn(I*f*x^m)^2+1/2*I*a*ln(x)*Pi*csgn(I*x^m)*csgn(I*f*x^m)^2-1/2
*I*b*Pi*csgn(I*c*(e*x+d)^n)^3*ln(x)*ln(f)+1/4*b*Pi^2*csgn(I*c)*csgn(I*(e*x+
d)^n)*csgn(I*c*(e*x+d)^n)*ln(x)*csgn(I*f)*csgn(I*f*x^m)^2+1/4*b*Pi^2*csgn(I
*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)*ln(x)*csgn(I*x^m)*csgn(I*f*x^m)^2
+1/2*a/m*ln(x^m)^2-1/2*I*b*ln(c)*ln(x)*Pi*csgn(I*f*x^m)^3+1/2*I*a*ln(x)*Pi*
csgn(I*f)*csgn(I*f*x^m)^2+n*b*ln(x)^2*ln((e*x+d)/d)*m-n*b*m*ln(x)*polylog(2
,-e*x/d)+n*b*dilog((e*x+d)/d)*m*ln(x)+1/4*b*Pi^2*csgn(I*c*(e*x+d)^n)^3*ln(x
)*csgn(I*x^m)*csgn(I*f*x^m)^2+1/4*b*Pi^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)
^n)^2*ln(x)*csgn(I*f*x^m)^3-1/2*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c
*(e*x+d)^n)*ln(x)*ln(f)+1/4*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/
m*ln(x^m)^2+1/2*I*b*ln(c)*ln(x)*Pi*csgn(I*f)*csgn(I*f*x^m)^2-1/4*b*Pi^2*csg
n(I*c*(e*x+d)^n)^3*ln(x)*csgn(I*f*x^m)^3+b*m*n*polylog(3,-e*x/d)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(f*x^m)*(a+b*log(c*(e*x+d)^n))/x,x, algorithm="maxima")
```

```
[Out] -1/2*(b*m*log(x)^2 - 2*b*log(f)*log(x) - 2*b*log(x)*log(x^m))*log((x*e + d)
^n) - integrate(-1/2*(b*m*n*x*e*log(x)^2 - 2*b*n*x*e*log(f)*log(x) + 2*b*d*
log(c)*log(f) + 2*(b*log(c)*log(f) + a*log(f))*x*e + 2*a*d*log(f) - 2*(b*n*
x*e*log(x) - (b*log(c) + a)*x*e - b*d*log(c) - a*d)*log(x^m))/(x^2*e + d*x)
, x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(f*x^m)*(a+b*log(c*(e*x+d)^n))/x,x, algorithm="fricas")
```

```
[Out] integral((b*log((x*e + d)^n*c)*log(f*x^m) + a*log(f*x^m))/x, x)
```

Sympy [F(-1)] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(f*x**m)*(a+b*ln(c*(e*x+d)**n))/x,x)
```

```
[Out] Timed out
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(f*x^m)*(a+b*log(c*(e*x+d)^n))/x,x, algorithm="giac")
```

```
[Out] integrate((b*log((x*e + d)^n*c) + a)*log(f*x^m)/x, x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\ln\left(f\,x^m\right)\,\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)}{x} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((log(f*x^m)*(a + b*log(c*(d + e*x)^n)))/x,x)
```

```
[Out] int((log(f*x^m)*(a + b*log(c*(d + e*x)^n)))/x, x)
```

3.363 $\int \frac{\log(fx^m)(a+b\log(c(d+ex)^n))}{x^2}\,dx$

Optimal. Leaf size=102

$$\frac{bemn\log(x)}{d}-\frac{ben\log\left(1+\frac{d}{ex}\right)\log\left(fx^m\right)}{d}-\frac{bemn\log(d+ex)}{d}-\left(\frac{m}{x}+\frac{\log\left(fx^m\right)}{x}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)+\frac{be}{}$$

```
[Out] b*e*m*n*ln(x)/d-b*e*n*ln(1+d/e/x)*ln(f*x^m)/d-b*e*m*n*ln(e*x+d)/d-(m/x+ln(f
*x^m)/x)*(a+b*ln(c*(e*x+d)^n))+b*e*m*n*polylog(2,-d/e/x)/d
```

Rubi [A]
time = 0.05, antiderivative size = 102, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.250$, Rules used = {2473, 2379, 2438, 36, 29, 31}

$$\frac{bemn\text{PolyLog}\left(2,-\frac{d}{ex}\right)}{d}-\left(\frac{\log\left(fx^m\right)}{x}+\frac{m}{x}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)-\frac{ben\log\left(\frac{d}{ex}+1\right)\log\left(fx^m\right)}{d}+\frac{bemn\log(x)}{d}-\frac{bemn\log(d+ex)}{d}$$

Antiderivative was successfully verified.

```
[In] Int[(Log[f*x^m]*(a + b*Log[c*(d + e*x)^n]))/x^2,x]
```

```
[Out] (b*e*m*n*Log[x])/d - (b*e*n*Log[1 + d/(e*x)]*Log[f*x^m])/d - (b*e*m*n*Log[d
 + e*x])/d - (m/x + Log[f*x^m]/x)*(a + b*Log[c*(d + e*x)^n]) + (b*e*m*n*Pol
yLog[2, -(d/(e*x))])/d
```

Rule 29

```
Int[(x_)^(-1), x_Symbol] :> Simp[Log[x], x]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 36

```
Int[1/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))), x_Symbol] :> Dist[b/(b*c
 - a*d), Int[1/(a + b*x), x], x] - Dist[d/(b*c - a*d), Int[1/(c + d*x), x],
 x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0]
```

Rule 2379

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((x_)*((d_) + (e_.)*(x_)^(r
_.))), x_Symbol] :> Simp[(-Log[1 + d/(e*x^r)])*((a + b*Log[c*x^n])^p/(d*r))
, x] + Dist[b*n*(p/(d*r)), Int[Log[1 + d/(e*x^r)]*((a + b*Log[c*x^n])^(p -
1)/x), x], x] /; FreeQ[{a, b, c, d, e, n, r}, x] && IGtQ[p, 0]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2473

```
Int[Log[(f_.)*(x_)^(m_.)]*((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_
.))*((g_.)*(x_))^(q_.), x_Symbol] :> Simp[(-(g*(q + 1))^(-1))*(m*((g*x)^(q
+ 1)/(q + 1)) - (g*x)^(q + 1)*Log[f*x^m])*(a + b*Log[c*(d + e*x)^n]), x] +
(-Dist[b*e*(n/(g*(q + 1))), Int[(g*x)^(q + 1)*(Log[f*x^m]/(d + e*x)), x], x
] + Dist[b*e*m*(n/(g*(q + 1)^2)), Int[(g*x)^(q + 1)/(d + e*x), x], x]) /; F
reeQ[{a, b, c, d, e, f, g, m, n, q}, x] && NeQ[q, -1]
```

Rubi steps

$$\int \frac{\log(fx^m)(a+b\log(c(d+ex)^n))}{x^2}\,dx = -\left(\frac{m}{x}+\frac{\log(fx^m)}{x}\right)(a+b\log(c(d+ex)^n))+(ben)\int \frac{\log(fx^m}{x(d+ex}$$
$$= -\left(\frac{m}{x}+\frac{\log(fx^m)}{x}\right)(a+b\log(c(d+ex)^n))+\frac{(ben)\int \frac{\log(fx^m)}{x}\,d}{d}$$
$$= \frac{bemn\log(x)}{d}+\frac{ben\log^2(fx^m)}{2dm}-\frac{bemn\log(d+ex)}{d}-\left(\frac{m}{x}+\log\right.$$
$$= \frac{bemn\log(x)}{d}+\frac{ben\log^2(fx^m)}{2dm}-\frac{bemn\log(d+ex)}{d}-\left(\frac{m}{x}+\log\right.$$

Mathematica [A]
time = 0.08, size = 111, normalized size = 1.09

$$-\frac{bemnx\log^2(x)+2(m+\log(fx^m))(ad+benx\log(d+ex)+bd\log(c(d+ex)^n))-2benx\log(x)\left(m+\log(fx^m)+m\log(d+ex)-m\log\left(1+\frac{ex}{d}\right)\right)+2bemnx\operatorname{Li}_2\left(-\frac{ex}{d}\right)}{2dx}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Log[f*x^m]*(a + b*Log[c*(d + e*x)^n]))/x^2,x]
```

```
[Out] -1/2*(b*e*m*n*x*Log[x]^2 + 2*(m + Log[f*x^m])*(a*d + b*e*n*x*Log[d + e*x] +
 b*d*Log[c*(d + e*x)^n]) - 2*b*e*n*x*Log[x]*(m + Log[f*x^m] + m*Log[d + e*x
] - m*Log[1 + (e*x)/d]) + 2*b*e*m*n*x*PolyLog[2, -((e*x)/d)])/(d*x)
```

Maple [C] Result contains higher order function than in optimal. Order 9 vs. order 4.
time = 0.60, size = 1859, normalized size = 18.23

method	result	size

risch	Expression too large to display	1859

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(f*x^m)*(a+b*ln(c*(e*x+d)^n))/x^2,x,method=_RETURNVERBOSE)
```

```
[Out] -1/x*a*m-1/2/d*b*e*m*n*ln(x)^2+1/4*b*Pi^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(
I*c*(e*x+d)^n)/x*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)+1/4*b*Pi^2*csgn(I*c*(e
*x+d)^n)^3/x*csgn(I*f*x^m)^3-1/2*I/x*ln(c)*Pi*b*csgn(I*f)*csgn(I*f*x^m)^2-1
/2*I/x*ln(c)*Pi*b*csgn(I*x^m)*csgn(I*f*x^m)^2-1/4*b*Pi^2*csgn(I*c)*csgn(I*c
*(e*x+d)^n)^2/x*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)-1/4*b*Pi^2*csgn(I*(e*x+
d)^n)*csgn(I*c*(e*x+d)^n)^2/x*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)-1/4*b*Pi^
2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/x*csgn(I*f)*csgn(I*f*x^m)
^2+1/2*I/x*Pi*a*csgn(I*f*x^m)^3+1/2*I*e*b*n/d*ln(x)*Pi*csgn(I*f)*csgn(I*f*x
^m)^2+1/2*I*e*b*n/d*ln(x)*Pi*csgn(I*x^m)*csgn(I*f*x^m)^2-1/2*I/x*Pi*b*m*csg
n(I*c)*csgn(I*c*(e*x+d)^n)^2-1/2*I/x*Pi*b*m*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x
+d)^n)^2-1/4*b*Pi^2*csgn(I*c*(e*x+d)^n)^3/x*csgn(I*x^m)*csgn(I*f*x^m)^2-b*l
n(c)/x*ln(x^m)+1/2*I*e*b*n/d*ln(e*x+d)*Pi*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^
m)-a/x*ln(x^m)+(-b/x*ln(x^m)-1/2*(-I*Pi*b*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^
m)+I*Pi*b*csgn(I*f)*csgn(I*f*x^m)^2+I*Pi*b*csgn(I*x^m)*csgn(I*f*x^m)^2-I*Pi
*b*csgn(I*f*x^m)^3+2*b*ln(f)+2*b*m)/x)*ln((e*x+d)^n)-1/2*I*e*b*n/d*ln(x)*Pi
*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)-1/x*ln(c)*ln(f)*b-1/x*ln(c)*b*m-1/4*b*
Pi^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/x*csgn(I*f*x^m)^3-1/2*I*e*b*n/d*ln(x)*
Pi*csgn(I*f*x^m)^3+1/2*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^
n)/x*ln(x^m)+1/2*I*e*b*n/d*ln(e*x+d)*Pi*csgn(I*f*x^m)^3+1/4*b*Pi^2*csgn(I*c
*(e*x+d)^n)^3/x*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)+1/4*b*Pi^2*csgn(I*c)*cs
gn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/x*csgn(I*f*x^m)^3+1/4*b*Pi^2*csgn(I*c)*
csgn(I*c*(e*x+d)^n)^2/x*csgn(I*f)*csgn(I*f*x^m)^2+1/4*b*Pi^2*csgn(I*(e*x+d)
^n)*csgn(I*c*(e*x+d)^n)^2/x*csgn(I*x^m)*csgn(I*f*x^m)^2+1/2*I/x*ln(c)*Pi*b*
csgn(I*f*x^m)^3+m*b*e*n/d*ln(e*x+d)*ln(-e*x/d)+1/2*I/x*ln(c)*Pi*b*csgn(I*f)
*csgn(I*x^m)*csgn(I*f*x^m)+1/2*I/x*ln(f)*Pi*b*csgn(I*c)*csgn(I*(e*x+d)^n)*c
sgn(I*c*(e*x+d)^n)-1/2*I*e*b*n/d*ln(e*x+d)*Pi*csgn(I*f)*csgn(I*f*x^m)^2-1/2
*I*e*b*n/d*ln(e*x+d)*Pi*csgn(I*x^m)*csgn(I*f*x^m)^2-1/2*I*b*Pi*csgn(I*(e*x+
d)^n)*csgn(I*c*(e*x+d)^n)^2/x*ln(x^m)-1/4*b*Pi^2*csgn(I*c)*csgn(I*(e*x+d)^n
)*csgn(I*c*(e*x+d)^n)/x*csgn(I*x^m)*csgn(I*f*x^m)^2-1/2*I*b*Pi*csgn(I*c)*cs
gn(I*c*(e*x+d)^n)^2/x*ln(x^m)+1/4*b*Pi^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/x*
csgn(I*x^m)*csgn(I*f*x^m)^2+1/4*b*Pi^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n
)^2/x*csgn(I*f)*csgn(I*f*x^m)^2-1/2*I/x*ln(f)*Pi*b*csgn(I*c)*csgn(I*c*(e*x+
d)^n)^2-1/2*I/x*ln(f)*Pi*b*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-1/2*I/x*
Pi*a*csgn(I*x^m)*csgn(I*f*x^m)^2+1/2*I*b*Pi*csgn(I*c*(e*x+d)^n)^3/x*ln(x^m)
-1/4*b*Pi^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/x*csgn(I*f*x^m)^3-1/4*b
*Pi^2*csgn(I*c*(e*x+d)^n)^3/x*csgn(I*f)*csgn(I*f*x^m)^2+1/2*I/x*Pi*b*m*csgn
(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-1/x*ln(f)*a+e*n*b*ln(x^m)/d*ln(
x)+1/2*I/x*Pi*a*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)-e*b*n/d*ln(e*x+d)*ln(f)
```

```
+e*b*n/d*ln(x)*ln(f)-e*n*b*ln(x^m)/d*ln(e*x+d)+1/2*I/x*ln(f)*Pi*b*csgn(I*c*
(e*x+d)^n)^3+1/2*I/x*Pi*b*m*csgn(I*c*(e*x+d)^n)^3-1/2*I/x*Pi*a*csgn(I*f)*cs
gn(I*f*x^m)^2+m*b*e*n/d*dilog(-e*x/d)+b*e*m*n*ln(x)/d-b*e*m*n*ln(e*x+d)/d
```

Maxima [A]
time = 0.33, size = 175, normalized size = 1.72

$$-\frac{1}{2}\left(\frac{2\left(\log\left(x\right)\log\left(\frac{xe}{d}+1\right)+\mathrm{Li}_2\left(-\frac{xe}{d}\right)\right)bne}{d}+\frac{2\,bne\log\left(xe+d\right)}{d}-\frac{2\,bnxe\log\left(xe+d\right)\log\left(x\right)-bnxe\log\left(x\right)^2+2\,bnxe\log\left(x\right)-2\,bd\log\left(\left(xe+d\right)^n\right)-2\,bd\log\left(c\right)-2\,ad}{dx}\right)m-\left(bn\left(\frac{\log\left(xe+d\right)}{d}-\frac{\log\left(x\right)}{d}\right)e+\frac{b\log\left(\left(xe+d\right)^nc\right)}{x}+\frac{a}{x}\right)\log\left(fx^m\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(f*x^m)*(a+b*log(c*(e*x+d)^n))/x^2,x, algorithm="maxima")
```

```
[Out] -1/2*(2*(log(x)*log(x*e/d + 1) + dilog(-x*e/d))*b*n*e/d + 2*b*n*e*log(x*e +
 d)/d - (2*b*n*x*e*log(x*e + d)*log(x) - b*n*x*e*log(x)^2 + 2*b*n*x*e*log(x
) - 2*b*d*log((x*e + d)^n) - 2*b*d*log(c) - 2*a*d)/(d*x))*m - (b*n*(log(x*e
 + d)/d - log(x)/d)*e + b*log((x*e + d)^n*c)/x + a/x)*log(f*x^m)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(f*x^m)*(a+b*log(c*(e*x+d)^n))/x^2,x, algorithm="fricas")
```

```
[Out] integral((b*log((x*e + d)^n*c)*log(f*x^m) + a*log(f*x^m))/x^2, x)
```

Sympy [F(-1)] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(f*x**m)*(a+b*ln(c*(e*x+d)**n))/x**2,x)
```

```
[Out] Timed out
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(f*x^m)*(a+b*log(c*(e*x+d)^n))/x^2,x, algorithm="giac")
```

```
[Out] integrate((b*log((x*e + d)^n*c) + a)*log(f*x^m)/x^2, x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\ln (f\, x^m)\ (a+b\ \ln (c\, (d+e\, x)^n))}{x^2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((log(f*x^m)*(a + b*log(c*(d + e*x)^n)))/x^2,x)
[Out] int((log(f*x^m)*(a + b*log(c*(d + e*x)^n)))/x^2, x)
```

3.364 $\int \frac{\log(fx^m)(a+b\log(c(d+ex)^n))}{x^3}\,dx$

Optimal. Leaf size=156

$$-\frac{3bemn}{4dx}-\frac{be^2mn\log(x)}{4d^2}-\frac{ben\log\left(fx^m\right)}{2dx}+\frac{be^2n\log\left(1+\frac{d}{ex}\right)\log\left(fx^m\right)}{2d^2}+\frac{be^2mn\log(d+ex)}{4d^2}-\frac{1}{4}\left(\frac{m}{x^2}+\frac{2\log(}{x}\right.$$

```
[Out] -3/4*b*e*m*n/d/x-1/4*b*e^2*m*n*ln(x)/d^2-1/2*b*e*n*ln(f*x^m)/d/x+1/2*b*e^2*
n*ln(1+d/e/x)*ln(f*x^m)/d^2+1/4*b*e^2*m*n*ln(e*x+d)/d^2-1/4*(m/x^2+2*ln(f*x
^m)/x^2)*(a+b*ln(c*(e*x+d)^n))-1/2*b*e^2*m*n*polylog(2,-d/e/x)/d^2
```

Rubi [A]
time = 0.10, antiderivative size = 156, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.250$, Rules used = {2473, 2380, 2341, 2379, 2438, 46}

$$-\frac{be^2mn\text{PolyLog}\left(2,-\frac{d}{ex}\right)}{2d^2}-\frac{1}{4}\left(\frac{2\log\left(fx^m\right)}{x^2}+\frac{m}{x^2}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)+\frac{be^2n\log\left(\frac{d}{ex}+1\right)\log\left(fx^m\right)}{2d^2}-\frac{be^2mn\log(x)}{4d^2}+\frac{be^2mn\log(d+ex)}{4d^2}-\frac{ben\log\left(fx^m\right)}{2dx}-\frac{3bemn}{4dx}$$

Antiderivative was successfully verified.

```
[In] Int[(Log[f*x^m]*(a + b*Log[c*(d + e*x)^n]))/x^3,x]
```

```
[Out] (-3*b*e*m*n)/(4*d*x) - (b*e^2*m*n*Log[x])/(4*d^2) - (b*e*n*Log[f*x^m])/(2*d
*x) + (b*e^2*n*Log[1 + d/(e*x)]*Log[f*x^m])/(2*d^2) + (b*e^2*m*n*Log[d + e*
x])/(4*d^2) - ((m/x^2 + (2*Log[f*x^m])/x^2)*(a + b*Log[c*(d + e*x)^n]))/4 -
 (b*e^2*m*n*PolyLog[2, -(d/(e*x))])/(2*d^2)
```

Rule 46

```
Int[((a_) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[E
xpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m +
 n + 2, 0])
```

Rule 2341

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_.)*(x_))^(m_.), x_Symbol] :>
Simp[(d*x)^(m + 1)*((a + b*Log[c*x^n])/(d*(m + 1))), x] - Simp[b*n*((d*x)^(
m + 1)/(d*(m + 1)^2)), x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[m, -1]
```

Rule 2379

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((x_)*((d_) + (e_.)*(x_)^(r
_.))), x_Symbol] :> Simp[(-Log[1 + d/(e*x^r)])*((a + b*Log[c*x^n])^p/(d*r))
, x] + Dist[b*n*(p/(d*r)), Int[Log[1 + d/(e*x^r)]*((a + b*Log[c*x^n])^(p -
1)/x), x], x] /; FreeQ[{a, b, c, d, e, n, r}, x] && IGtQ[p, 0]
```

Rule 2380

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*(x_)^(m_.))/((d_) + (e_.)*
(x_)^(r_.)), x_Symbol] :> Dist[1/d, Int[x^m*(a + b*Log[c*x^n])^p, x], x] -
Dist[e/d, Int[(x^(m + r)*(a + b*Log[c*x^n])^p)/(d + e*x^r), x], x] /; FreeQ
[{a, b, c, d, e, m, n, r}, x] && IGtQ[p, 0] && IGtQ[r, 0] && ILtQ[m, -1]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2473

```
Int[Log[(f_.)*(x_)^(m_.)]*((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_
.))*((g_.)*(x_))^(q_.), x_Symbol] :> Simp[(-(g*(q + 1))^(-1))*(m*((g*x)^(q
+ 1)/(q + 1)) - (g*x)^(q + 1)*Log[f*x^m])*(a + b*Log[c*(d + e*x)^n]), x] +
(-Dist[b*e*(n/(g*(q + 1))), Int[(g*x)^(q + 1)*(Log[f*x^m]/(d + e*x)), x], x
] + Dist[b*e*m*(n/(g*(q + 1)^2)), Int[(g*x)^(q + 1)/(d + e*x), x], x]) /; F
reeQ[{a, b, c, d, e, f, g, m, n, q}, x] && NeQ[q, -1]
```

Rubi steps

$$\int \frac{\log\left(fx^m\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{x^3}\,dx = -\frac{1}{4}\left(\frac{m}{x^2}+\frac{2\log\left(fx^m\right)}{x^2}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)+\frac{1}{2}(ben)\int \frac{\log(\ldots}{x^2(d\ldots}$$

$$= -\frac{1}{4}\left(\frac{m}{x^2}+\frac{2\log\left(fx^m\right)}{x^2}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)+\frac{1}{2}(ben)\int \Big(\frac{\log\ldots}{}$$

$$= -\frac{bemn}{4dx}-\frac{be^2mn\log(x)}{4d^2}+\frac{be^2mn\log(d+ex)}{4d^2}-\frac{1}{4}\Big(\frac{m}{x^2}+\frac{2\log(f\ldots}{x^2}$$

$$= -\frac{3bemn}{4dx}-\frac{be^2mn\log(x)}{4d^2}-\frac{ben\log\left(fx^m\right)}{2dx}-\frac{be^2n\log^2\left(fx^m\right)}{4d^2m}+\frac{be\ldots}{}$$

$$= -\frac{3bemn}{4dx}-\frac{be^2mn\log(x)}{4d^2}-\frac{ben\log\left(fx^m\right)}{2dx}-\frac{be^2n\log^2\left(fx^m\right)}{4d^2m}+\frac{be\ldots}{}$$

Mathematica [A]
time = 0.09, size = 204, normalized size = 1.31

$$-\frac{ad^2m+3bdemnx-be^2mnx^2\log^2(x)+2ad^2\log\left(fx^m\right)+2bdenx\log\left(fx^m\right)-be^2mnx^2\log(d+ex)-2be^2nx^2\log\left(fx^m\right)\log(d+ex)+bd^2m\log\left(c(d+ex)^n\right)+2bd^2\log\left(fx^m\right)\log\left(c(d+ex)^n\right)+be^2nx^2\log(x)\left(m+2\log\left(fx^m\right)+2m\log(d+ex)-2m\log\left(1+\frac{ex}{d}\right)\right)-2be^2mnx^2\text{Li}_2\left(-\frac{ex}{d}\right)}{4d^2x^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Log[f*x^m]*(a + b*Log[c*(d + e*x)^n]))/x^3,x]
```

```
[Out] -1/4*(a*d^2*m + 3*b*d*e*m*n*x - b*e^2*m*n*x^2*Log[x]^2 + 2*a*d^2*Log[f*x^m]
 + 2*b*d*e*n*x*Log[f*x^m] - b*e^2*m*n*x^2*Log[d + e*x] - 2*b*e^2*n*x^2*Log[
f*x^m]*Log[d + e*x] + b*d^2*m*Log[c*(d + e*x)^n] + 2*b*d^2*Log[f*x^m]*Log[c
*(d + e*x)^n] + b*e^2*n*x^2*Log[x]*(m + 2*Log[f*x^m] + 2*m*Log[d + e*x] - 2
*m*Log[1 + (e*x)/d]) - 2*b*e^2*m*n*x^2*PolyLog[2, -((e*x)/d)])/(d^2*x^2)
```

Maple [C] Result contains higher order function than in optimal. Order 9 vs. order 4.
time = 0.68, size = 2051, normalized size = 13.15

method	result	size
risch	Expression too large to display	2051

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(f*x^m)*(a+b*ln(c*(e*x+d)^n))/x^3,x,method=_RETURNVERBOSE)
```

```
[Out] -1/8*b*Pi^2*csgn(I*c*(e*x+d)^n)^3/x^2*csgn(I*x^m)*csgn(I*f*x^m)^2-1/4*I/x^2
*ln(f)*Pi*b*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+1/4*I/d^2*e^2*b*n*ln(x)*Pi*csgn
(I*f*x^m)^3-1/4*I/d^2*e^2*b*n*ln(e*x+d)*Pi*csgn(I*f*x^m)^3-1/4*I/x^2*Pi*a*c
sgn(I*f)*csgn(I*f*x^m)^2-1/4*I/x^2*Pi*a*csgn(I*x^m)*csgn(I*f*x^m)^2+1/4*I/d
^2*e^2*b*n*ln(x)*Pi*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)-1/2*m*e^2*b*n/d^2*l
n(e*x+d)*ln(-e*x/d)-1/2/x^2*ln(f)*a-1/4/x^2*a*m-1/2/d^2*e^2*b*n*ln(x)*ln(f)
+1/8*b*Pi^2*csgn(I*c*(e*x+d)^n)^3/x^2*csgn(I*f*x^m)^3+1/4*I/x^2*Pi*a*csgn(I
*f)*csgn(I*x^m)*csgn(I*f*x^m)+1/8*b*Pi^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I
*c*(e*x+d)^n)/x^2*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)+1/4*I/d^2*e^2*b*n*ln(
e*x+d)*Pi*csgn(I*x^m)*csgn(I*f*x^m)^2-1/4*I/d^2*e^2*b*n*ln(x)*Pi*csgn(I*f)*
csgn(I*f*x^m)^2+1/8*b*Pi^2*csgn(I*c*(e*x+d)^n)^3/x^2*csgn(I*f)*csgn(I*x^m)*
csgn(I*f*x^m)+1/8*b*Pi^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/x^
2*csgn(I*f*x^m)^3-1/4*I/x^2*ln(f)*Pi*b*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n
)^2-1/8*I/x^2*Pi*b*m*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+1/4*I/x^2*ln(f)*Pi*b*c
sgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+1/8*I/x^2*Pi*b*m*csgn(I*c)*c
sgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-1/4*I/d*e*b*n/x*Pi*csgn(I*x^m)*csgn(I*
f*x^m)^2-1/8*I/x^2*Pi*b*m*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-1/2*m*e^2
*b*n/d^2*dilog(-e*x/d)-1/8*b*Pi^2*csgn(I*c*(e*x+d)^n)^3/x^2*csgn(I*f)*csgn(
I*f*x^m)^2-1/8*b*Pi^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/x^2*csgn(I*f*x^m)^3-1
/8*b*Pi^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/x^2*csgn(I*f*x^m)^3+1/4*I
/x^2*ln(c)*Pi*b*csgn(I*f*x^m)^3-1/8*b*Pi^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/
x^2*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)+1/4/d^2*b*e^2*m*n*ln(x)^2-1/2*b*ln(
c)/x^2*ln(x^m)-1/2*e*n*b*ln(x^m)/d/x+1/2*e^2*n*b*ln(x^m)/d^2*ln(e*x+d)-1/2*
e^2*n*b*ln(x^m)/d^2*ln(x)+1/4*I/d*e*b*n/x*Pi*csgn(I*f)*csgn(I*x^m)*csgn(I*f
*x^m)-1/4*I/d^2*e^2*b*n*ln(e*x+d)*Pi*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)+1/
2/d^2*e^2*b*n*ln(e*x+d)*ln(f)-1/2/d*e*b*n/x*ln(f)-1/8*b*Pi^2*csgn(I*c)*csgn
(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/x^2*csgn(I*x^m)*csgn(I*f*x^m)^2+1/4*I*b*P
i*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/x^2*ln(x^m)+1/4*I/d*e*b*n
/x*Pi*csgn(I*f*x^m)^3+1/4*I/x^2*ln(c)*Pi*b*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x
^m)+1/4*I/d^2*e^2*b*n*ln(e*x+d)*Pi*csgn(I*f)*csgn(I*f*x^m)^2+1/4*I*b*Pi*csg
```

```
n(I*c*(e*x+d)^n)^3/x^2*ln(x^m)+1/4*I/x^2*ln(f)*Pi*b*csgn(I*c*(e*x+d)^n)^3+1
/8*I/x^2*Pi*b*m*csgn(I*c*(e*x+d)^n)^3-1/2*a/x^2*ln(x^m)-1/2/x^2*ln(c)*ln(f)
*b-1/4/x^2*ln(c)*b*m-1/4*I/x^2*ln(c)*Pi*b*csgn(I*f)*csgn(I*f*x^m)^2-1/4*I/x
^2*ln(c)*Pi*b*csgn(I*x^m)*csgn(I*f*x^m)^2+1/4*I/x^2*Pi*a*csgn(I*f*x^m)^3-1/
8*b*Pi^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/x^2*csgn(I*f)*csgn(I*x^m)*
csgn(I*f*x^m)-1/8*b*Pi^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/x^
2*csgn(I*f)*csgn(I*f*x^m)^2-1/4*I/d^2*e^2*b*n*ln(x)*Pi*csgn(I*x^m)*csgn(I*f
*x^m)^2-1/4*I/d*e*b*n/x*Pi*csgn(I*f)*csgn(I*f*x^m)^2+(-1/2*b/x^2*ln(x^m)-1/
4*(-I*Pi*b*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)+I*Pi*b*csgn(I*f)*csgn(I*f*x^
m)^2+I*Pi*b*csgn(I*x^m)*csgn(I*f*x^m)^2-I*Pi*b*csgn(I*f*x^m)^3+2*b*ln(f)+b*
m)/x^2)*ln((e*x+d)^n)-1/4*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/x^2*ln(x^m
)-1/4*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/x^2*ln(x^m)+1/8*b*Pi^2
*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/x^2*csgn(I*f)*csgn(I*f*x^m)^2+1/8*b*Pi^2*c
sgn(I*c)*csgn(I*c*(e*x+d)^n)^2/x^2*csgn(I*x^m)*csgn(I*f*x^m)^2+1/8*b*Pi^2*c
sgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/x^2*csgn(I*f)*csgn(I*f*x^m)^2+1/8*b*
Pi^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/x^2*csgn(I*x^m)*csgn(I*f*x^m)^
2-1/4*b*e^2*m*n*ln(x)/d^2+1/4*b*e^2*m*n*ln(e*x+d)/d^2-3/4*b*e*m*n/d/x
```

Maxima [A]
time = 0.33, size = 204, normalized size = 1.31

$$\frac{1}{4}\left(\frac{2\left(\log\left(x\right)\log\left(\frac{xe}{d}+1\right)+\mathrm{Li}_2\left(-\frac{xe}{d}\right)\right)bne^2}{d^2}+\frac{bne^2\log\left(xe+d\right)}{d^2}-\frac{2\,bnx^2e^2\log\left(xe+d\right)\log\left(x\right)-bnx^2e^2\log\left(x\right)^2+bnx^2e^2\log\left(x\right)+3\,bdnxe+bd^2\log\left(\left(xe+d\right)^n\right)+bd^2\log\left(c\right)+ad^2}{d^2x^2}\right)m+\frac{1}{2}\left(bn\left(\frac{e\log\left(xe+d\right)}{d^2}-\frac{e\log\left(x\right)}{d^2}-\frac{1}{dx}\right)e-\frac{b\log\left(\left(xe+d\right)^nc\right)}{x^2}-\frac{a}{x^2}\right)\log\left(fx^m\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(f*x^m)*(a+b*log(c*(e*x+d)^n))/x^3,x, algorithm="maxima")
```

```
[Out] 1/4*(2*(log(x)*log(x*e/d + 1) + dilog(-x*e/d))*b*n*e^2/d^2 + b*n*e^2*log(x*
e + d)/d^2 - (2*b*n*x^2*e^2*log(x*e + d)*log(x) - b*n*x^2*e^2*log(x)^2 + b*
n*x^2*e^2*log(x) + 3*b*d*n*x*e + b*d^2*log((x*e + d)^n) + b*d^2*log(c) + a*
d^2)/(d^2*x^2))*m + 1/2*(b*n*(e*log(x*e + d)/d^2 - e*log(x)/d^2 - 1/(d*x))*
e - b*log((x*e + d)^n*c)/x^2 - a/x^2)*log(f*x^m)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(f*x^m)*(a+b*log(c*(e*x+d)^n))/x^3,x, algorithm="fricas")
```

```
[Out] integral((b*log((x*e + d)^n*c)*log(f*x^m) + a*log(f*x^m))/x^3, x)
```

Sympy [F(-1)] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(f*x**m)*(a+b*ln(c*(e*x+d)**n))/x**3,x)
```

```
[Out] Timed out
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(f*x^m)*(a+b*log(c*(e*x+d)^n))/x^3,x, algorithm="giac")
```

```
[Out] integrate((b*log((x*e + d)^n*c) + a)*log(f*x^m)/x^3, x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\ln\left(f\,x^m\right)\,\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)}{x^3} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((log(f*x^m)*(a + b*log(c*(d + e*x)^n)))/x^3,x)
```

```
[Out] int((log(f*x^m)*(a + b*log(c*(d + e*x)^n)))/x^3, x)
```

3.365 $\int \frac{\log(fx^m)(a+b\log(c(d+ex)^n))}{x^4}\,dx$

Optimal. Leaf size=193

$$-\frac{5bemn}{36dx^2}+\frac{4be^2mn}{9d^2x}+\frac{be^3mn\log(x)}{9d^3}-\frac{ben\log\left(fx^m\right)}{6dx^2}+\frac{be^2n\log\left(fx^m\right)}{3d^2x}-\frac{be^3n\log\left(1+\frac{d}{ex}\right)\log\left(fx^m\right)}{3d^3}-\frac{be^3mn\log}{9d}$$

```
[Out] -5/36*b*e*m*n/d/x^2+4/9*b*e^2*m*n/d^2/x+1/9*b*e^3*m*n*ln(x)/d^3-1/6*b*e*n*l
n(f*x^m)/d/x^2+1/3*b*e^2*n*ln(f*x^m)/d^2/x-1/3*b*e^3*n*ln(1+d/e/x)*ln(f*x^m
)/d^3-1/9*b*e^3*m*n*ln(e*x+d)/d^3-1/9*(m/x^3+3*ln(f*x^m)/x^3)*(a+b*ln(c*(e*
x+d)^n))+1/3*b*e^3*m*n*polylog(2,-d/e/x)/d^3
```

Rubi [A]
time = 0.14, antiderivative size = 193, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 6, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.250$, Rules used = {2473, 2380, 2341, 2379, 2438, 46}

$$\frac{be^3mn\text{PolyLog}\left(2,-\frac{d}{ex}\right)}{3d^3}-\frac{1}{9}\left(\frac{3\log\left(fx^m\right)}{x^3}+\frac{m}{x^3}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)-\frac{be^3n\log\left(\frac{d}{ex}+1\right)\log\left(fx^m\right)}{3d^3}+\frac{be^3mn\log(x)}{9d^3}-\frac{be^3mn\log(d+ex)}{9d^3}+\frac{be^2n\log\left(fx^m\right)}{3d^2x}+\frac{4be^2mn}{9d^2x}-\frac{ben\log\left(fx^m\right)}{6dx^2}-\frac{5bemn}{36dx^2}$$

Antiderivative was successfully verified.

```
[In] Int[(Log[f*x^m]*(a + b*Log[c*(d + e*x)^n]))/x^4,x]
```

```
[Out] (-5*b*e*m*n)/(36*d*x^2) + (4*b*e^2*m*n)/(9*d^2*x) + (b*e^3*m*n*Log[x])/(9*d
^3) - (b*e*n*Log[f*x^m])/(6*d*x^2) + (b*e^2*n*Log[f*x^m])/(3*d^2*x) - (b*e^
3*n*Log[1 + d/(e*x)]*Log[f*x^m])/(3*d^3) - (b*e^3*m*n*Log[d + e*x])/(9*d^3)
 - ((m/x^3 + (3*Log[f*x^m])/x^3)*(a + b*Log[c*(d + e*x)^n]))/9 + (b*e^3*m*n
*PolyLog[2, -(d/(e*x))])/(3*d^3)
```

Rule 46

```
Int[((a_) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[E
xpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m +
 n + 2, 0])
```

Rule 2341

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_.)*(x_))^(m_.), x_Symbol] :>
Simp[(d*x)^(m + 1)*((a + b*Log[c*x^n])/(d*(m + 1))), x] - Simp[b*n*((d*x)^(
m + 1)/(d*(m + 1)^2)), x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[m, -1]
```

Rule 2379

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((x_)*((d_) + (e_.)*(x_)^(r
_.))), x_Symbol] :> Simp[(-Log[1 + d/(e*x^r)])*((a + b*Log[c*x^n])^p/(d*r))
, x] + Dist[b*n*(p/(d*r)), Int[Log[1 + d/(e*x^r)]*((a + b*Log[c*x^n])^(p -
```

```
1)/x), x], x] /; FreeQ[{a, b, c, d, e, n, r}, x] && IGtQ[p, 0]
```

Rule 2380

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*(x_)^(m_.))/((d_) + (e_.)*
(x_)^(r_.)), x_Symbol] :> Dist[1/d, Int[x^m*(a + b*Log[c*x^n])^p, x], x] -
Dist[e/d, Int[(x^(m + r)*(a + b*Log[c*x^n])^p)/(d + e*x^r), x], x] /; FreeQ
[{a, b, c, d, e, m, n, r}, x] && IGtQ[p, 0] && IGtQ[r, 0] && ILtQ[m, -1]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2473

```
Int[Log[(f_.)*(x_)^(m_.)]*((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_
.))*((g_.)*(x_))^(q_.), x_Symbol] :> Simp[(-(g*(q + 1))^(-1))*(m*((g*x)^(q
+ 1)/(q + 1)) - (g*x)^(q + 1)*Log[f*x^m])*(a + b*Log[c*(d + e*x)^n]), x] +
(-Dist[b*e*(n/(g*(q + 1))), Int[(g*x)^(q + 1)*(Log[f*x^m]/(d + e*x)), x], x
] + Dist[b*e*m*(n/(g*(q + 1)^2)), Int[(g*x)^(q + 1)/(d + e*x), x], x]) /; F
reeQ[{a, b, c, d, e, f, g, m, n, q}, x] && NeQ[q, -1]
```

Rubi steps

$$\int \frac{\log(fx^m)(a+b\log(c(d+ex)^n))}{x^4}\,dx = -\frac{1}{9}\left(\frac{m}{x^3}+\frac{3\log(fx^m)}{x^3}\right)(a+b\log(c(d+ex)^n))+\frac{1}{3}(ben)\int \frac{\log}{x^3(}$$

$$= -\frac{1}{9}\left(\frac{m}{x^3}+\frac{3\log(fx^m)}{x^3}\right)(a+b\log(c(d+ex)^n))+\frac{1}{3}(ben)\int \left(\frac{\mathrm{lc}}{}\right.$$

$$= -\frac{bemn}{18dx^2}+\frac{be^2mn}{9d^2x}+\frac{be^3mn\log(x)}{9d^3}-\frac{be^3mn\log(d+ex)}{9d^3}-\frac{1}{9}\left(\frac{m}{x^3}\right.$$

$$= -\frac{5bemn}{36dx^2}+\frac{4be^2mn}{9d^2x}+\frac{be^3mn\log(x)}{9d^3}-\frac{ben\log(fx^m)}{6dx^2}+\frac{be^2n\log}{3d^2}$$

$$= -\frac{5bemn}{36dx^2}+\frac{4be^2mn}{9d^2x}+\frac{be^3mn\log(x)}{9d^3}-\frac{ben\log(fx^m)}{6dx^2}+\frac{be^2n\log}{3d^2}$$

Mathematica [A]
time = 0.10, size = 240, normalized size = 1.24

$$-\frac{4ad^3m+5bd^2emnx-16bde^2mnx^2+6be^3mnx^3\log^2(x)+12ad^3\log(fx^m)+6bd^2enx\log(fx^m)-12bde^2nx^2\log(fx^m)+4be^3mnx^3\log(d+ex)+12be^3nx^3\log(fx^m)\log(d+ex)+4bd^3m\log(c(d+ex)^n)+12bd^3\log(fx^m)\log(c(d+ex)^n)-4be^3nx^3\log(x)\left(m+3\log(fx^m)+3m\log(d+ex)-3m\log\left(1+\frac{ex}{d}\right)\right)+12be^3mnx^3\mathrm{Li}_2\left(-\frac{ex}{d}\right)}{36d^3x^3}$$

Antiderivative was successfully verified.

[In] Integrate[(Log[f*x^m]*(a + b*Log[c*(d + e*x)^n]))/x^4,x]

[Out] -1/36*(4*a*d^3*m + 5*b*d^2*e*m*n*x - 16*b*d*e^2*m*n*x^2 + 6*b*e^3*m*n*x^3*Log[x]^2 + 12*a*d^3*Log[f*x^m] + 6*b*d^2*e*n*x*Log[f*x^m] - 12*b*d*e^2*n*x^2*Log[f*x^m] + 4*b*e^3*m*n*x^3*Log[d + e*x] + 12*b*e^3*n*x^3*Log[f*x^m]*Log[d + e*x] + 4*b*d^3*m*Log[c*(d + e*x)^n] + 12*b*d^3*Log[f*x^m]*Log[c*(d + e*x)^n] - 4*b*e^3*n*x^3*Log[x]*(m + 3*Log[f*x^m] + 3*m*Log[d + e*x] - 3*m*Log[1 + (e*x)/d]) + 12*b*e^3*m*n*x^3*PolyLog[2, -((e*x)/d)])/(d^3*x^3)

Maple [C] Result contains higher order function than in optimal. Order 9 vs. order 4.
time = 0.77, size = 2220, normalized size = 11.50

method	result	size
risch	Expression too large to display	2220

Verification of antiderivative is not currently implemented for this CAS.

[In] int(ln(f*x^m)*(a+b*ln(c*(e*x+d)^n))/x^4,x,method=_RETURNVERBOSE)

[Out] -1/9/x^3*a*m-1/6*I/x^3*ln(f)*Pi*b*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-1/6*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/x^3*ln(x^m)+(-1/3*b/x^3*ln(x^m)-1/18*(-3*I*Pi*b*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)+3*I*Pi*b*csgn(I*f)*csgn(I*f*x^m)^2+3*I*Pi*b*csgn(I*x^m)*csgn(I*f*x^m)^2-3*I*Pi*b*csgn(I*f*x^m)^3+6*b*ln(f)+2*b*m)/x^3)*ln((e*x+d)^n)-1/3/x^3*ln(c)*ln(f)*b+1/6*I/d^2*e^2*b*n/x*Pi*csgn(I*f)*csgn(I*f*x^m)^2-1/6*I/d^3*e^3*b*n*ln(e*x+d)*Pi*csgn(I*f)*csgn(I*f*x^m)^2+1/6*I/x^3*ln(c)*Pi*b*csgn(I*f*x^m)^3+1/6*I/x^3*ln(f)*Pi*b*csgn(I*c*(e*x+d)^n)^3+1/18*I/x^3*Pi*b*m*csgn(I*c*(e*x+d)^n)^3-1/6*I/x^3*Pi*a*csgn(I*f)*csgn(I*f*x^m)^2+1/6*I/x^3*ln(c)*Pi*b*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)+1/18*I/x^3*Pi*b*m*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+1/12*I/d*e*b*n/x^2*Pi*csgn(I*f*x^m)^3+1/6*I/x^3*ln(f)*Pi*b*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-1/3/d^3*e^3*b*n*ln(e*x+d)*ln(f)-1/6*I/d^3*e^3*b*n*ln(x)*Pi*csgn(I*f*x^m)^3-1/12*b*Pi^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/x^3*csgn(I*f*x^m)^3-1/12*b*Pi^2*csgn(I*c*(e*x+d)^n)^3/x^3*csgn(I*f)*csgn(I*f*x^m)^2-1/12*b*Pi^2*csgn(I*c*(e*x+d)^n)^3/x^3*csgn(I*x^m)*csgn(I*f*x^m)^2-1/6*I/d^2*e^2*b*n/x*Pi*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)-1/3/x^3*ln(f)*a-1/12*I/d*e*b*n/x^2*Pi*csgn(I*x^m)*csgn(I*f*x^m)^2+1/6*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/x^3*ln(x^m)+1/6*I/d^3*e^3*b*n*ln(e*x+d)*Pi*csgn(I*f*x^m)^3-1/12*b*Pi^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/x^3*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)+1/6*I/d^3*e^3*b*n*ln(x)*Pi*csgn(I*x^m)*csgn(I*f*x^m)^2+4/9*b*e^2*m*n/d^2/x-1/3*a/x^3*ln(x^m)+1/3*m*e^3*b*n/d^3*ln(e*x+d)*ln(-e*x/d)-1/6/d^3*b*e^3*m*n*ln(x)^2+1/12*b*Pi^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/x^3*csgn(I*f)*csgn(I*f*x^m)^2+1/12*b*Pi^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/x^3*csgn(I*x^m)*csgn(I*f*x^m)^2-1/18*I/x^3*Pi*b*m*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-1/6*I/d^2*e^2*b*n/x*Pi*csgn(I*f*x^m)^3-1/12*I/d*e*b*n/x^2*Pi*csgn(I*f)*csgn(I*f*x^m)^2+1/6*I/d^3*e^3*b*n*ln(x)*Pi*csgn(I*f)*csgn(I*f*x^m)^2+1/6*I/d^2*e^2*b*n/x*Pi*csgn(I*x^m)*csgn(I*f*x^m)^2-1/9/x^3*ln(c)*b*m-1/18*I/x^3*Pi*b*m*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)

```
^n)^2+1/6*I/x^3*Pi*a*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)+1/6*I/x^3*Pi*a*csg
n(I*f*x^m)^3+1/12*b*Pi^2*csgn(I*c*(e*x+d)^n)^3/x^3*csgn(I*f*x^m)^3+1/12*b*P
i^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/x^3*csgn(I*f)*csgn(I*f*x^m)^2+1/12*b*Pi
^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/x^3*csgn(I*x^m)*csgn(I*f*x^m)^2-1/6*I/x^
3*ln(f)*Pi*b*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+1/12*b*Pi^2*csgn(I*c*(e*x+d)^n
)^3/x^3*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)+1/12*b*Pi^2*csgn(I*c)*csgn(I*(e
*x+d)^n)*csgn(I*c*(e*x+d)^n)/x^3*csgn(I*f*x^m)^3-1/6*I/d^3*e^3*b*n*ln(e*x+d
)*Pi*csgn(I*x^m)*csgn(I*f*x^m)^2-1/3*b*ln(c)/x^3*ln(x^m)-1/12*b*Pi^2*csgn(I
*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/x^3*csgn(I*f)*csgn(I*f*x^m)^2-1/1
2*b*Pi^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/x^3*csgn(I*x^m)*cs
gn(I*f*x^m)^2-1/12*b*Pi^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/x^3*csgn(I*f)*csg
n(I*x^m)*csgn(I*f*x^m)+1/6*I/d^3*e^3*b*n*ln(e*x+d)*Pi*csgn(I*f)*csgn(I*x^m)
*csgn(I*f*x^m)-1/6*I/d^3*e^3*b*n*ln(x)*Pi*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^
m)-1/6*I/x^3*ln(c)*Pi*b*csgn(I*f)*csgn(I*f*x^m)^2-1/6*I/x^3*ln(c)*Pi*b*csgn
(I*x^m)*csgn(I*f*x^m)^2-1/6*e*n*b*ln(x^m)/d/x^2+1/3*m*e^3*b*n/d^3*dilog(-e*
x/d)+1/12*I/d*e*b*n/x^2*Pi*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)-1/12*b*Pi^2*
csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/x^3*csgn(I*f*x^m)^3+1/3*e^3*n*b*ln(x^m)/d^3
*ln(x)+1/3*e^2*n*b*ln(x^m)/d^2/x-1/3*e^3*n*b*ln(x^m)/d^3*ln(e*x+d)+1/12*b*P
i^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/x^3*csgn(I*f)*csgn(I*x^
m)*csgn(I*f*x^m)-1/6*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/x^3*ln(
x^m)+1/3/d^3*e^3*b*n*ln(x)*ln(f)+1/3/d^2*e^2*b*n/x*ln(f)-1/6/d*e*b*n/x^2*ln
(f)-1/6*I/x^3*Pi*a*csgn(I*x^m)*csgn(I*f*x^m)^2+1/6*I*b*Pi*csgn(I*c*(e*x+d)^
n)^3/x^3*ln(x^m)+1/9*b*e^3*m*n*ln(x)/d^3-1/9*b*e^3*m*n*ln(e*x+d)/d^3-5/36*b
*e*m*n/d/x^2
```

Maxima [A]
time = 0.33, size = 231, normalized size = 1.20

$$-\frac{1}{36}m\left(\frac{12\left(\log\left(x\right)\log\left(\frac{xe}{d}+1\right)+\mathrm{Li}_2\left(-\frac{xe}{d}\right)\right)bne^3}{d^3}+\frac{4\,bne^3\log\left(xe+d\right)}{d^3}-\frac{12\,bnx^3e^3\log\left(xe+d\right)\log\left(x\right)-6\,bnx^3e^3\log\left(x\right)^2+4\,bnx^3e^3\log\left(x\right)+16\,bdnx^2e^2-5\,bd^2nxe-4\,bd^3\log\left(\left(xe+d\right)^n\right)-4\,bd^3\log\left(c\right)-4\,ad^3}{d^3x^3}\right)-\frac{1}{6}\left(bn\left(\frac{2\,e^2\log\left(xe+d\right)}{d^3}-\frac{2\,e^2\log\left(x\right)}{d^3}-\frac{2\,xe-d}{d^2x^2}\right)e+\frac{2\,b\log\left(\left(xe+d\right)^nc\right)}{x^3}+\frac{2\,a}{x^3}\right)\log\left(fx^m\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(f*x^m)*(a+b*log(c*(e*x+d)^n))/x^4,x, algorithm="maxima")
```

```
[Out] -1/36*m*(12*(log(x)*log(x*e/d + 1) + dilog(-x*e/d))*b*n*e^3/d^3 + 4*b*n*e^3
*log(x*e + d)/d^3 - (12*b*n*x^3*e^3*log(x*e + d)*log(x) - 6*b*n*x^3*e^3*log
(x)^2 + 4*b*n*x^3*e^3*log(x) + 16*b*d*n*x^2*e^2 - 5*b*d^2*n*x*e - 4*b*d^3*l
og((x*e + d)^n) - 4*b*d^3*log(c) - 4*a*d^3)/(d^3*x^3)) - 1/6*(b*n*(2*e^2*lo
g(x*e + d)/d^3 - 2*e^2*log(x)/d^3 - (2*x*e - d)/(d^2*x^2))*e + 2*b*log((x*e
 + d)^n*c)/x^3 + 2*a/x^3)*log(f*x^m)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(f*x^m)*(a+b*log(c*(e*x+d)^n))/x^4,x, algorithm="fricas")
```

```
[Out] integral((b*log((x*e + d)^n*c)*log(f*x^m) + a*log(f*x^m))/x^4, x)
```

Sympy [**F(-1)**] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(f*x**m)*(a+b*ln(c*(e*x+d)**n))/x**4,x)
```

```
[Out] Timed out
```

Giac [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(f*x^m)*(a+b*log(c*(e*x+d)^n))/x^4,x, algorithm="giac")
```

```
[Out] integrate((b*log((x*e + d)^n*c) + a)*log(f*x^m)/x^4, x)
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\ln\left(f\,x^m\right)\,\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)}{x^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((log(f*x^m)*(a + b*log(c*(d + e*x)^n)))/x^4,x)
```

```
[Out] int((log(f*x^m)*(a + b*log(c*(d + e*x)^n)))/x^4, x)
```

3.366 $\int \frac{\log(fx^m)(a+b\log(c(d+ex)^n))}{x^5} dx$

Optimal. Leaf size=230

$$-\frac{7bemn}{144dx^3}+\frac{3be^2mn}{32d^2x^2}-\frac{5be^3mn}{16d^3x}-\frac{be^4mn\log(x)}{16d^4}-\frac{ben\log\left(fx^m\right)}{12dx^3}+\frac{be^2n\log\left(fx^m\right)}{8d^2x^2}-\frac{be^3n\log\left(fx^m\right)}{4d^3x}+\frac{be^4n\log\left(1\right.}{}$$

```
[Out] -7/144*b*e*m*n/d/x^3+3/32*b*e^2*m*n/d^2/x^2-5/16*b*e^3*m*n/d^3/x-1/16*b*e^4
*m*n*ln(x)/d^4-1/12*b*e*n*ln(f*x^m)/d/x^3+1/8*b*e^2*n*ln(f*x^m)/d^2/x^2-1/4
*b*e^3*n*ln(f*x^m)/d^3/x+1/4*b*e^4*n*ln(1+d/e/x)*ln(f*x^m)/d^4+1/16*b*e^4*m
*n*ln(e*x+d)/d^4-1/16*(m/x^4+4*ln(f*x^m)/x^4)*(a+b*ln(c*(e*x+d)^n))-1/4*b*e
^4*m*n*polylog(2,-d/e/x)/d^4
```

Rubi [A]
time = 0.18, antiderivative size = 230, normalized size of antiderivative = 1.00, number of steps used = 11, number of rules used = 6, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.250$, Rules used = {2473, 2380, 2341, 2379, 2438, 46}

$$-\frac{be^4mn\text{PolyLog}\left(2,-\frac{d}{ex}\right)}{4d^4}-\frac{1}{16}\left(\frac{4\log\left(fx^m\right)}{x^4}+\frac{m}{x^4}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)+\frac{be^4n\log\left(\frac{d}{ex}+1\right)\log\left(fx^m\right)}{4d^4}-\frac{be^4mn\log(x)}{16d^4}+\frac{be^4mn\log(d+ex)}{16d^4}-\frac{be^3n\log\left(fx^m\right)}{4d^3x}-\frac{5be^3mn}{16d^3x}+\frac{be^2n\log\left(fx^m\right)}{8d^2x^2}+\frac{3be^2mn}{32d^2x^2}-\frac{ben\log\left(fx^m\right)}{12dx^3}-\frac{7bemn}{144dx^3}$$

Antiderivative was successfully verified.

```
[In] Int[(Log[f*x^m]*(a + b*Log[c*(d + e*x)^n]))/x^5,x]
```

```
[Out] (-7*b*e*m*n)/(144*d*x^3) + (3*b*e^2*m*n)/(32*d^2*x^2) - (5*b*e^3*m*n)/(16*d
^3*x) - (b*e^4*m*n*Log[x])/(16*d^4) - (b*e*n*Log[f*x^m])/(12*d*x^3) + (b*e^
2*n*Log[f*x^m])/(8*d^2*x^2) - (b*e^3*n*Log[f*x^m])/(4*d^3*x) + (b*e^4*n*Log
[1 + d/(e*x)]*Log[f*x^m])/(4*d^4) + (b*e^4*m*n*Log[d + e*x])/(16*d^4) - ((m
/x^4 + (4*Log[f*x^m])/x^4)*(a + b*Log[c*(d + e*x)^n]))/16 - (b*e^4*m*n*Poly
Log[2, -(d/(e*x))])/(4*d^4)
```

Rule 46

```
Int[((a_) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[E
xpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m +
 n + 2, 0])
```

Rule 2341

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_.)*(x_))^(m_.), x_Symbol] :>
Simp[(d*x)^(m + 1)*((a + b*Log[c*x^n])/(d*(m + 1))), x] - Simp[b*n*((d*x)^(
m + 1)/(d*(m + 1)^2)), x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[m, -1]
```

Rule 2379

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((x_)*((d_) + (e_.)*(x_)^(r
_.))), x_Symbol] :> Simp[(-Log[1 + d/(e*x^r)])*((a + b*Log[c*x^n])^p/(d*r))
```

```
, x] + Dist[b*n*(p/(d*r)), Int[Log[1 + d/(e*x^r)]*((a + b*Log[c*x^n])^(p -
1)/x), x], x] /; FreeQ[{a, b, c, d, e, n, r}, x] && IGtQ[p, 0]
```

Rule 2380

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*(x_)^(m_.))/((d_) + (e_.)*
(x_)^(r_.)), x_Symbol] :> Dist[1/d, Int[x^m*(a + b*Log[c*x^n])^p, x], x] -
Dist[e/d, Int[(x^(m + r)*(a + b*Log[c*x^n])^p)/(d + e*x^r), x], x] /; FreeQ
[{a, b, c, d, e, m, n, r}, x] && IGtQ[p, 0] && IGtQ[r, 0] && ILtQ[m, -1]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2473

```
Int[Log[(f_.)*(x_)^(m_.)]*((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_
.))*((g_.)*(x_))^(q_.), x_Symbol] :> Simp[(-(g*(q + 1))^(-1))*(m*((g*x)^(q
+ 1)/(q + 1)) - (g*x)^(q + 1)*Log[f*x^m])*(a + b*Log[c*(d + e*x)^n]), x] +
(-Dist[b*e*(n/(g*(q + 1))), Int[(g*x)^(q + 1)*(Log[f*x^m]/(d + e*x)), x], x
] + Dist[b*e*m*(n/(g*(q + 1)^2)), Int[(g*x)^(q + 1)/(d + e*x), x], x]) /; F
reeQ[{a, b, c, d, e, f, g, m, n, q}, x] && NeQ[q, -1]
```

Rubi steps

$$\int \frac{\log(fx^m)(a+b\log(c(d+ex)^n))}{x^5}\,dx = -\frac{1}{16}\left(\frac{m}{x^4}+\frac{4\log(fx^m)}{x^4}\right)(a+b\log(c(d+ex)^n))+\frac{1}{4}(ben)\int \frac{\log}{x^4(}$$

$$= -\frac{1}{16}\left(\frac{m}{x^4}+\frac{4\log(fx^m)}{x^4}\right)(a+b\log(c(d+ex)^n))+\frac{1}{4}(ben)\int \Bigg(\frac{\mathrm{lo}}{}$$

$$= -\frac{bemn}{48dx^3}+\frac{be^2mn}{32d^2x^2}-\frac{be^3mn}{16d^3x}-\frac{be^4mn\log(x)}{16d^4}+\frac{be^4mn\log(d+ex)}{16d^4}$$

$$= -\frac{7bemn}{144dx^3}+\frac{3be^2mn}{32d^2x^2}-\frac{5be^3mn}{16d^3x}-\frac{be^4mn\log(x)}{16d^4}-\frac{ben\log(fx^m)}{12dx^3}$$

$$= -\frac{7bemn}{144dx^3}+\frac{3be^2mn}{32d^2x^2}-\frac{5be^3mn}{16d^3x}-\frac{be^4mn\log(x)}{16d^4}-\frac{ben\log(fx^m)}{12dx^3}$$

Mathematica [A]
time = 0.10, size = 273, normalized size = 1.19

$$-\frac{18ad^4m+14bd^3emnx-27bd^2e^2mnx^2+90bde^3mnx^3-36be^4mnx^4\log^2(x)+72ad^4\log(fx^m)+24bd^3enx\log(fx^m)-36bd^2e^2nx^2\log(fx^m)+72bde^3nx^3\log(fx^m)-18be^4mnx^4\log(d+ex)-72be^4nx^4\log(fx^m)\log(d+ex)+18bd^4m\log(c(d+ex)^n)+72bd^4\log(fx^m)\log(c(d+ex)^n)+18be^4nx^4\log(x)\left(m+4\log(fx^m)+4m\log(d+ex)-4m\log\left(1+\frac{ex}{d}\right)\right)-72be^4mnx^4\mathrm{Li}_2\left(-\frac{ex}{d}\right)}{288d^4x^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Log[f*x^m]*(a + b*Log[c*(d + e*x)^n]))/x^5,x]
```

```
[Out] -1/288*(18*a*d^4*m + 14*b*d^3*e*m*n*x - 27*b*d^2*e^2*m*n*x^2 + 90*b*d*e^3*m
*n*x^3 - 36*b*e^4*m*n*x^4*Log[x]^2 + 72*a*d^4*Log[f*x^m] + 24*b*d^3*e*n*x*L
og[f*x^m] - 36*b*d^2*e^2*n*x^2*Log[f*x^m] + 72*b*d*e^3*n*x^3*Log[f*x^m] - 1
8*b*e^4*m*n*x^4*Log[d + e*x] - 72*b*e^4*n*x^4*Log[f*x^m]*Log[d + e*x] + 18*
b*d^4*m*Log[c*(d + e*x)^n] + 72*b*d^4*Log[f*x^m]*Log[c*(d + e*x)^n] + 18*b*
e^4*n*x^4*Log[x]*(m + 4*Log[f*x^m] + 4*m*Log[d + e*x] - 4*m*Log[1 + (e*x)/d
]) - 72*b*e^4*m*n*x^4*PolyLog[2, -((e*x)/d)])/(d^4*x^4)
```

Maple [C] Result contains higher order function than in optimal. Order 9 vs. order 4.
time = 0.81, size = 2387, normalized size = 10.38

method	result	size
risch	Expression too large to display	2387

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(f*x^m)*(a+b*ln(c*(e*x+d)^n))/x^5,x,method=_RETURNVERBOSE)
```

```
[Out] 1/8/d^2*e^2*b*n/x^2*ln(f)-1/4/d^3*e^3*b*n/x*ln(f)-1/12/d*e*b*n/x^3*ln(f)-1/
4/d^4*e^4*b*n*ln(x)*ln(f)+1/4/d^4*e^4*b*n*ln(e*x+d)*ln(f)-1/16*b*Pi^2*csgn(
I*c*(e*x+d)^n)^3/x^4*csgn(I*x^m)*csgn(I*f*x^m)^2-1/4*m*e^4*b*n/d^4*dilog(-e
*x/d)-1/4/x^4*ln(f)*a-1/16*b*Pi^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x
+d)^n)/x^4*csgn(I*f)*csgn(I*f*x^m)^2-1/16*b*Pi^2*csgn(I*c)*csgn(I*(e*x+d)^n
)*csgn(I*c*(e*x+d)^n)/x^4*csgn(I*x^m)*csgn(I*f*x^m)^2-1/16*b*Pi^2*csgn(I*c)
*csgn(I*c*(e*x+d)^n)^2/x^4*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)+1/16*b*Pi^2*
csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/x^4*csgn(I*f)*csgn(I*f*x^m)^2+1/16*
b*Pi^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/x^4*csgn(I*x^m)*csgn(I*f*x^m
)^2+1/16*b*Pi^2*csgn(I*c*(e*x+d)^n)^3/x^4*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^
m)+1/16*b*Pi^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/x^4*csgn(I*f
*x^m)^3-1/16*b*Pi^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/x^4*csgn(I*f*x^
m)^3-1/16*b*Pi^2*csgn(I*c*(e*x+d)^n)^3/x^4*csgn(I*f)*csgn(I*f*x^m)^2+1/16*I
/d^2*e^2*b*n/x^2*Pi*csgn(I*x^m)*csgn(I*f*x^m)^2+1/8*I/d^4*e^4*b*n*ln(x)*Pi*
csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)+1/8*I/d^3*e^3*b*n/x*Pi*csgn(I*f)*csgn(I
*x^m)*csgn(I*f*x^m)-1/4/x^4*ln(c)*ln(f)*b-1/16/x^4*ln(c)*b*m-1/8*I/x^4*ln(f
)*Pi*b*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-1/8*I/x^4*ln(c)*Pi*b*csgn(I*
f)*csgn(I*f*x^m)^2-7/144*b*e*m*n/d/x^3+3/32*b*e^2*m*n/d^2/x^2-5/16*b*e^3*m*
n/d^3/x+1/32*I/x^4*Pi*b*m*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+1
/8*I/x^4*ln(c)*Pi*b*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)-1/32*I/x^4*Pi*b*m*c
sgn(I*c)*csgn(I*c*(e*x+d)^n)^2-1/8*I/x^4*ln(f)*Pi*b*csgn(I*c)*csgn(I*c*(e*x
+d)^n)^2+1/8*I/x^4*ln(c)*Pi*b*csgn(I*f*x^m)^3+1/8*I/x^4*ln(f)*Pi*b*csgn(I*c
*(e*x+d)^n)^3-1/16*b*Pi^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/x^4*csgn(I*f*x^m)
^3+1/16*b*Pi^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/x^4*csgn(I*f)*csgn(I*f*x^m)^
2+1/16*b*Pi^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/x^4*csgn(I*x^m)*csgn(I*f*x^m)
```

```
^2+(-1/4*b/x^4*ln(x^m)-1/16*(-2*I*Pi*b*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)+
2*I*Pi*b*csgn(I*f)*csgn(I*f*x^m)^2+2*I*Pi*b*csgn(I*x^m)*csgn(I*f*x^m)^2-2*I
*Pi*b*csgn(I*f*x^m)^3+4*b*ln(f)+b*m)/x^4)*ln((e*x+d)^n)+1/8*I/d^4*e^4*b*n*l
n(e*x+d)*Pi*csgn(I*x^m)*csgn(I*f*x^m)^2+1/16*I/d^2*e^2*b*n/x^2*Pi*csgn(I*f)
*csgn(I*f*x^m)^2+1/8*I/d^3*e^3*b*n/x*Pi*csgn(I*f*x^m)^3+1/24*I/d*e*b*n/x^3*
Pi*csgn(I*f*x^m)^3+1/8*I/x^4*ln(f)*Pi*b*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*
c*(e*x+d)^n)-1/8*I/d^4*e^4*b*n*ln(x)*Pi*csgn(I*x^m)*csgn(I*f*x^m)^2+1/4*e^4
*n*b*ln(x^m)/d^4*ln(e*x+d)-1/4*e^3*n*b*ln(x^m)/d^3/x-1/4*e^4*n*b*ln(x^m)/d^
4*ln(x)+1/8*e^2*n*b*ln(x^m)/d^2/x^2+1/8/d^4*n*m*b*e^4*ln(x)^2+1/24*I/d*e*b*
n/x^3*Pi*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)-1/16*I/d^2*e^2*b*n/x^2*Pi*csgn
(I*f)*csgn(I*x^m)*csgn(I*f*x^m)-1/8*I/d^3*e^3*b*n/x*Pi*csgn(I*x^m)*csgn(I*f
*x^m)^2-1/24*I/d*e*b*n/x^3*Pi*csgn(I*x^m)*csgn(I*f*x^m)^2-1/24*I/d*e*b*n/x^
3*Pi*csgn(I*f)*csgn(I*f*x^m)^2-1/8*I/d^4*e^4*b*n*ln(e*x+d)*Pi*csgn(I*f)*csg
n(I*x^m)*csgn(I*f*x^m)-1/4*a/x^4*ln(x^m)+1/16*b*Pi^2*csgn(I*c)*csgn(I*(e*x+
d)^n)*csgn(I*c*(e*x+d)^n)/x^4*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)+1/8*I/d^4
*e^4*b*n*ln(e*x+d)*Pi*csgn(I*f)*csgn(I*f*x^m)^2-1/12*e*n*b*ln(x^m)/d/x^3-1/
4*m*e^4*b*n/d^4*ln(e*x+d)*ln(-e*x/d)-1/8*I/x^4*ln(c)*Pi*b*csgn(I*x^m)*csgn(
I*f*x^m)^2-1/8*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/x^4*ln(x^m)-1/8*I*b*P
i*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/x^4*ln(x^m)-1/32*I/x^4*Pi*b*m*csg
n(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+1/8*I/x^4*Pi*a*csgn(I*f)*csgn(I*x^m)*c
sgn(I*f*x^m)-1/16/x^4*a*m-1/4*b*ln(c)/x^4*ln(x^m)-1/16*b*Pi^2*csgn(I*(e*x+d
)^n)*csgn(I*c*(e*x+d)^n)^2/x^4*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)+1/8*I*b*
Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/x^4*ln(x^m)-1/8*I/d^4*e^
4*b*n*ln(e*x+d)*Pi*csgn(I*f*x^m)^3-1/8*I/d^4*e^4*b*n*ln(x)*Pi*csgn(I*f)*csg
n(I*f*x^m)^2-1/8*I/d^3*e^3*b*n/x*Pi*csgn(I*f)*csgn(I*f*x^m)^2-1/16*I/d^2*e^
2*b*n/x^2*Pi*csgn(I*f*x^m)^3+1/8*I/d^4*e^4*b*n*ln(x)*Pi*csgn(I*f*x^m)^3+1/1
6*b*Pi^2*csgn(I*c*(e*x+d)^n)^3/x^4*csgn(I*f*x^m)^3+1/8*I/x^4*Pi*a*csgn(I*f*
x^m)^3+1/32*I/x^4*Pi*b*m*csgn(I*c*(e*x+d)^n)^3-1/8*I/x^4*Pi*a*csgn(I*f)*csg
n(I*f*x^m)^2-1/8*I/x^4*Pi*a*csgn(I*x^m)*csgn(I*f*x^m)^2+1/8*I*b*Pi*csgn(I*c
*(e*x+d)^n)^3/x^4*ln(x^m)+1/16*b*e^4*m*n*ln(e*x+d)/d^4-1/16*b*e^4*m*n*ln(x)
/d^4
```

Maxima [A]
time = 0.33, size = 253, normalized size = 1.10

$$\frac{1}{288}\,m\left(\frac{72\,\left(\log\left(x\right)\log\left(\frac{xe}{d}+1\right)+\mathrm{Li}_2\left(-\frac{xe}{d}\right)\right)bne^4}{d^4}+\frac{18\,bne^4\log\left(xe+d\right)}{d^4}-\frac{72\,bnx^4e^4\log\left(xe+d\right)\log\left(x\right)-36\,bnx^4e^4\log\left(x\right)^2+18\,bnx^4e^4\log\left(x\right)+90\,bdnx^3e^3-27\,bd^2nx^2e^2+14\,bd^3nxe+18\,bd^4\log\left(\left(xe+d\right)^n\right)+18\,bd^4\log\left(c\right)+18\,ad^4}{d^4x^4}\right)+\frac{1}{24}\left(bn\left(\frac{6\,e^3\log\left(xe+d\right)}{d^4}-\frac{6\,e^3\log\left(x\right)}{d^4}-\frac{6\,x^2e^2-3\,dxe+2\,d^2}{d^3x^3}\right)e-\frac{6\,b\log\left(\left(xe+d\right)^nc\right)}{x^4}-\frac{6\,a}{x^4}\right)\log\left(fx^m\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(f*x^m)*(a+b*log(c*(e*x+d)^n))/x^5,x, algorithm="maxima")
```

```
[Out] 1/288*m*(72*(log(x)*log(x*e/d + 1) + dilog(-x*e/d))*b*n*e^4/d^4 + 18*b*n*e^
4*log(x*e + d)/d^4 - (72*b*n*x^4*e^4*log(x*e + d)*log(x) - 36*b*n*x^4*e^4*l
og(x)^2 + 18*b*n*x^4*e^4*log(x) + 90*b*d*n*x^3*e^3 - 27*b*d^2*n*x^2*e^2 + 1
4*b*d^3*n*x*e + 18*b*d^4*log((x*e + d)^n) + 18*b*d^4*log(c) + 18*a*d^4)/(d^
4*x^4)) + 1/24*(b*n*(6*e^3*log(x*e + d)/d^4 - 6*e^3*log(x)/d^4 - (6*x^2*e^2
```

```
 - 3*d*x*e + 2*d^2)/(d^3*x^3))*e - 6*b*log((x*e + d)^n*c)/x^4 - 6*a/x^4)*lo
g(f*x^m)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(f*x^m)*(a+b*log(c*(e*x+d)^n))/x^5,x, algorithm="fricas")
[Out] integral((b*log((x*e + d)^n*c)*log(f*x^m) + a*log(f*x^m))/x^5, x)
```

Sympy [F(-1)] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(f*x**m)*(a+b*ln(c*(e*x+d)**n))/x**5,x)
[Out] Timed out
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(f*x^m)*(a+b*log(c*(e*x+d)^n))/x^5,x, algorithm="giac")
[Out] integrate((b*log((x*e + d)^n*c) + a)*log(f*x^m)/x^5, x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\ln\left(f\,x^m\right)\,\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)}{x^5}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((log(f*x^m)*(a + b*log(c*(d + e*x)^n)))/x^5,x)
[Out] int((log(f*x^m)*(a + b*log(c*(d + e*x)^n)))/x^5, x)
```

3.367 $\int x^2 \log(fx^m)\left(a+b\log\left(c(d+ex)^n\right)\right)^2\,dx$

Optimal. Leaf size=705

$$\frac{2abd^2mnx}{9e^2}-\frac{71b^2d^2mn^2x}{54e^2}+\frac{bd^2mn(6a-11bn)x}{9e^2}+\frac{19b^2dmn^2x^2}{54e}-\frac{2}{27}b^2mn^2x^3-\frac{2abd^2nx\log(fx^m)}{3e^2}+\frac{11b^2d^2n^2x}{9e}$$

```
[Out] 11/9*b^2*d^2*n^2*x*ln(f*x^m)/e^2-5/18*b^2*d*n^2*x^2*ln(f*x^m)/e+23/54*b^2*d
^3*m*n^2*ln(e*x+d)/e^3-5/9*b^2*d^3*n^2*ln(f*x^m)*ln(e*x+d)/e^3+2/9*a*b*d^2*
m*n*x/e^2+1/9*b*d^2*m*n*(-11*b*n+6*a)*x/e^2-2/3*a*b*d^2*n*x*ln(f*x^m)/e^2+5
/9*b^2*d^3*m*n^2*ln(-e*x/d)*ln(e*x+d)/e^3+8/9*b^2*d^2*m*n*(e*x+d)*ln(c*(e*x
+d)^n)/e^3+2/3*b^2*d^3*m*n*ln(-e*x/d)*ln(c*(e*x+d)^n)/e^3-2/3*b^2*d^2*n*(e*
x+d)*ln(f*x^m)*ln(c*(e*x+d)^n)/e^3-5/18*b*d*m*n*x^2*(a+b*ln(c*(e*x+d)^n))/e
+1/3*b*d*n*x^2*ln(f*x^m)*(a+b*ln(c*(e*x+d)^n))/e-2/3*b*d^3*m*n*(a+b*ln(c*(e
*x+d)^n))*polylog(2,1+e*x/d)/e^3+4/27*b*m*n*x^3*(a+b*ln(c*(e*x+d)^n))-2/9*b
*n*x^3*ln(f*x^m)*(a+b*ln(c*(e*x+d)^n))-1/3*d^3*m*ln(-e*x/d)*(a+b*ln(c*(e*x+
d)^n))^2/e^3+2/27*b^2*n^2*x^3*ln(f*x^m)-1/9*d^3*m*(a+b*ln(c*(e*x+d)^n))^2/e
^3+1/3*d^3*ln(f*x^m)*(a+b*ln(c*(e*x+d)^n))^2/e^3-1/9*m*x^3*(a+b*ln(c*(e*x+d
)^n))^2+1/3*x^3*ln(f*x^m)*(a+b*ln(c*(e*x+d)^n))^2-2/27*b^2*m*n^2*x^3-71/54*
b^2*d^2*m*n^2*x/e^2+19/54*b^2*d*m*n^2*x^2/e+11/9*b^2*d^3*m*n^2*polylog(2,1+
e*x/d)/e^3+2/3*b^2*d^3*m*n^2*polylog(3,1+e*x/d)/e^3
```

Rubi [A]

time = 1.29, antiderivative size = 863, normalized size of antiderivative = 1.22, number of steps used = 52, number of rules used = 19, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.731$, Rules used = {2445, 2458, 45, 2372, 12, 14, 2338, 2475, 2443, 2481, 2421, 6724, 2393, 2332, 2354, 2438, 2341, 2484, 2422}

Antiderivative was successfully verified.

```
[In] Int[x^2*Log[f*x^m]*(a + b*Log[c*(d + e*x)^n])^2,x]
```

```
[Out] (11*a*b*d^2*m*n*x)/(9*e^2) - (28*b^2*d^2*m*n^2*x)/(9*e^2) + (5*b^2*d*m*n^2*
x^2)/(36*e) - (2*b^2*m*n^2*x^3)/81 + (13*b^2*d*m*n^2*(d + e*x)^2)/(36*e^3)
- (4*b^2*m*n^2*(d + e*x)^3)/(81*e^3) + (23*b^2*d^3*m*n^2*Log[x])/(54*e^3) +
 (2*b^2*d^2*n^2*x*Log[f*x^m])/e^2 - (b^2*d*n^2*(d + e*x)^2*Log[f*x^m])/(2*e
^3) + (2*b^2*n^2*(d + e*x)^3*Log[f*x^m])/(27*e^3) + (b^2*d^3*m*n^2*Log[d +
e*x]^2)/(9*e^3) + (b^2*d^3*m*n^2*Log[x]*Log[d + e*x]^2)/(3*e^3) - (b^2*d^3*
n^2*Log[f*x^m]*Log[d + e*x]^2)/(3*e^3) + (11*b^2*d^2*m*n*(d + e*x)*Log[c*(d
 + e*x)^n])/(9*e^3) + (2*b*d^2*m*n*(d + e*x)*(a + b*Log[c*(d + e*x)^n]))/(3
*e^3) - (13*b*d*m*n*(d + e*x)^2*(a + b*Log[c*(d + e*x)^n]))/(18*e^3) + (4*b
*m*n*(d + e*x)^3*(a + b*Log[c*(d + e*x)^n]))/(27*e^3) + (11*b*d^3*m*n*Log[-
((e*x)/d)]*(a + b*Log[c*(d + e*x)^n]))/(9*e^3) - (2*b*d^2*n*(d + e*x)*Log[f
*x^m]*(a + b*Log[c*(d + e*x)^n]))/e^3 + (b*d*n*(d + e*x)^2*Log[f*x^m]*(a +
```

```
b*Log[c*(d + e*x)^n]))/e^3 - (2*b*n*(d + e*x)^3*Log[f*x^m]*(a + b*Log[c*(d
+ e*x)^n]))/(9*e^3) - (2*b*d^3*m*n*Log[d + e*x]*(a + b*Log[c*(d + e*x)^n]))
/(9*e^3) - (2*b*d^3*m*n*Log[x]*Log[d + e*x]*(a + b*Log[c*(d + e*x)^n]))/(3*
e^3) + (2*b*d^3*n*Log[f*x^m]*Log[d + e*x]*(a + b*Log[c*(d + e*x)^n]))/(3*e^
3) - (m*x^3*(a + b*Log[c*(d + e*x)^n])^2)/9 + (d^3*m*Log[x]*(a + b*Log[c*(d
 + e*x)^n])^2)/(3*e^3) - (d^3*m*Log[-((e*x)/d)]*(a + b*Log[c*(d + e*x)^n])^
2)/(3*e^3) + (x^3*Log[f*x^m]*(a + b*Log[c*(d + e*x)^n])^2)/3 + (11*b^2*d^3*
m*n^2*PolyLog[2, 1 + (e*x)/d])/(9*e^3) - (2*b*d^3*m*n*(a + b*Log[c*(d + e*x
)^n])*PolyLog[2, 1 + (e*x)/d])/(3*e^3) + (2*b^2*d^3*m*n^2*PolyLog[3, 1 + (e
*x)/d])/(3*e^3)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] &&  !LinearQ[u, x] &&  !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2332

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2338

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2341

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_.)*(x_))^(m_.), x_Symbol] :>
Simp[(d*x)^(m + 1)*((a + b*Log[c*x^n])/(d*(m + 1))), x] - Simp[b*n*((d*x)^(
m + 1)/(d*(m + 1)^2)), x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[m, -1]
```

Rule 2354

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[Log[1 + e*(x/d)]*((a + b*Log[c*x^n])^p/e), x] - Dist[b*n*(p/e),
 Int[Log[1 + e*(x/d)]*((a + b*Log[c*x^n])^(p - 1)/x), x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2372

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*(x_)^(m_.)*((d_) + (e_.)*(x_)^(r_
.))^(q_.), x_Symbol] :> With[{u = IntHide[x^m*(d + e*x^r)^q, x]}, Dist[a +
b*Log[c*x^n], u, x] - Dist[b*n, Int[SimplifyIntegrand[u/x, x], x], x]] /; F
reeQ[{a, b, c, d, e, n, r}, x] && IGtQ[q, 0] && IntegerQ[m] &&  !(EqQ[q, 1]
 && EqQ[m, -1])
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((f_.)*(x_))^(m_.)*((d_) + (e_.)*
(x_)^(r_.))^(q_.), x_Symbol] :> With[{u = ExpandIntegrand[a + b*Log[c*x^n],
 (f*x)^m*(d + e*x^r)^q, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e,
 f, m, n, q, r}, x] && IntegerQ[q] && (GtQ[q, 0] || (IntegerQ[m] && Integer
Q[r]))
```

Rule 2421

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> Simp[(-PolyLog[2, (-d)*f*x^m])*((a + b*Log[c
*x^n])^p/m), x] + Dist[b*n*(p/m), Int[PolyLog[2, (-d)*f*x^m]*((a + b*Log[c*
x^n])^(p - 1)/x), x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0
] && EqQ[d*e, 1]
```

Rule 2422

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))^(r_.)]*((a_.) + Log[(c_.)*(x_)^(n_
.)]*(b_.))^(p_.))/(x_), x_Symbol] :> Simp[Log[d*(e + f*x^m)^r]*((a + b*Log[
c*x^n])^(p + 1)/(b*n*(p + 1))), x] - Dist[f*m*(r/(b*n*(p + 1))), Int[x^(m -
 1)*((a + b*Log[c*x^n])^(p + 1)/(e + f*x^m)), x], x] /; FreeQ[{a, b, c, d,
e, f, r, m, n}, x] && IGtQ[p, 0] && NeQ[d*e, 1]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2443

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d
```

```
+ e*x)^n])^p/g), x] - Dist[b*e*n*(p/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]*
((a + b*Log[c*(d + e*x)^n])^(p - 1)/(d + e*x)), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[(f + g*x)^(q + 1)*((a + b*Log[c*(d + e*x)^
n])^p/(g*(q + 1))), x] - Dist[b*e*n*(p/(g*(q + 1))), Int[(f + g*x)^(q + 1)*
((a + b*Log[c*(d + e*x)^n])^(p - 1)/(d + e*x)), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && GtQ[p, 0] && NeQ[q, -1] && Int
egersQ[2*p, 2*q] && ( !IGtQ[q, 0] || (EqQ[p, 2] && NeQ[q, 1]))
```

Rule 2458

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[(g*(x/e))^q*((e*h - d*i)/e + i*(x/e))^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2475

```
Int[Log[(f_.)*(x_)^(m_.)]*((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_
.))^(p_)*((g_.)*(x_))^(q_.), x_Symbol] :> With[{u = IntHide[(g*x)^q*(a + b*
Log[c*(d + e*x)^n])^p, x]}, Dist[Log[f*x^m], u, x] - Dist[m, Int[Dist[1/x,
u, x], x], x]] /; FreeQ[{a, b, c, d, e, f, g, m, n, q}, x] && IGtQ[p, 1] &&
 IGtQ[q, 0]
```

Rule 2481

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[(k*(x/d))^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + j*(x/e))^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2484

```
Int[(((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.
)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.)))/(x_), x_Symbol] :> Simp[Log[x]*(a + b
*Log[c*(d + e*x)^n])*(f + g*Log[h*(i + j*x)^m]), x] + (-Dist[e*g*m, Int[Log
[x]*((a + b*Log[c*(d + e*x)^n])/(d + e*x)), x], x] - Dist[b*j*n, Int[Log[x]
*((f + g*Log[h*(i + j*x)^m])/(i + j*x)), x], x]) /; FreeQ[{a, b, c, d, e, f
, g, h, i, j, m, n}, x] && EqQ[e*i - d*j, 0]
```

Rule 6724

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int x^2 \log\left(fx^m\right) \left(a+b\log\left(c(d+ex)^n\right)\right)^2 \, dx = \frac{2b^2d^2n^2x\log\left(fx^m\right)}{e^2} - \frac{b^2dn^2(d+ex)^2\log\left(fx^m\right)}{2e^3} + \frac{2b^2n^2(d+$$

$$= -\frac{2b^2d^2mn^2x}{e^2} + \frac{2b^2d^2n^2x\log\left(fx^m\right)}{e^2} - \frac{b^2dn^2(d+ex)^2\log\left(fx\right.}{2e^3}$$

$$= -\frac{2b^2d^2mn^2x}{e^2} + \frac{2b^2d^2n^2x\log\left(fx^m\right)}{e^2} - \frac{b^2dn^2(d+ex)^2\log\left(fx\right.}{2e^3}$$

$$= -\frac{11b^2d^2mn^2x}{9e^2} + \frac{5b^2dmn^2x^2}{36e} - \frac{2}{81}b^2mn^2x^3 + \frac{23b^2d^3mn^2\log}{54e^3}$$

$$= -\frac{11b^2d^2mn^2x}{9e^2} + \frac{5b^2dmn^2x^2}{36e} - \frac{2}{81}b^2mn^2x^3 + \frac{23b^2d^3mn^2\log}{54e^3}$$

$$= -\frac{11b^2d^2mn^2x}{9e^2} + \frac{5b^2dmn^2x^2}{36e} - \frac{2}{81}b^2mn^2x^3 + \frac{23b^2d^3mn^2\log}{54e^3}$$

$$= -\frac{11b^2d^2mn^2x}{9e^2} + \frac{5b^2dmn^2x^2}{36e} - \frac{2}{81}b^2mn^2x^3 + \frac{23b^2d^3mn^2\log}{54e^3}$$

$$= -\frac{17b^2d^2mn^2x}{9e^2} + \frac{5b^2dmn^2x^2}{36e} - \frac{2}{81}b^2mn^2x^3 + \frac{b^2dmn^2(d+ex}{6e^3}$$

$$= -\frac{17b^2d^2mn^2x}{9e^2} + \frac{5b^2dmn^2x^2}{36e} - \frac{2}{81}b^2mn^2x^3 + \frac{b^2dmn^2(d+ex}{6e^3}$$

$$= \frac{2abd^2mnx}{3e^2} - \frac{23b^2d^2mn^2x}{9e^2} - \frac{abdmnx^2}{6e} + \frac{5b^2dmn^2x^2}{36e} + \frac{2}{27}ab$$

$$= \frac{2abd^2mnx}{3e^2} - \frac{151b^2d^2mn^2x}{54e^2} - \frac{abdmnx^2}{6e} + \frac{7b^2dmn^2x^2}{27e} + \frac{2}{27}a$$

$$= \frac{2abd^2mnx}{3e^2} - \frac{151b^2d^2mn^2x}{54e^2} - \frac{abdmnx^2}{6e} + \frac{7b^2dmn^2x^2}{27e} + \frac{2}{27}a$$

$$= \frac{2abd^2mnx}{3e^2} - \frac{151b^2d^2mn^2x}{54e^2} - \frac{abdmnx^2}{6e} + \frac{7b^2dmn^2x^2}{27e} + \frac{2}{27}a$$

$$= \frac{2abd^2mnx}{3e^2} - \frac{151b^2d^2mn^2x}{54e^2} - \frac{abdmnx^2}{6e} + \frac{7b^2dmn^2x^2}{27e} + \frac{2}{27}a$$

Mathematica [A]
time = 1.10, size = 735, normalized size = 1.04

Antiderivative was successfully verified.

```
[In] Integrate[x^2*Log[f*x^m]*(a + b*Log[c*(d + e*x)^n])^2,x]
```

```
[Out] (6*b*n*(m*Log[x] - Log[f*x^m])*(e*x*(6*d^2 - 3*d*e*x + 2*e^2*x^2) - 6*(d^3
+ e^3*x^3)*Log[d + e*x])*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n]) + 18
*e^3*m*x^3*Log[x]*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2 - 6*e^3*x
^3*(m + 3*m*Log[x] - 3*Log[f*x^m])*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x
)^n])^2 + b*m*n*(-a + b*n*Log[d + e*x] - b*Log[c*(d + e*x)^n])*(-48*d^2*e*x
 + 15*d*e^2*x^2 - 8*e^3*x^3 + 12*d^3*Log[d + e*x] + 12*e^3*x^3*Log[d + e*x]
 - 6*Log[x]*(e*x*(-6*d^2 + 3*d*e*x - 2*e^2*x^2) + 6*e^3*x^3*Log[d + e*x] +
6*d^3*Log[1 + (e*x)/d]) - 36*d^3*PolyLog[2, -((e*x)/d)]) - b^2*n^2*(137*d^2
*e*m*x - 19*d*e^2*m*x^2 + 4*e^3*m*x^3 + 36*d^3*m*Log[x] - 36*d^3*Log[f*x^m]
 - 66*d^2*e*x*Log[f*x^m] + 15*d*e^2*x^2*Log[f*x^m] - 4*e^3*x^3*Log[f*x^m] -
 71*d^3*m*Log[d + e*x] - 48*d^2*e*m*x*Log[d + e*x] + 15*d*e^2*m*x^2*Log[d +
 e*x] - 8*e^3*m*x^3*Log[d + e*x] - 66*d^3*m*Log[x]*Log[d + e*x] + 66*d^3*Lo
g[f*x^m]*Log[d + e*x] + 36*d^2*e*x*Log[f*x^m]*Log[d + e*x] - 18*d*e^2*x^2*L
og[f*x^m]*Log[d + e*x] + 12*e^3*x^3*Log[f*x^m]*Log[d + e*x] + 6*d^3*m*Log[d
 + e*x]^2 + 6*e^3*m*x^3*Log[d + e*x]^2 + 18*d^3*m*Log[-((e*x)/d)]*Log[d + e
*x]^2 - 18*d^3*Log[f*x^m]*Log[d + e*x]^2 - 18*e^3*x^3*Log[f*x^m]*Log[d + e*
x]^2 + 66*d^3*m*Log[x]*Log[1 + (e*x)/d] + 66*d^3*m*PolyLog[2, -((e*x)/d)] +
 36*d^3*m*Log[d + e*x]*PolyLog[2, 1 + (e*x)/d] - 36*d^3*m*PolyLog[3, 1 + (e
*x)/d]))/(54*e^3)
```

Maple [F]
time = 0.05, size = 0, normalized size = 0.00

$$\int x^2 \ln \left(f\,x^m\right) \left(a+b\ln \left(c(ex+d)^n\right)\right)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*ln(f*x^m)*(a+b*ln(c*(e*x+d)^n))^2,x)
```

```
[Out] int(x^2*ln(f*x^m)*(a+b*ln(c*(e*x+d)^n))^2,x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*log(f*x^m)*(a+b*log(c*(e*x+d)^n))^2,x, algorithm="maxima")
```

```
[Out] -1/9*(b^2*(m - 3*log(f))*x^3 - 3*b^2*x^3*log(x^m))*log((x*e + d)^n)^2 + int
egrate(1/9*(9*(b^2*log(c)^2*log(f) + 2*a*b*log(c)*log(f) + a^2*log(f))*x^3*
e + 9*(b^2*d*log(c)^2*log(f) + 2*a*b*d*log(c)*log(f) + a^2*d*log(f))*x^2 +
2*(((m*n - 3*n*log(f) + 9*log(c)*log(f))*b^2 + 9*a*b*log(f))*x^3*e + 9*(b^2
*d*log(c)*log(f) + a*b*d*log(f))*x^2 - 3*((b^2*(n - 3*log(c)) - 3*a*b)*x^3*
e - 3*(b^2*d*log(c) + a*b*d)*x^2)*log(x^m))*log((x*e + d)^n) + 9*((b^2*log(
c)^2 + 2*a*b*log(c) + a^2)*x^3*e + (b^2*d*log(c)^2 + 2*a*b*d*log(c) + a^2*d
)*x^2)*log(x^m))/(x*e + d), x)
```

Fricas [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*log(f*x^m)*(a+b*log(c*(e*x+d)^n))^2,x, algorithm="fricas")
```

```
[Out] integral(b^2*x^2*log((x*e + d)^n*c)^2*log(f*x^m) + 2*a*b*x^2*log((x*e + d)^
n*c)*log(f*x^m) + a^2*x^2*log(f*x^m), x)
```

Sympy [**F(-1)**] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*ln(f*x**m)*(a+b*ln(c*(e*x+d)**n))**2,x)
```

```
[Out] Timed out
```

Giac [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*log(f*x^m)*(a+b*log(c*(e*x+d)^n))^2,x, algorithm="giac")
```

```
[Out] integrate((b*log((x*e + d)^n*c) + a)^2*x^2*log(f*x^m), x)
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.00

$$\int x^2\,\ln\left(f\,x^m\right)\,{\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)}^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*log(f*x^m)*(a + b*log(c*(d + e*x)^n))^2,x)
```

```
[Out] int(x^2*log(f*x^m)*(a + b*log(c*(d + e*x)^n))^2, x)
```

3.368 $\int x \log(fx^m)(a+b\log(c(d+ex)^n))^2\,dx$

Optimal. Leaf size=602

$$-\frac{abdmnx}{2e}+\frac{2b^2dmn^2x}{e}-\frac{2bdmn(a-bn)x}{e}-\frac{1}{8}b^2mn^2x^2-\frac{b^2mn^2(d+ex)^2}{4e^2}-\frac{b^2d^2mn^2\log(x)}{4e^2}+\frac{2abdnx\log(fx^m)}{e}$$

```
[Out] -1/2*a*b*d*m*n*x/e+2*b^2*d*m*n^2*x/e-2*b*d*m*n*(-b*n+a)*x/e-1/8*b^2*m*n^2*x
^2-1/4*b^2*m*n^2*(e*x+d)^2/e^2-1/4*b^2*d^2*m*n^2*ln(x)/e^2+2*a*b*d*n*x*ln(f
*x^m)/e-2*b^2*d*n^2*x*ln(f*x^m)/e+1/4*b^2*n^2*(e*x+d)^2*ln(f*x^m)/e^2-5/2*b
^2*d*m*n*(e*x+d)*ln(c*(e*x+d)^n)/e^2-2*b^2*d^2*m*n*ln(-e*x/d)*ln(c*(e*x+d)^
n)/e^2+2*b^2*d*n*(e*x+d)*ln(f*x^m)*ln(c*(e*x+d)^n)/e^2+1/2*b*m*n*(e*x+d)^2*
(a+b*ln(c*(e*x+d)^n))/e^2+1/2*b*d^2*m*n*ln(-e*x/d)*(a+b*ln(c*(e*x+d)^n))/e^
2-1/2*b*n*(e*x+d)^2*ln(f*x^m)*(a+b*ln(c*(e*x+d)^n))/e^2+1/2*d*m*(e*x+d)*(a+
b*ln(c*(e*x+d)^n))^2/e^2-1/4*m*(e*x+d)^2*(a+b*ln(c*(e*x+d)^n))^2/e^2+1/2*d^
2*m*ln(-e*x/d)*(a+b*ln(c*(e*x+d)^n))^2/e^2-d*(e*x+d)*ln(f*x^m)*(a+b*ln(c*(e
*x+d)^n))^2/e^2+1/2*(e*x+d)^2*ln(f*x^m)*(a+b*ln(c*(e*x+d)^n))^2/e^2-3/2*b^2
*d^2*m*n^2*polylog(2,1+e*x/d)/e^2+b*d^2*m*n*(a+b*ln(c*(e*x+d)^n))*polylog(2
,1+e*x/d)/e^2-b^2*d^2*m*n^2*polylog(3,1+e*x/d)/e^2
```

Rubi [A]
time = 0.88, antiderivative size = 602, normalized size of antiderivative = 1.00, number of steps used = 38, number of rules used = 16, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.667$, Rules used = {2448, 2436, 2333, 2332, 2437, 2342, 2341, 2475, 45, 2458, 2393, 2354, 2438, 2395, 2421, 6724}

Antiderivative was successfully verified.

```
[In] Int[x*Log[f*x^m]*(a + b*Log[c*(d + e*x)^n])^2,x]
```

```
[Out] -1/2*(a*b*d*m*n*x)/e + (2*b^2*d*m*n^2*x)/e - (2*b*d*m*n*(a - b*n)*x)/e - (b
^2*m*n^2*x^2)/8 - (b^2*m*n^2*(d + e*x)^2)/(4*e^2) - (b^2*d^2*m*n^2*Log[x])/
(4*e^2) + (2*a*b*d*n*x*Log[f*x^m])/e - (2*b^2*d*n^2*x*Log[f*x^m])/e + (b^2*
n^2*(d + e*x)^2*Log[f*x^m])/(4*e^2) - (5*b^2*d*m*n*(d + e*x)*Log[c*(d + e*x
)^n])/(2*e^2) - (2*b^2*d^2*m*n*Log[-((e*x)/d)]*Log[c*(d + e*x)^n])/e^2 + (2
*b^2*d*n*(d + e*x)*Log[f*x^m]*Log[c*(d + e*x)^n])/e^2 + (b*m*n*(d + e*x)^2*
(a + b*Log[c*(d + e*x)^n]))/(2*e^2) + (b*d^2*m*n*Log[-((e*x)/d)]*(a + b*Log
[c*(d + e*x)^n]))/(2*e^2) - (b*n*(d + e*x)^2*Log[f*x^m]*(a + b*Log[c*(d + e
*x)^n]))/(2*e^2) + (d*m*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^2)/(2*e^2) - (
m*(d + e*x)^2*(a + b*Log[c*(d + e*x)^n])^2)/(4*e^2) + (d^2*m*Log[-((e*x)/d)
]*(a + b*Log[c*(d + e*x)^n])^2)/(2*e^2) - (d*(d + e*x)*Log[f*x^m]*(a + b*Lo
g[c*(d + e*x)^n])^2)/e^2 + ((d + e*x)^2*Log[f*x^m]*(a + b*Log[c*(d + e*x)^n
])^2)/(2*e^2) - (3*b^2*d^2*m*n^2*PolyLog[2, 1 + (e*x)/d])/(2*e^2) + (b*d^2*
m*n*(a + b*Log[c*(d + e*x)^n])*PolyLog[2, 1 + (e*x)/d])/e^2 - (b^2*d^2*m*n^
2*PolyLog[3, 1 + (e*x)/d])/e^2
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2332

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2333

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2341

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_.)*(x_))^(m_.), x_Symbol] :>
Simp[(d*x)^(m + 1)*((a + b*Log[c*x^n])/(d*(m + 1))), x] - Simp[b*n*((d*x)^(
m + 1)/(d*(m + 1)^2)), x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[m, -1]
```

Rule 2342

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_.)*(x_))^(m_.), x_Symbo
l] :> Simp[(d*x)^(m + 1)*((a + b*Log[c*x^n])^p/(d*(m + 1))), x] - Dist[b*n*
(p/(m + 1)), Int[(d*x)^m*(a + b*Log[c*x^n])^(p - 1), x], x] /; FreeQ[{a, b,
 c, d, m, n}, x] && NeQ[m, -1] && GtQ[p, 0]
```

Rule 2354

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[Log[1 + e*(x/d)]*((a + b*Log[c*x^n])^p/e), x] - Dist[b*n*(p/e),
 Int[Log[1 + e*(x/d)]*((a + b*Log[c*x^n])^(p - 1)/x), x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((f_.)*(x_))^(m_.)*((d_) + (e_.)*
(x_)^(r_.))^(q_.), x_Symbol] :> With[{u = ExpandIntegrand[a + b*Log[c*x^n],
 (f*x)^m*(d + e*x^r)^q, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e,
 f, m, n, q, r}, x] && IntegerQ[q] && (GtQ[q, 0] || (IntegerQ[m] && Integer
Q[r]))
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((f_.)*(x_))^(m_.)*((d_) +
(e_.)*(x_)^(r_.))^(q_.), x_Symbol] :> With[{u = ExpandIntegrand[(a + b*Log[
c*x^n])^p, (f*x)^m*(d + e*x^r)^q, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b
, c, d, e, f, m, n, p, q, r}, x] && IntegerQ[q] && (GtQ[q, 0] || (IGtQ[p, 0
] && IntegerQ[m] && IntegerQ[r]))
```

Rule 2421

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> Simp[(-PolyLog[2, (-d)*f*x^m])*((a + b*Log[c
*x^n])^p/m), x] + Dist[b*n*(p/m), Int[PolyLog[2, (-d)*f*x^m]*((a + b*Log[c*
x^n])^(p - 1)/x), x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0
] && EqQ[d*e, 1]
```

Rule 2436

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2437

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[(f*(x/d))^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2448

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q*(a + b*Log[c*(d
 + e*x)^n])^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f -
 d*g, 0] && IGtQ[q, 0]
```

Rule 2458

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[(g*(x/e))^q*((e*h - d*i)/e + i*(x/e))^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
```

```
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2475

```
Int[Log[(f_.)*(x_)^(m_.)]*((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_
.))^(p_)*((g_.)*(x_))^(q_.), x_Symbol] :> With[{u = IntHide[(g*x)^q*(a + b*
Log[c*(d + e*x)^n])^p, x]}, Dist[Log[f*x^m], u, x] - Dist[m, Int[Dist[1/x,
u, x], x], x]] /; FreeQ[{a, b, c, d, e, f, g, m, n, q}, x] && IGtQ[p, 1] &&
 IGtQ[q, 0]
```

Rule 6724

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int x \log (f x^m) (a+b \log (c(d+ex)^n))^2 \, dx = \frac{2abdnx \log (fx^m)}{e} - \frac{2b^2dn^2x \log (fx^m)}{e} + \frac{b^2n^2(d+ex)^2 \log (f}{4e^2}$$

$$= -\frac{2bdmn(a-bn)x}{e} + \frac{2abdnx \log (fx^m)}{e} - \frac{2b^2dn^2x \log (fx^m)}{e}$$

$$= -\frac{2bdmn(a-bn)x}{e} + \frac{2abdnx \log (fx^m)}{e} - \frac{2b^2dn^2x \log (fx^m)}{e}$$

$$= -\frac{b^2dmn^2x}{2e} - \frac{2bdmn(a-bn)x}{e} - \frac{1}{8}b^2mn^2x^2 - \frac{b^2d^2mn^2 \log(x}{4e^2}$$

$$= -\frac{b^2dmn^2x}{2e} - \frac{2bdmn(a-bn)x}{e} - \frac{1}{8}b^2mn^2x^2 - \frac{b^2d^2mn^2 \log(x}{4e^2}$$

$$= \frac{abdmnx}{2e} + \frac{3b^2dmn^2x}{2e} - \frac{2bdmn(a-bn)x}{e} - \frac{1}{8}b^2mn^2x^2 - \frac{b^2m}{}$$

$$= -\frac{abdmnx}{2e} + \frac{b^2dmn^2x}{e} - \frac{2bdmn(a-bn)x}{e} - \frac{1}{8}b^2mn^2x^2 - \frac{b^2r}{}$$

$$= -\frac{abdmnx}{2e} + \frac{2b^2dmn^2x}{e} - \frac{2bdmn(a-bn)x}{e} - \frac{1}{8}b^2mn^2x^2 - \frac{b^2}{}$$

Mathematica [F]
time = 0.23, size = 0, normalized size = 0.00

$$\int x \log (fx^m) (a+b \log (c(d+ex)^n))^2 \, dx$$

Verification is not applicable to the result.

```
[In] Integrate[x*Log[f*x^m]*(a + b*Log[c*(d + e*x)^n])^2,x]
```

```
[Out] Integrate[x*Log[f*x^m]*(a + b*Log[c*(d + e*x)^n])^2, x]
```

Maple [F]
time = 0.08, size = 0, normalized size = 0.00

$$\int x \ln \left(f\,x^{m}\right) \left(a+b \ln \left(c(ex+d)^{n}\right)\right)^{2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*ln(f*x^m)*(a+b*ln(c*(e*x+d)^n))^2,x)
```

```
[Out] int(x*ln(f*x^m)*(a+b*ln(c*(e*x+d)^n))^2,x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*log(f*x^m)*(a+b*log(c*(e*x+d)^n))^2,x, algorithm="maxima")
```

```
[Out] -1/4*(b^2*(m - 2*log(f))*x^2 - 2*b^2*x^2*log(x^m))*log((x*e + d)^n)^2 + int
egrate(1/2*(2*(b^2*log(c)^2*log(f) + 2*a*b*log(c)*log(f) + a^2*log(f))*x^2*
e + 2*(b^2*d*log(c)^2*log(f) + 2*a*b*d*log(c)*log(f) + a^2*d*log(f))*x + ((
(m*n - 2*n*log(f) + 4*log(c)*log(f))*b^2 + 4*a*b*log(f))*x^2*e + 4*(b^2*d*l
og(c)*log(f) + a*b*d*log(f))*x - 2*((b^2*(n - 2*log(c)) - 2*a*b)*x^2*e - 2*
(b^2*d*log(c) + a*b*d)*x)*log(x^m))*log((x*e + d)^n) + 2*((b^2*log(c)^2 + 2
*a*b*log(c) + a^2)*x^2*e + (b^2*d*log(c)^2 + 2*a*b*d*log(c) + a^2*d)*x)*log
(x^m))/(x*e + d), x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*log(f*x^m)*(a+b*log(c*(e*x+d)^n))^2,x, algorithm="fricas")
```

```
[Out] integral(b^2*x*log((x*e + d)^n*c)^2*log(f*x^m) + 2*a*b*x*log((x*e + d)^n*c)
*log(f*x^m) + a^2*x*log(f*x^m), x)
```

Sympy [F(-1)] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*ln(f*x**m)*(a+b*ln(c*(e*x+d)**n))**2,x)
```

```
[Out] Timed out
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*log(f*x^m)*(a+b*log(c*(e*x+d)^n))^2,x, algorithm="giac")
```

```
[Out] integrate((b*log((x*e + d)^n*c) + a)^2*x*log(f*x^m), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int x\,\ln\left(f\,x^m\right)\,{\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)}^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*log(f*x^m)*(a + b*log(c*(d + e*x)^n))^2,x)
```

```
[Out] int(x*log(f*x^m)*(a + b*log(c*(d + e*x)^n))^2, x)
```

3.369 $\int \log(fx^m)(a+b\log(c(d+ex)^n))^2\,dx$

Optimal. Leaf size=309

$$2abmnx-4b^2mn^2x+2bmn(a-bn)x-2abnx\log(fx^m)+2b^2n^2x\log(fx^m)+\frac{4b^2mn(d+ex)\log(c(d+ex)^n)}{e}+-$$

```
[Out] 2*a*b*m*n*x-4*b^2*m*n^2*x+2*b*m*n*(-b*n+a)*x-2*a*b*n*x*ln(f*x^m)+2*b^2*n^2*
x*ln(f*x^m)+4*b^2*m*n*(e*x+d)*ln(c*(e*x+d)^n)/e+2*b^2*d*m*n*ln(-e*x/d)*ln(c
*(e*x+d)^n)/e-2*b^2*n*(e*x+d)*ln(f*x^m)*ln(c*(e*x+d)^n)/e-m*(e*x+d)*(a+b*ln
(c*(e*x+d)^n))^2/e-d*m*ln(-e*x/d)*(a+b*ln(c*(e*x+d)^n))^2/e+(e*x+d)*ln(f*x^
m)*(a+b*ln(c*(e*x+d)^n))^2/e+2*b^2*d*m*n^2*polylog(2,1+e*x/d)/e-2*b*d*m*n*(
a+b*ln(c*(e*x+d)^n))*polylog(2,1+e*x/d)/e+2*b^2*d*m*n^2*polylog(3,1+e*x/d)/
e
```

Rubi [A]

time = 0.31, antiderivative size = 309, normalized size of antiderivative = 1.00, number of steps used = 17, number of rules used = 12, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.522$, Rules used = {2436, 2333, 2332, 2470, 2458, 45, 2393, 2354, 2438, 2395, 2421, 6724}

$$-\frac{2bdmn\text{PolyLog}\left(2,\frac{ex}{d}+1\right)(a+b\log(c(d+ex)^n))}{e}+\frac{2b^2dmn^2\text{PolyLog}\left(2,\frac{ex}{d}+1\right)}{e}+\frac{2b^2dmn^2\text{PolyLog}\left(3,\frac{ex}{d}+1\right)}{e}+\frac{(d+ex)\log(fx^m)(a+b\log(c(d+ex)^n))^2}{e}-\frac{m(d+ex)(a+b\log(c(d+ex)^n))^2}{e}-\frac{dm\log\left(-\frac{ex}{d}\right)(a+b\log(c(d+ex)^n))^2}{e}-2abnx\log(fx^m)+2abmnx+2bmnx(a-bn)-\frac{2b^2n(d+ex)\log(fx^m)\log(c(d+ex)^n)}{e}+\frac{4b^2mn(d+ex)\log(c(d+ex)^n)}{e}+\frac{2b^2dmn\log\left(-\frac{ex}{d}\right)\log(c(d+ex)^n)}{e}+2b^2n^2x\log(fx^m)-4b^2mn^2x$$

Antiderivative was successfully verified.

```
[In] Int[Log[f*x^m]*(a + b*Log[c*(d + e*x)^n])^2,x]
```

```
[Out] 2*a*b*m*n*x - 4*b^2*m*n^2*x + 2*b*m*n*(a - b*n)*x - 2*a*b*n*x*Log[f*x^m] +
2*b^2*n^2*x*Log[f*x^m] + (4*b^2*m*n*(d + e*x)*Log[c*(d + e*x)^n])/e + (2*b^
2*d*m*n*Log[-((e*x)/d)]*Log[c*(d + e*x)^n])/e - (2*b^2*n*(d + e*x)*Log[f*x^
m]*Log[c*(d + e*x)^n])/e - (m*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^2)/e - (
d*m*Log[-((e*x)/d)]*(a + b*Log[c*(d + e*x)^n])^2)/e + ((d + e*x)*Log[f*x^m]
*(a + b*Log[c*(d + e*x)^n])^2)/e + (2*b^2*d*m*n^2*PolyLog[2, 1 + (e*x)/d])/
e - (2*b*d*m*n*(a + b*Log[c*(d + e*x)^n])*PolyLog[2, 1 + (e*x)/d])/e + (2*b
^2*d*m*n^2*PolyLog[3, 1 + (e*x)/d])/e
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2332

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2333

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2354

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[Log[1 + e*(x/d)]*((a + b*Log[c*x^n])^p/e), x] - Dist[b*n*(p/e),
 Int[Log[1 + e*(x/d)]*((a + b*Log[c*x^n])^(p - 1)/x), x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((f_.)*(x_))^(m_.)*((d_) + (e_.)*
(x_)^(r_.))^(q_.), x_Symbol] :> With[{u = ExpandIntegrand[a + b*Log[c*x^n],
 (f*x)^m*(d + e*x^r)^q, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e,
 f, m, n, q, r}, x] && IntegerQ[q] && (GtQ[q, 0] || (IntegerQ[m] && Integer
Q[r]))
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((f_.)*(x_))^(m_.)*((d_) +
(e_.)*(x_)^(r_.))^(q_.), x_Symbol] :> With[{u = ExpandIntegrand[(a + b*Log[
c*x^n])^p, (f*x)^m*(d + e*x^r)^q, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b
, c, d, e, f, m, n, p, q, r}, x] && IntegerQ[q] && (GtQ[q, 0] || (IGtQ[p, 0
] && IntegerQ[m] && IntegerQ[r]))
```

Rule 2421

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> Simp[(-PolyLog[2, (-d)*f*x^m])*((a + b*Log[c
*x^n])^p/m), x] + Dist[b*n*(p/m), Int[PolyLog[2, (-d)*f*x^m]*((a + b*Log[c*
x^n])^(p - 1)/x), x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0
] && EqQ[d*e, 1]
```

Rule 2436

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2458

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[(g*(x/e))^q*((e*h - d*i)/e + i*(x/e))^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2470

```
Int[Log[(f_.)*(x_)^(m_.)]*((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_
.))^(p_), x_Symbol] :> With[{u = IntHide[(a + b*Log[c*(d + e*x)^n])^p, x]},
 Dist[Log[f*x^m], u, x] - Dist[m, Int[Dist[1/x, u, x], x], x]] /; FreeQ[{a,
 b, c, d, e, f, m, n}, x] && IGtQ[p, 1]
```

Rule 6724

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \log\left(fx^m\right)\left(a+b\log\left(c(d+ex)^n\right)\right)^2\,dx = -2abnx\log\left(fx^m\right)+2b^2n^2x\log\left(fx^m\right)-\frac{2b^2n(d+ex)\log\left(fx^m\right)\mathrm{l}}{e}$$

$$= 2bmn(a-bn)x-2abnx\log\left(fx^m\right)+2b^2n^2x\log\left(fx^m\right)-\frac{2b^2n(d}{}$$

$$= 2bmn(a-bn)x-2abnx\log\left(fx^m\right)+2b^2n^2x\log\left(fx^m\right)-\frac{2b^2n(d}{}$$

$$= 2bmn(a-bn)x-2abnx\log\left(fx^m\right)+2b^2n^2x\log\left(fx^m\right)-\frac{2b^2n(d}{}$$

$$= 2bmn(a-bn)x-2abnx\log\left(fx^m\right)+2b^2n^2x\log\left(fx^m\right)-\frac{2b^2n(d}{}$$

$$= -2b^2mn^2x+2bmn(a-bn)x-2abnx\log\left(fx^m\right)+2b^2n^2x\log\left(fx\right.$$

$$= 2abmnx-2b^2mn^2x+2bmn(a-bn)x-2abnx\log\left(fx^m\right)+2b^2n$$

$$= 2abmnx-4b^2mn^2x+2bmn(a-bn)x-2abnx\log\left(fx^m\right)+2b^2n$$

Mathematica [A]
time = 0.28, size = 549, normalized size = 1.78

$$b^2n^2(-m\log(x)+\log(fx^m))\left(x\log^2(d+ex)-2e\left(-\frac{x}{e}+\frac{d\log(d+ex)}{e^2}+\frac{x\log(d+ex)}{e}-\frac{d\log^2(d+ex)}{2e^2}\right)\right)-x(m-\log(fx^m))(a-bn\log(d+ex)+b\log(c(d+ex)^n))^2-2bnx(-m-m\log(x)+\log(fx^m))(a+b(-n\log(d+ex)+\log(c(d+ex)^n)))+2bnx(-m+\log(fx^m))\log(d+ex)(a+b(-n\log(d+ex)+\log(c(d+ex)^n)))+\frac{2bdn(-m-m\log(x)+\log(fx^m))\log(d+ex)(a+b(-n\log(d+ex)+\log(c(d+ex)^n)))}{e}-2bemn(a+b(-n\log(d+ex)+\log(c(d+ex)^n)))\left(\frac{x(-1+\log(x))}{e}-\frac{d\left(\frac{\log(x)\log\left(\frac{d+ex}{d}\right)}{e}+\frac{\mathrm{Li}_2\left(-\frac{ex}{d}\right)}{e}\right)}{e}\right)+b^2mn^2\left(-x\log^2(d+ex)+x\log(x)\log^2(d+ex)+2e\left(-\frac{x}{e}+\frac{d\log(d+ex)}{e^2}+\frac{x\log(d+ex)}{e}-\frac{d\log^2(d+ex)}{2e^2}\right)-2e\left(\frac{2ex-d\log(d+ex)-ex\log(d+ex)+\log(x)\left(-ex+ex\log(d+ex)+d\log\left(1+\frac{ex}{d}\right)\right)+d\mathrm{Li}_2\left(-\frac{ex}{d}\right)}{e^2}-\frac{d\left(\frac{1}{2}\left(\log(x)-\log\left(-\frac{ex}{d}\right)\right)\log^2(d+ex)-\log(d+ex)\mathrm{Li}_2\left(\frac{d+ex}{d}\right)+\mathrm{Li}_3\left(\frac{d+ex}{d}\right)\right)}{e^2}\right)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[f*x^m]*(a + b*Log[c*(d + e*x)^n])^2,x]
```

```
[Out] b^2*n^2*(-(m*Log[x]) + Log[f*x^m])*(x*Log[d + e*x]^2 - 2*e*(-(x/e) + (d*Log
[d + e*x])/e^2 + (x*Log[d + e*x])/e - (d*Log[d + e*x]^2)/(2*e^2))) - x*(m -
 Log[f*x^m])*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2 - 2*b*n*x*(-m
- m*Log[x] + Log[f*x^m])*(a + b*(-(n*Log[d + e*x]) + Log[c*(d + e*x)^n])) +
 2*b*n*x*(-m + Log[f*x^m])*Log[d + e*x]*(a + b*(-(n*Log[d + e*x]) + Log[c*(
d + e*x)^n])) + (2*b*d*n*(-m - m*Log[x] + Log[f*x^m])*Log[d + e*x]*(a + b*(
-(n*Log[d + e*x]) + Log[c*(d + e*x)^n])))/e - 2*b*e*m*n*(a + b*(-(n*Log[d +
 e*x]) + Log[c*(d + e*x)^n]))*((x*(-1 + Log[x]))/e - (d*((Log[x]*Log[(d + e
*x)/d])/e + PolyLog[2, -((e*x)/d)]/e))/e) + b^2*m*n^2*(-(x*Log[d + e*x]^2)
+ x*Log[x]*Log[d + e*x]^2 + 2*e*(-(x/e) + (d*Log[d + e*x])/e^2 + (x*Log[d +
 e*x])/e - (d*Log[d + e*x]^2)/(2*e^2)) - 2*e*((2*e*x - d*Log[d + e*x] - e*x
*Log[d + e*x] + Log[x]*(-(e*x) + e*x*Log[d + e*x] + d*Log[1 + (e*x)/d]) + d
*PolyLog[2, -((e*x)/d)])/e^2 - (d*(((Log[x] - Log[-((e*x)/d)])*Log[d + e*x]
^2)/2 - Log[d + e*x]*PolyLog[2, (d + e*x)/d] + PolyLog[3, (d + e*x)/d]))/e^
2))
```

Maple [F]
time = 0.05, size = 0, normalized size = 0.00

$$\int \ln\left(f\,x^{m}\right)\left(a+b\ln\left(c(ex+d)^{n}\right)\right)^{2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(f*x^m)*(a+b*ln(c*(e*x+d)^n))^2,x)
```

```
[Out] int(ln(f*x^m)*(a+b*ln(c*(e*x+d)^n))^2,x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(f*x^m)*(a+b*log(c*(e*x+d)^n))^2,x, algorithm="maxima")
```

```
[Out] -(b^2*(m - log(f))*x - b^2*x*log(x^m))*log((x*e + d)^n)^2 + integrate((b^2*
d*log(c)^2*log(f) + 2*a*b*d*log(c)*log(f) + a^2*d*log(f) + (b^2*log(c)^2*lo
g(f) + 2*a*b*log(c)*log(f) + a^2*log(f))*x*e + 2*(b^2*d*log(c)*log(f) + a*b
```

```
*d*log(f) + ((m*n - n*log(f) + log(c)*log(f))*b^2 + a*b*log(f))*x*e + (b^2*
d*log(c) + a*b*d - (b^2*(n - log(c)) - a*b)*x*e)*log(x^m))*log((x*e + d)^n)
 + (b^2*d*log(c)^2 + 2*a*b*d*log(c) + a^2*d + (b^2*log(c)^2 + 2*a*b*log(c)
+ a^2)*x*e)*log(x^m))/(x*e + d), x)
```

Fricas [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(f*x^m)*(a+b*log(c*(e*x+d)^n))^2,x, algorithm="fricas")
[Out] integral(b^2*log((x*e + d)^n*c)^2*log(f*x^m) + 2*a*b*log((x*e + d)^n*c)*log
(f*x^m) + a^2*log(f*x^m), x)
```

Sympy [**F(-1)**] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(f*x**m)*(a+b*ln(c*(e*x+d)**n))**2,x)
[Out] Timed out
```

Giac [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(f*x^m)*(a+b*log(c*(e*x+d)^n))^2,x, algorithm="giac")
[Out] integrate((b*log((x*e + d)^n*c) + a)^2*log(f*x^m), x)
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.00

$$\int \ln\left(f\,x^m\right)\,{\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)}^2 \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(log(f*x^m)*(a + b*log(c*(d + e*x)^n))^2,x)
[Out] int(log(f*x^m)*(a + b*log(c*(d + e*x)^n))^2, x)
```

3.370 $\int \frac{\log(fx^m)(a+b\log(c(d+ex)^n))^2}{x}\,dx$

Optimal. Leaf size=823

$$\frac{1}{2}m\log^2(x)\left(a-bn\log(d+ex)+b\log\left(c(d+ex)^n\right)\right)^2+\log(x)\left(-m\log(x)+\log\left(fx^m\right)\right)\left(a-bn\log(d+ex)\right.$$

```
[Out] 1/2*m*ln(x)^2*(a-b*n*ln(e*x+d)+b*ln(c*(e*x+d)^n))^2+ln(x)*(-m*ln(x)+ln(f*x^
m))*(a-b*n*ln(e*x+d)+b*ln(c*(e*x+d)^n))^2+2*b*n*(-m*ln(x)+ln(f*x^m))*(a-b*n
*ln(e*x+d)+b*ln(c*(e*x+d)^n))*(ln(x)*(ln(e*x+d)-ln(1+e*x/d))-polylog(2,-e*x
/d))+2*b*m*n*(a-b*n*ln(e*x+d)+b*ln(c*(e*x+d)^n))*(1/2*ln(x)^2*(ln(e*x+d)-ln
(1+e*x/d))-ln(x)*polylog(2,-e*x/d)+polylog(3,-e*x/d))-b^2*n^2*(m*ln(x)-ln(f
*x^m))*(ln(-e*x/d)*ln(e*x+d)^2+2*ln(e*x+d)*polylog(2,1+e*x/d)-2*polylog(3,1
+e*x/d))+1/12*b^2*m*n^2*(ln(-e*x/d)^4+6*ln(-e*x/d)^2*ln(-e*x/(e*x+d))^2-4*(
ln(-e*x/d)+ln(d/(e*x+d)))*ln(-e*x/(e*x+d))^3+ln(-e*x/(e*x+d))^4+6*ln(x)^2*l
n(e*x+d)^2+4*(2*ln(-e*x/d)^3-3*ln(x)^2*ln(e*x+d))*ln(1+e*x/d)+6*(ln(x)-ln(-
e*x/d))*(ln(x)+3*ln(-e*x/d))*ln(1+e*x/d)^2-4*ln(-e*x/d)^2*ln(-e*x/(e*x+d))*
(ln(-e*x/d)+3*ln(1+e*x/d))+12*(ln(-e*x/d)^2-2*ln(-e*x/d)*(ln(-e*x/(e*x+d))+
ln(1+e*x/d))+2*ln(x)*(-ln(e*x+d)+ln(1+e*x/d)))*polylog(2,-e*x/d)-12*ln(-e*x
/(e*x+d))^2*polylog(2,e*x/(e*x+d))+12*(ln(-e*x/d)-ln(-e*x/(e*x+d)))^2*polyl
og(2,1+e*x/d)+24*(ln(x)-ln(-e*x/d))*ln(1+e*x/d)*polylog(2,1+e*x/d)+24*(ln(-
e*x/(e*x+d))+ln(e*x+d))*polylog(3,-e*x/d)+24*ln(-e*x/(e*x+d))*polylog(3,e*x
/(e*x+d))+24*(-ln(x)+ln(-e*x/(e*x+d)))*polylog(3,1+e*x/d)-24*polylog(4,-e*x
/d)-24*polylog(4,e*x/(e*x+d))+24*polylog(4,1+e*x/d))
```

Rubi [F]
time = 0.04, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int \frac{\log\left(fx^m\right)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{x}\,dx$$

Verification is not applicable to the result.

```
[In] Int[(Log[f*x^m]*(a + b*Log[c*(d + e*x)^n])^2)/x,x]
```

```
[Out] (Log[f*x^m]^2*(a + b*Log[c*(d + e*x)^n])^2)/(2*m) - (b*e*n*Defer[Int][(Log[
f*x^m]^2*(a + b*Log[c*(d + e*x)^n]))/(d + e*x), x])/m
```

Rubi steps

$$\int \frac{\log\left(fx^m\right)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{x}\,dx=\frac{\log^2\left(fx^m\right)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{2m}-\frac{(ben)\int\frac{\log^2(fx^m)(a+b\log(c(d}{d+ex}}{m}$$

Mathematica [A]
time = 0.23, size = 823, normalized size = 1.00

Antiderivative was successfully verified.

```
[In] Integrate[(Log[f*x^m]*(a + b*Log[c*(d + e*x)^n])^2)/x,x]
```

```
[Out] (m*Log[x]^2*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2)/2 + Log[x]*(-(
m*Log[x]) + Log[f*x^m])*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2 + 2
*b*n*(-(m*Log[x]) + Log[f*x^m])*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n
])*(Log[x]*(Log[d + e*x] - Log[1 + (e*x)/d]) - PolyLog[2, -((e*x)/d)]) + 2*
b*m*n*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])*((Log[x]^2*(Log[d + e*x
] - Log[1 + (e*x)/d]))/2 - Log[x]*PolyLog[2, -((e*x)/d)] + PolyLog[3, -((e*
x)/d)]) - b^2*n^2*(m*Log[x] - Log[f*x^m])*(Log[-((e*x)/d)]*Log[d + e*x]^2 +
 2*Log[d + e*x]*PolyLog[2, 1 + (e*x)/d] - 2*PolyLog[3, 1 + (e*x)/d]) + (b^2
*m*n^2*(Log[-((e*x)/d)]^4 + 6*Log[-((e*x)/d)]^2*Log[-((e*x)/(d + e*x))]^2 -
 4*(Log[-((e*x)/d)] + Log[d/(d + e*x)])*Log[-((e*x)/(d + e*x))]^3 + Log[-((
e*x)/(d + e*x))]^4 + 6*Log[x]^2*Log[d + e*x]^2 + 4*(2*Log[-((e*x)/d)]^3 - 3
*Log[x]^2*Log[d + e*x])*Log[1 + (e*x)/d] + 6*(Log[x] - Log[-((e*x)/d)])*(Lo
g[x] + 3*Log[-((e*x)/d)])*Log[1 + (e*x)/d]^2 - 4*Log[-((e*x)/d)]^2*Log[-((e
*x)/(d + e*x))]*(Log[-((e*x)/d)] + 3*Log[1 + (e*x)/d]) + 12*(Log[-((e*x)/d)
]^2 - 2*Log[-((e*x)/d)]*(Log[-((e*x)/(d + e*x))] + Log[1 + (e*x)/d]) + 2*Lo
g[x]*(-Log[d + e*x] + Log[1 + (e*x)/d]))*PolyLog[2, -((e*x)/d)] - 12*Log[-(
(e*x)/(d + e*x))]^2*PolyLog[2, (e*x)/(d + e*x)] + 12*(Log[-((e*x)/d)] - Log
[-((e*x)/(d + e*x))])^2*PolyLog[2, 1 + (e*x)/d] + 24*(Log[x] - Log[-((e*x)/
d)])*Log[1 + (e*x)/d]*PolyLog[2, 1 + (e*x)/d] + 24*(Log[-((e*x)/(d + e*x))]
 + Log[d + e*x])*PolyLog[3, -((e*x)/d)] + 24*Log[-((e*x)/(d + e*x))]*PolyLo
g[3, (e*x)/(d + e*x)] + 24*(-Log[x] + Log[-((e*x)/(d + e*x))])*PolyLog[3, 1
 + (e*x)/d] - 24*(PolyLog[4, -((e*x)/d)] + PolyLog[4, (e*x)/(d + e*x)] - Po
lyLog[4, 1 + (e*x)/d])))/12
```

Maple [F]
time = 0.05, size = 0, normalized size = 0.00

$$\int \frac{\ln(f\,x^{m})\left(a+b\ln\left(c(ex+d)^{n}\right)\right)^{2}}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(f*x^m)*(a+b*ln(c*(e*x+d)^n))^2/x,x)
```

```
[Out] int(ln(f*x^m)*(a+b*ln(c*(e*x+d)^n))^2/x,x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(f*x^m)*(a+b*log(c*(e*x+d)^n))^2/x,x, algorithm="maxima")
```

```
[Out] -1/2*(b^2*m*log(x)^2 - 2*b^2*log(f)*log(x) - 2*b^2*log(x)*log(x^m))*log((x*
e + d)^n)^2 - integrate(-(b^2*d*log(c)^2*log(f) + 2*a*b*d*log(c)*log(f) + a
^2*d*log(f) + (b^2*log(c)^2*log(f) + 2*a*b*log(c)*log(f) + a^2*log(f))*x*e
+ (b^2*m*n*x*e*log(x)^2 - 2*b^2*n*x*e*log(f)*log(x) + 2*b^2*d*log(c)*log(f)
 + 2*a*b*d*log(f) + 2*(b^2*log(c)*log(f) + a*b*log(f))*x*e - 2*(b^2*n*x*e*l
og(x) - b^2*d*log(c) - a*b*d - (b^2*log(c) + a*b)*x*e)*log(x^m))*log((x*e +
 d)^n) + (b^2*d*log(c)^2 + 2*a*b*d*log(c) + a^2*d + (b^2*log(c)^2 + 2*a*b*l
og(c) + a^2)*x*e)*log(x^m))/(x^2*e + d*x), x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(f*x^m)*(a+b*log(c*(e*x+d)^n))^2/x,x, algorithm="fricas")
```

```
[Out] integral((b^2*log((x*e + d)^n*c)^2*log(f*x^m) + 2*a*b*log((x*e + d)^n*c)*lo
g(f*x^m) + a^2*log(f*x^m))/x, x)
```

Sympy [F(-1)] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(f*x**m)*(a+b*ln(c*(e*x+d)**n))**2/x,x)
```

```
[Out] Timed out
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(f*x^m)*(a+b*log(c*(e*x+d)^n))^2/x,x, algorithm="giac")
```

```
[Out] integrate((b*log((x*e + d)^n*c) + a)^2*log(f*x^m)/x, x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\ln\left(f\,x^m\right)\,{\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)}^2}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((log(f*x^m)*(a + b*log(c*(d + e*x)^n))^2)/x,x)
[Out] int((log(f*x^m)*(a + b*log(c*(d + e*x)^n))^2)/x, x)
```

3.371 $\int \frac{\log(fx^m)(a+b\log(c(d+ex)^n))^2}{x^2}\,dx$

Optimal. Leaf size=607

$$-\frac{b^2emn^2\log^2(x)\log(d+ex)}{d}+\frac{2b^2emn^2\log\left(-\frac{ex}{d}\right)\log(d+ex)}{d}+\frac{2b^2en^2\log(x)\log\left(fx^m\right)\log(d+ex)}{d}-\frac{b^2emn}{}$$

```
[Out] -b^2*e*m*n^2*ln(x)^2*ln(e*x+d)/d+2*b^2*e*m*n^2*ln(-e*x/d)*ln(e*x+d)/d+2*b^2
*e*n^2*ln(x)*ln(f*x^m)*ln(e*x+d)/d-b^2*e*m*n^2*ln(e*x+d)^2/d-b^2*m*n^2*ln(e
*x+d)^2/x+b^2*e*m*n^2*ln(-e*x/d)*ln(e*x+d)^2/d-b^2*e*n^2*ln(f*x^m)*ln(e*x+d
)^2/d-b^2*n^2*ln(f*x^m)*ln(e*x+d)^2/x-2*b*n*(m*ln(x)-ln(f*x^m))*(e*x*ln(-e*
x/d)-(e*x+d)*ln(e*x+d))*(a-b*n*ln(e*x+d)+b*ln(c*(e*x+d)^n))/d/x-m*ln(x)*(a-
b*n*ln(e*x+d)+b*ln(c*(e*x+d)^n))^2/x-(m-m*ln(x)+ln(f*x^m))*(a-b*n*ln(e*x+d)
+b*ln(c*(e*x+d)^n))^2/x+b^2*e*m*n^2*ln(x)^2*ln(1+e*x/d)/d-2*b^2*e*n^2*ln(x)
*ln(f*x^m)*ln(1+e*x/d)/d-2*b^2*e*n^2*ln(f*x^m)*polylog(2,-e*x/d)/d+b*m*n*(a
-b*n*ln(e*x+d)+b*ln(c*(e*x+d)^n))*(2*e*x*ln(-e*x/d)-2*(e*x+d)*ln(e*x+d)-2*d
*ln(x)*ln(e*x+d)+e*x*(ln(x)^2-2*ln(x)*ln(1+e*x/d)-2*polylog(2,-e*x/d)))/d/x
+2*b^2*e*m*n^2*(1+ln(e*x+d))*polylog(2,1+e*x/d)/d+2*b^2*e*m*n^2*polylog(3,-
e*x/d)/d-2*b^2*e*m*n^2*polylog(3,1+e*x/d)/d
```

Rubi [F]
time = 0.02, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int \frac{\log\left(fx^m\right)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{x^2}\,dx$$

Verification is not applicable to the result.

```
[In] Int[(Log[f*x^m]*(a + b*Log[c*(d + e*x)^n])^2)/x^2,x]
```

```
[Out] Defer[Int][(Log[f*x^m]*(a + b*Log[c*(d + e*x)^n])^2)/x^2, x]
```

Rubi steps

$$\int \frac{\log\left(fx^m\right)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{x^2}\,dx=\int \frac{\log\left(fx^m\right)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{x^2}\,dx$$

Mathematica [A]
time = 0.45, size = 513, normalized size = 0.85

Antiderivative was successfully verified.

```
[In] Integrate[(Log[f*x^m]*(a + b*Log[c*(d + e*x)^n])^2)/x^2,x]
```

```
[Out] (2*b*n*(m*Log[x] - Log[f*x^m])*(-(e*x*Log[-((e*x)/d)]) + (d + e*x)*Log[d +
e*x])*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n]) - d*m*Log[x]*(a - b*n*L
og[d + e*x] + b*Log[c*(d + e*x)^n])^2 + d*(-m + m*Log[x] - Log[f*x^m])*(a -
 b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2 - b*m*n*(a - b*n*Log[d + e*x] +
 b*Log[c*(d + e*x)^n])*(-2*e*x*Log[-((e*x)/d)] + 2*(d + e*x)*Log[d + e*x] +
 2*d*Log[x]*Log[d + e*x] - e*x*(Log[x]^2 - 2*(Log[x]*Log[1 + (e*x)/d] + Pol
yLog[2, -((e*x)/d)]))) + b^2*n^2*(e*m*x*Log[x]^2*Log[d + e*x] + 2*e*m*x*Log
[-((e*x)/d)]*Log[d + e*x] - 2*e*m*x*Log[x]*Log[-((e*x)/d)]*Log[d + e*x] + 2
*e*x*Log[-((e*x)/d)]*Log[f*x^m]*Log[d + e*x] - d*m*Log[d + e*x]^2 - e*m*x*L
og[d + e*x]^2 + e*m*x*Log[-((e*x)/d)]*Log[d + e*x]^2 - d*Log[f*x^m]*Log[d +
 e*x]^2 - e*x*Log[f*x^m]*Log[d + e*x]^2 - e*m*x*Log[x]^2*Log[1 + (e*x)/d] -
 2*e*m*x*Log[x]*PolyLog[2, -((e*x)/d)] + 2*e*x*(m - m*Log[x] + Log[f*x^m] +
 m*Log[d + e*x])*PolyLog[2, 1 + (e*x)/d] + 2*e*m*x*PolyLog[3, -((e*x)/d)] -
 2*e*m*x*PolyLog[3, 1 + (e*x)/d]))/(d*x)
```

Maple [F]
time = 0.05, size = 0, normalized size = 0.00

$$\int \frac{\ln \left(f\,x^{m}\right) \left(a+b\ln \left(c(ex+d)^{n}\right)\right)^{2}}{x^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(f*x^m)*(a+b*ln(c*(e*x+d)^n))^2/x^2,x)
```

```
[Out] int(ln(f*x^m)*(a+b*ln(c*(e*x+d)^n))^2/x^2,x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(f*x^m)*(a+b*log(c*(e*x+d)^n))^2/x^2,x, algorithm="maxima")
```

```
[Out] -(b^2*(m + log(f)) + b^2*log(x^m))*log((x*e + d)^n)^2/x + integrate((b^2*d*
log(c)^2*log(f) + 2*a*b*d*log(c)*log(f) + a^2*d*log(f) + (b^2*log(c)^2*log(
f) + 2*a*b*log(c)*log(f) + a^2*log(f))*x*e + 2*(b^2*d*log(c)*log(f) + a*b*d
*log(f) + ((m*n + n*log(f) + log(c)*log(f))*b^2 + a*b*log(f))*x*e + (b^2*d*
log(c) + a*b*d + (b^2*(n + log(c)) + a*b)*x*e)*log(x^m))*log((x*e + d)^n) +
 (b^2*d*log(c)^2 + 2*a*b*d*log(c) + a^2*d + (b^2*log(c)^2 + 2*a*b*log(c) +
a^2)*x*e)*log(x^m))/(x^3*e + d*x^2), x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(f*x^m)*(a+b*log(c*(e*x+d)^n))^2/x^2,x, algorithm="fricas")
[Out] integral((b^2*log((x*e + d)^n*c)^2*log(f*x^m) + 2*a*b*log((x*e + d)^n*c)*lo
g(f*x^m) + a^2*log(f*x^m))/x^2, x)
```

Sympy [F(-1)] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(f*x**m)*(a+b*ln(c*(e*x+d)**n))**2/x**2,x)
[Out] Timed out
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(f*x^m)*(a+b*log(c*(e*x+d)^n))^2/x^2,x, algorithm="giac")
[Out] integrate((b*log((x*e + d)^n*c) + a)^2*log(f*x^m)/x^2, x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\ln\left(f\,x^m\right)\,{\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)}^2}{x^2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((log(f*x^m)*(a + b*log(c*(d + e*x)^n))^2)/x^2,x)
[Out] int((log(f*x^m)*(a + b*log(c*(d + e*x)^n))^2)/x^2, x)
```

3.372 $\int \frac{\log(fx^m)(a+b\log(c(d+ex)^n))^2}{x^3}\,dx$

Optimal. Leaf size=939

$$\frac{b^2e^2mn^2\log(x)}{d^2}-\frac{b^2e^2mn^2\log^2(x)}{2d^2}+\frac{b^2e^2mn^2\log\left(-\frac{ex}{d}\right)}{2d^2}+\frac{b^2e^2n^2\log(x)\log\left(fx^m\right)}{d^2}-\frac{3b^2e^2mn^2\log(d+ex)}{2d^2}-\frac{3b^2}{}$$

```
[Out] -1/4*b^2*m*n^2*ln(e*x+d)^2/x^2-1/2*b^2*n^2*ln(f*x^m)*ln(e*x+d)^2/x^2-b^2*e^
2*m*n^2*polylog(3,-e*x/d)/d^2+b^2*e^2*m*n^2*polylog(3,1+e*x/d)/d^2-1/2*m*ln
(x)*(a-b*n*ln(e*x+d)+b*ln(c*(e*x+d)^n))^2/x^2+b^2*e^2*m*n^2*ln(x)/d^2+b^2*e
^2*n^2*ln(x)*ln(f*x^m)/d^2-b^2*e^2*n^2*ln(f*x^m)*ln(e*x+d)/d^2-b^2*e^2*n^2*
(m-ln(f*x^m))*polylog(2,-e*x/d)/d^2-1/2*b^2*e^2*m*n^2*ln(x)^2/d^2+1/2*b^2*e
^2*m*n^2*ln(-e*x/d)/d^2-3/2*b^2*e^2*m*n^2*ln(e*x+d)/d^2+1/4*b^2*e^2*m*n^2*l
n(e*x+d)^2/d^2+1/2*b^2*e^2*n^2*ln(f*x^m)*ln(e*x+d)^2/d^2-1/4*(m-2*m*ln(x)+2
*ln(f*x^m))*(a-b*n*ln(e*x+d)+b*ln(c*(e*x+d)^n))^2/x^2+b*n*(m*ln(x)-ln(f*x^m
))*(e^2*x^2*ln(-e*x/d)+(e*x+d)*(e*x+(-e*x+d)*ln(e*x+d)))*(a-b*n*ln(e*x+d)+b
*ln(c*(e*x+d)^n))/d^2/x^2-1/2*b^2*e^2*m*n^2*ln(x)^2*ln(1+e*x/d)/d^2-1/2*b*m
*n*(a-b*n*ln(e*x+d)+b*ln(c*(e*x+d)^n))*(e*x*(e*x+d)+e^2*x^2*ln(-e*x/d)+(-e^
2*x^2+d^2)*ln(e*x+d)+2*d^2*ln(x)*ln(e*x+d)+e*x*(e*x*ln(x)^2+2*d*(1+ln(x))-2
*e*x*(ln(x)*ln(1+e*x/d)+polylog(2,-e*x/d))))/d^2/x^2-1/2*b^2*e^2*m*n^2*(1+2
*ln(e*x+d))*polylog(2,1+e*x/d)/d^2-b^2*e^2*m*n^2*ln(x)*ln(1+e*x/d)/d^2+b^2*
e^2*n^2*ln(x)*ln(f*x^m)*ln(1+e*x/d)/d^2+b^2*e^2*m*n^2*ln(x)*ln(e*x+d)/d^2-b
^2*e^2*n^2*ln(x)*ln(f*x^m)*ln(e*x+d)/d^2-3/2*b^2*e*m*n^2*ln(e*x+d)/d/x+1/2*
b^2*e^2*m*n^2*ln(x)^2*ln(e*x+d)/d^2-1/2*b^2*e^2*m*n^2*ln(-e*x/d)*ln(e*x+d)/
d^2-b^2*e*n^2*ln(f*x^m)*ln(e*x+d)/d/x-1/2*b^2*e^2*m*n^2*ln(-e*x/d)*ln(e*x+d
)^2/d^2
```

Rubi [F]
time = 0.02, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int \frac{\log\left(fx^m\right)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{x^3}\,dx$$

Verification is not applicable to the result.

```
[In] Int[(Log[f*x^m]*(a + b*Log[c*(d + e*x)^n])^2)/x^3,x]
```

```
[Out] Defer[Int][(Log[f*x^m]*(a + b*Log[c*(d + e*x)^n])^2)/x^3, x]
```

Rubi steps

$$\int \frac{\log\left(fx^m\right)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{x^3}\,dx=\int \frac{\log\left(fx^m\right)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{x^3}\,dx$$

Mathematica [A]
time = 0.64, size = 781, normalized size = 0.83

Antiderivative was successfully verified.

```
[In] Integrate[(Log[f*x^m]*(a + b*Log[c*(d + e*x)^n])^2)/x^3,x]
```

```
[Out] (4*b*n*(m*Log[x] - Log[f*x^m])*(e^2*x^2*Log[-((e*x)/d)] + (d + e*x)*(e*x +
(d - e*x)*Log[d + e*x]))*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n]) - 2*
d^2*m*Log[x]*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2 + d^2*(-m + 2*
m*Log[x] - 2*Log[f*x^m])*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2 -
2*b*m*n*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])*(e*x*(d + e*x) + e^2*
x^2*Log[-((e*x)/d)] + (d^2 - e^2*x^2)*Log[d + e*x] + 2*d^2*Log[x]*Log[d + e
*x] + e*x*(e*x*Log[x]^2 + 2*d*(1 + Log[x]) - 2*e*x*(Log[x]*Log[1 + (e*x)/d]
 + PolyLog[2, -((e*x)/d)]))) + b^2*n^2*(4*e^2*m*x^2*Log[x] - 2*e^2*m*x^2*Lo
g[x]^2 + 2*e^2*m*x^2*Log[-((e*x)/d)] + 4*e^2*x^2*Log[x]*Log[f*x^m] - 6*d*e*
m*x*Log[d + e*x] - 6*e^2*m*x^2*Log[d + e*x] + 4*e^2*m*x^2*Log[x]*Log[d + e*
x] - 2*e^2*m*x^2*Log[x]^2*Log[d + e*x] - 2*e^2*m*x^2*Log[-((e*x)/d)]*Log[d
+ e*x] + 4*e^2*m*x^2*Log[x]*Log[-((e*x)/d)]*Log[d + e*x] - 4*d*e*x*Log[f*x^
m]*Log[d + e*x] - 4*e^2*x^2*Log[f*x^m]*Log[d + e*x] - 4*e^2*x^2*Log[-((e*x)
/d)]*Log[f*x^m]*Log[d + e*x] - d^2*m*Log[d + e*x]^2 + e^2*m*x^2*Log[d + e*x
]^2 - 2*e^2*m*x^2*Log[-((e*x)/d)]*Log[d + e*x]^2 - 2*d^2*Log[f*x^m]*Log[d +
 e*x]^2 + 2*e^2*x^2*Log[f*x^m]*Log[d + e*x]^2 - 4*e^2*m*x^2*Log[x]*Log[1 +
(e*x)/d] + 2*e^2*m*x^2*Log[x]^2*Log[1 + (e*x)/d] + 4*e^2*m*x^2*(-1 + Log[x]
)*PolyLog[2, -((e*x)/d)] - 2*e^2*x^2*(m - 2*m*Log[x] + 2*Log[f*x^m] + 2*m*L
og[d + e*x])*PolyLog[2, 1 + (e*x)/d] - 4*e^2*m*x^2*PolyLog[3, -((e*x)/d)] +
 4*e^2*m*x^2*PolyLog[3, 1 + (e*x)/d]))/(4*d^2*x^2)
```

Maple [F]
time = 0.04, size = 0, normalized size = 0.00

$$\int \frac{\ln\left(f\,x^{m}\right)\left(a+b\ln\left(c(ex+d)^{n}\right)\right)^{2}}{x^{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(f*x^m)*(a+b*ln(c*(e*x+d)^n))^2/x^3,x)
```

```
[Out] int(ln(f*x^m)*(a+b*ln(c*(e*x+d)^n))^2/x^3,x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(f*x^m)*(a+b*log(c*(e*x+d)^n))^2/x^3,x, algorithm="maxima")
```

```
[Out] -1/4*(b^2*(m + 2*log(f)) + 2*b^2*log(x^m))*log((x*e + d)^n)^2/x^2 + integra
te(1/2*(2*b^2*d*log(c)^2*log(f) + 4*a*b*d*log(c)*log(f) + 2*a^2*d*log(f) +
2*(b^2*log(c)^2*log(f) + 2*a*b*log(c)*log(f) + a^2*log(f))*x*e + (4*b^2*d*l
og(c)*log(f) + 4*a*b*d*log(f) + ((m*n + 2*n*log(f) + 4*log(c)*log(f))*b^2 +
 4*a*b*log(f))*x*e + 2*(2*b^2*d*log(c) + 2*a*b*d + (b^2*(n + 2*log(c)) + 2*
a*b)*x*e)*log(x^m))*log((x*e + d)^n) + 2*(b^2*d*log(c)^2 + 2*a*b*d*log(c) +
 a^2*d + (b^2*log(c)^2 + 2*a*b*log(c) + a^2)*x*e)*log(x^m))/(x^4*e + d*x^3)
, x)
```

Fricas [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(f*x^m)*(a+b*log(c*(e*x+d)^n))^2/x^3,x, algorithm="fricas")
```

```
[Out] integral((b^2*log((x*e + d)^n*c)^2*log(f*x^m) + 2*a*b*log((x*e + d)^n*c)*lo
g(f*x^m) + a^2*log(f*x^m))/x^3, x)
```

Sympy [**F(-1)**] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(f*x**m)*(a+b*ln(c*(e*x+d)**n))**2/x**3,x)
```

```
[Out] Timed out
```

Giac [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(f*x^m)*(a+b*log(c*(e*x+d)^n))^2/x^3,x, algorithm="giac")
```

```
[Out] integrate((b*log((x*e + d)^n*c) + a)^2*log(f*x^m)/x^3, x)
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\ln\left(f\,x^m\right)\,{\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)}^2}{x^3} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((log(f*x^m)*(a + b*log(c*(d + e*x)^n))^2)/x^3,x)
```

```
[Out] int((log(f*x^m)*(a + b*log(c*(d + e*x)^n))^2)/x^3, x)
```

3.373 $\int \log(fx^m)\,(a+b\log(c(d+ex)^n))^3\,dx$

Optimal. Leaf size=522

$$-12ab^2mn^2x+18b^3mn^3x-6b^2mn^2(a-bn)x+6ab^2n^2x\log(fx^m)-6b^3n^3x\log(fx^m)-\frac{18b^3mn^2(d+ex)\log(c$$

```
[Out] -12*a*b^2*m*n^2*x+18*b^3*m*n^3*x-6*b^2*m*n^2*(-b*n+a)*x+6*a*b^2*n^2*x*ln(f*
x^m)-6*b^3*n^3*x*ln(f*x^m)-18*b^3*m*n^2*(e*x+d)*ln(c*(e*x+d)^n)/e-6*b^3*d*m
*n^2*ln(-e*x/d)*ln(c*(e*x+d)^n)/e+6*b^3*n^2*(e*x+d)*ln(f*x^m)*ln(c*(e*x+d)^
n)/e+6*b*m*n*(e*x+d)*(a+b*ln(c*(e*x+d)^n))^2/e+3*b*d*m*n*ln(-e*x/d)*(a+b*ln
(c*(e*x+d)^n))^2/e-3*b*n*(e*x+d)*ln(f*x^m)*(a+b*ln(c*(e*x+d)^n))^2/e-m*(e*x
+d)*(a+b*ln(c*(e*x+d)^n))^3/e-d*m*ln(-e*x/d)*(a+b*ln(c*(e*x+d)^n))^3/e+(e*x
+d)*ln(f*x^m)*(a+b*ln(c*(e*x+d)^n))^3/e-6*b^3*d*m*n^3*polylog(2,1+e*x/d)/e+
6*b^2*d*m*n^2*(a+b*ln(c*(e*x+d)^n))*polylog(2,1+e*x/d)/e-3*b*d*m*n*(a+b*ln(
c*(e*x+d)^n))^2*polylog(2,1+e*x/d)/e-6*b^3*d*m*n^3*polylog(3,1+e*x/d)/e+6*b
^2*d*m*n^2*(a+b*ln(c*(e*x+d)^n))*polylog(3,1+e*x/d)/e-6*b^3*d*m*n^3*polylog
(4,1+e*x/d)/e
```

Rubi [A]
time = 0.58, antiderivative size = 522, normalized size of antiderivative = 1.00, number of steps used = 28, number of rules used = 13, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.565$, Rules used = {2436, 2333, 2332, 2470, 2458, 45, 2393, 2354, 2438, 2395, 2421, 6724, 2430}

$$\frac{6b^2dmn^2\text{PolyLog}(2,\frac{ex}{d}+1)(a+b\log(c(d+ex)^n))}{e}+\frac{6b^2dmn^2\text{PolyLog}(3,\frac{ex}{d}+1)(a+b\log(c(d+ex)^n))}{e}-\frac{3bdmn\text{PolyLog}(2,\frac{ex}{d}+1)(a+b\log(c(d+ex)^n))^2}{e}-\frac{6b^3dmn^3\text{PolyLog}(2,\frac{ex}{d}+1)}{e}-\frac{6b^3dmn^3\text{PolyLog}(3,\frac{ex}{d}+1)}{e}-\frac{6b^3dmn^3\text{PolyLog}(4,\frac{ex}{d}+1)}{e}+6ab^2n^2x\log(fx^m)-12ab^2mn^2x-6b^2mn^2x(a-bn)-\frac{3bn(d+ex)\log(fx^m)(a+b\log(c(d+ex)^n))^2}{e}+\frac{(d+ex)\log(fx^m)(a+b\log(c(d+ex)^n))^3}{e}+\frac{6bmn(d+ex)(a+b\log(c(d+ex)^n))^2}{e}+\frac{3bdmn\log(-\frac{ex}{d})(a+b\log(c(d+ex)^n))^2}{e}-\frac{m(d+ex)(a+b\log(c(d+ex)^n))^3}{e}-\frac{dm\log(-\frac{ex}{d})(a+b\log(c(d+ex)^n))^3}{e}+\frac{6b^3n^2(d+ex)\log(fx^m)\log(c(d+ex)^n)}{e}-\frac{18b^3mn^2(d+ex)\log(c(d+ex)^n)}{e}-\frac{6b^3dmn^2\log(-\frac{ex}{d})\log(c(d+ex)^n)}{e}-6b^3n^3x\log(fx^m)+18b^3mn^3x$$

Antiderivative was successfully verified.

```
[In] Int[Log[f*x^m]*(a + b*Log[c*(d + e*x)^n])^3,x]
```

```
[Out] -12*a*b^2*m*n^2*x + 18*b^3*m*n^3*x - 6*b^2*m*n^2*(a - b*n)*x + 6*a*b^2*n^2*
x*Log[f*x^m] - 6*b^3*n^3*x*Log[f*x^m] - (18*b^3*m*n^2*(d + e*x)*Log[c*(d +
e*x)^n])/e - (6*b^3*d*m*n^2*Log[-((e*x)/d)]*Log[c*(d + e*x)^n])/e + (6*b^3*
n^2*(d + e*x)*Log[f*x^m]*Log[c*(d + e*x)^n])/e + (6*b*m*n*(d + e*x)*(a + b*
Log[c*(d + e*x)^n])^2)/e + (3*b*d*m*n*Log[-((e*x)/d)]*(a + b*Log[c*(d + e*x
)^n])^2)/e - (3*b*n*(d + e*x)*Log[f*x^m]*(a + b*Log[c*(d + e*x)^n])^2)/e -
(m*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^3)/e - (d*m*Log[-((e*x)/d)]*(a + b*
Log[c*(d + e*x)^n])^3)/e + ((d + e*x)*Log[f*x^m]*(a + b*Log[c*(d + e*x)^n])
^3)/e - (6*b^3*d*m*n^3*PolyLog[2, 1 + (e*x)/d])/e + (6*b^2*d*m*n^2*(a + b*L
og[c*(d + e*x)^n])*PolyLog[2, 1 + (e*x)/d])/e - (3*b*d*m*n*(a + b*Log[c*(d
+ e*x)^n])^2*PolyLog[2, 1 + (e*x)/d])/e - (6*b^3*d*m*n^3*PolyLog[3, 1 + (e*
x)/d])/e + (6*b^2*d*m*n^2*(a + b*Log[c*(d + e*x)^n])*PolyLog[3, 1 + (e*x)/d
])/e - (6*b^3*d*m*n^3*PolyLog[4, 1 + (e*x)/d])/e
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
```

```
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2332

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2333

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2354

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[Log[1 + e*(x/d)]*((a + b*Log[c*x^n])^p/e), x] - Dist[b*n*(p/e),
 Int[Log[1 + e*(x/d)]*((a + b*Log[c*x^n])^(p - 1)/x), x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((f_.)*(x_))^(m_.)*((d_) + (e_.)*
(x_)^(r_.))^(q_.), x_Symbol] :> With[{u = ExpandIntegrand[a + b*Log[c*x^n],
 (f*x)^m*(d + e*x^r)^q, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e,
 f, m, n, q, r}, x] && IntegerQ[q] && (GtQ[q, 0] || (IntegerQ[m] && Integer
Q[r]))
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((f_.)*(x_))^(m_.)*((d_) +
(e_.)*(x_)^(r_.))^(q_.), x_Symbol] :> With[{u = ExpandIntegrand[(a + b*Log[
c*x^n])^p, (f*x)^m*(d + e*x^r)^q, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b
, c, d, e, f, m, n, p, q, r}, x] && IntegerQ[q] && (GtQ[q, 0] || (IGtQ[p, 0
] && IntegerQ[m] && IntegerQ[r]))
```

Rule 2421

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> Simp[(-PolyLog[2, (-d)*f*x^m])*((a + b*Log[c
*x^n])^p/m), x] + Dist[b*n*(p/m), Int[PolyLog[2, (-d)*f*x^m]*((a + b*Log[c*
x^n])^(p - 1)/x), x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0
] && EqQ[d*e, 1]
```

Rule 2430

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*PolyLog[k_, (e_.)*(x_)^(q_
.)])/(x_), x_Symbol] :> Simp[PolyLog[k + 1, e*x^q]*((a + b*Log[c*x^n])^p/q)
, x] - Dist[b*n*(p/q), Int[PolyLog[k + 1, e*x^q]*((a + b*Log[c*x^n])^(p - 1
)/x), x], x] /; FreeQ[{a, b, c, e, k, n, q}, x] && GtQ[p, 0]
```

Rule 2436

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2458

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[(g*(x/e))^q*((e*h - d*i)/e + i*(x/e))^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2470

```
Int[Log[(f_.)*(x_)^(m_.)]*((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_
.))^(p_), x_Symbol] :> With[{u = IntHide[(a + b*Log[c*(d + e*x)^n])^p, x]},
 Dist[Log[f*x^m], u, x] - Dist[m, Int[Dist[1/x, u, x], x], x]] /; FreeQ[{a,
 b, c, d, e, f, m, n}, x] && IGtQ[p, 1]
```

Rule 6724

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \log(fx^m)(a+b\log(c(d+ex)^n))^3\,dx = 6ab^2n^2x\log(fx^m) - 6b^3n^3x\log(fx^m) + \frac{6b^3n^2(d+ex)\log(fx^m)}{e}$$

$$= -6b^2mn^2(a-bn)x + 6ab^2n^2x\log(fx^m) - 6b^3n^3x\log(fx^m) + \frac{6b}{}$$

$$= -6b^2mn^2(a-bn)x + 6ab^2n^2x\log(fx^m) - 6b^3n^3x\log(fx^m) + \frac{6b}{}$$

$$= -6b^2mn^2(a-bn)x + 6ab^2n^2x\log(fx^m) - 6b^3n^3x\log(fx^m) + \frac{6b}{}$$

$$= -6b^2mn^2(a-bn)x + 6ab^2n^2x\log(fx^m) - 6b^3n^3x\log(fx^m) + \frac{6b}{}$$

$$= 6b^3mn^3x - 6b^2mn^2(a-bn)x + 6ab^2n^2x\log(fx^m) - 6b^3n^3x\log($$

$$= -6ab^2mn^2x + 6b^3mn^3x - 6b^2mn^2(a-bn)x + 6ab^2n^2x\log(fx^m)$$

$$= -12ab^2mn^2x + 12b^3mn^3x - 6b^2mn^2(a-bn)x + 6ab^2n^2x\log(fx$$

$$= -12ab^2mn^2x + 18b^3mn^3x - 6b^2mn^2(a-bn)x + 6ab^2n^2x\log(fx$$

Mathematica [**F**]
time = 0.30, size = 0, normalized size = 0.00

$$\int \log(fx^m)(a+b\log(c(d+ex)^n))^3\,dx$$

Verification is not applicable to the result.

```
[In] Integrate[Log[f*x^m]*(a + b*Log[c*(d + e*x)^n])^3,x]
[Out] Integrate[Log[f*x^m]*(a + b*Log[c*(d + e*x)^n])^3, x]
```

Maple [**F**]
time = 0.06, size = 0, normalized size = 0.00

$$\int \ln(f\,x^m)(a+b\ln(c(ex+d)^n))^3\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(f*x^m)*(a+b*ln(c*(e*x+d)^n))^3,x)
[Out] int(ln(f*x^m)*(a+b*ln(c*(e*x+d)^n))^3,x)
```

Maxima [**F**]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(f*x^m)*(a+b*log(c*(e*x+d)^n))^3,x, algorithm="maxima")
[Out] -(b^3*(m - log(f))*x - b^3*x*log(x^m))*log((x*e + d)^n)^3 + integrate((b^3*
d*log(c)^3*log(f) + 3*a*b^2*d*log(c)^2*log(f) + 3*a^2*b*d*log(c)*log(f) + a
^3*d*log(f) + (b^3*log(c)^3*log(f) + 3*a*b^2*log(c)^2*log(f) + 3*a^2*b*log(
c)*log(f) + a^3*log(f))*x*e + 3*(b^3*d*log(c)*log(f) + a*b^2*d*log(f) + ((m
*n - n*log(f) + log(c)*log(f))*b^3 + a*b^2*log(f))*x*e + (b^3*d*log(c) + a*
b^2*d - (b^3*(n - log(c)) - a*b^2)*x*e)*log(x^m))*log((x*e + d)^n)^2 + 3*(b
^3*d*log(c)^2*log(f) + 2*a*b^2*d*log(c)*log(f) + a^2*b*d*log(f) + (b^3*log(
c)^2*log(f) + 2*a*b^2*log(c)*log(f) + a^2*b*log(f))*x*e + (b^3*d*log(c)^2 +
 2*a*b^2*d*log(c) + a^2*b*d + (b^3*log(c)^2 + 2*a*b^2*log(c) + a^2*b)*x*e)*
log(x^m))*log((x*e + d)^n) + (b^3*d*log(c)^3 + 3*a*b^2*d*log(c)^2 + 3*a^2*b
*d*log(c) + a^3*d + (b^3*log(c)^3 + 3*a*b^2*log(c)^2 + 3*a^2*b*log(c) + a^3
)*x*e)*log(x^m))/(x*e + d), x)
```

Fricas [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(f*x^m)*(a+b*log(c*(e*x+d)^n))^3,x, algorithm="fricas")
[Out] integral(b^3*log((x*e + d)^n*c)^3*log(f*x^m) + 3*a*b^2*log((x*e + d)^n*c)^2
*log(f*x^m) + 3*a^2*b*log((x*e + d)^n*c)*log(f*x^m) + a^3*log(f*x^m), x)
```

Sympy [**F(-1)**] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(f*x**m)*(a+b*ln(c*(e*x+d)**n))**3,x)
[Out] Timed out
```

Giac [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(f*x^m)*(a+b*log(c*(e*x+d)^n))^3,x, algorithm="giac")
[Out] integrate((b*log((x*e + d)^n*c) + a)^3*log(f*x^m), x)
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.00

$$\int \ln\left(f\,x^m\right)\,{\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)}^3\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(log(f*x^m)*(a + b*log(c*(d + e*x)^n))^3,x)
[Out] int(log(f*x^m)*(a + b*log(c*(d + e*x)^n))^3, x)
```

3.374 $\int \frac{\log(x)\log^2(a+bx)}{x}\,dx$

Optimal. Leaf size=519

$$\frac{1}{12}\left(\log^4\left(-\frac{bx}{a}\right)+6\log^2\left(-\frac{bx}{a}\right)\log^2\left(-\frac{bx}{a+bx}\right)-4\left(\log\left(-\frac{bx}{a}\right)+\log\left(\frac{a}{a+bx}\right)\right)\log^3\left(-\frac{bx}{a+bx}\right)+\right.$$

```
[Out] 1/12*ln(-b*x/a)^4+1/2*ln(-b*x/a)^2*ln(-b*x/(b*x+a))^2-1/3*(ln(-b*x/a)+ln(a/
(b*x+a)))*ln(-b*x/(b*x+a))^3+1/12*ln(-b*x/(b*x+a))^4+1/2*ln(x)^2*ln(b*x+a)^
2+1/3*(2*ln(-b*x/a)^3-3*ln(x)^2*ln(b*x+a))*ln(1+b*x/a)+1/2*(ln(x)-ln(-b*x/a
))*(ln(x)+3*ln(-b*x/a))*ln(1+b*x/a)^2-1/3*ln(-b*x/a)^2*ln(-b*x/(b*x+a))*(ln
(-b*x/a)+3*ln(1+b*x/a))+(ln(-b*x/a)^2-2*ln(-b*x/a)*(ln(-b*x/(b*x+a))+ln(1+b
*x/a))+2*ln(x)*(-ln(b*x+a)+ln(1+b*x/a)))*polylog(2,-b*x/a)-ln(-b*x/(b*x+a))
^2*polylog(2,b*x/(b*x+a))+(ln(-b*x/a)-ln(-b*x/(b*x+a)))^2*polylog(2,1+b*x/a
)+2*(ln(x)-ln(-b*x/a))*ln(1+b*x/a)*polylog(2,1+b*x/a)+2*(ln(-b*x/(b*x+a))+l
n(b*x+a))*polylog(3,-b*x/a)+2*ln(-b*x/(b*x+a))*polylog(3,b*x/(b*x+a))+2*(-l
n(x)+ln(-b*x/(b*x+a)))*polylog(3,1+b*x/a)-2*polylog(4,-b*x/a)-2*polylog(4,b
*x/(b*x+a))+2*polylog(4,1+b*x/a)
```

Rubi [F]
time = 0.03, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int \frac{\log(x)\log^2(a+bx)}{x}\,dx$$

Verification is not applicable to the result.

```
[In] Int[(Log[x]*Log[a + b*x]^2)/x,x]
```

```
[Out] (Log[x]^2*Log[a + b*x]^2)/2 - b*Defer[Int][(Log[x]^2*Log[a + b*x])/(a + b*x
), x]
```

Rubi steps

$$\int \frac{\log(x)\log^2(a+bx)}{x}\,dx=\frac{1}{2}\log^2(x)\log^2(a+bx)-b\int \frac{\log^2(x)\log(a+bx)}{a+bx}\,dx$$

Mathematica [A]
time = 0.07, size = 519, normalized size = 1.00

Antiderivative was successfully verified.

```
[In] Integrate[(Log[x]*Log[a + b*x]^2)/x,x]
```

```
[Out] (Log[-((b*x)/a)]^4 + 6*Log[-((b*x)/a)]^2*Log[-((b*x)/(a + b*x))]^2 - 4*(Log
[-((b*x)/a)] + Log[a/(a + b*x)])*Log[-((b*x)/(a + b*x))]^3 + Log[-((b*x)/(a
 + b*x))]^4 + 6*Log[x]^2*Log[a + b*x]^2 + 4*(2*Log[-((b*x)/a)]^3 - 3*Log[x]
^2*Log[a + b*x])*Log[1 + (b*x)/a] + 6*(Log[x] - Log[-((b*x)/a)])*(Log[x] +
3*Log[-((b*x)/a)])*Log[1 + (b*x)/a]^2 - 4*Log[-((b*x)/a)]^2*Log[-((b*x)/(a
+ b*x))]*(Log[-((b*x)/a)] + 3*Log[1 + (b*x)/a]) + 12*(Log[-((b*x)/a)]^2 - 2
*Log[-((b*x)/a)]*(Log[-((b*x)/(a + b*x))] + Log[1 + (b*x)/a]) + 2*Log[x]*(-
Log[a + b*x] + Log[1 + (b*x)/a]))*PolyLog[2, -((b*x)/a)] - 12*Log[-((b*x)/(
a + b*x))]^2*PolyLog[2, (b*x)/(a + b*x)] + 12*(Log[-((b*x)/a)] - Log[-((b*x
)/(a + b*x))])^2*PolyLog[2, 1 + (b*x)/a] + 24*(Log[x] - Log[-((b*x)/a)])*Lo
g[1 + (b*x)/a]*PolyLog[2, 1 + (b*x)/a] + 24*(Log[-((b*x)/(a + b*x))] + Log[
a + b*x])*PolyLog[3, -((b*x)/a)] + 24*Log[-((b*x)/(a + b*x))]*PolyLog[3, (b
*x)/(a + b*x)] + 24*(-Log[x] + Log[-((b*x)/(a + b*x))])*PolyLog[3, 1 + (b*x
)/a] - 24*(PolyLog[4, -((b*x)/a)] + PolyLog[4, (b*x)/(a + b*x)] - PolyLog[4
, 1 + (b*x)/a]))/12
```

Maple [F]
time = 0.31, size = 0, normalized size = 0.00

$$\int \frac{\ln(x)\ln(bx+a)^2}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(x)/x*ln(b*x+a)^2,x)
```

```
[Out] int(ln(x)/x*ln(b*x+a)^2,x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(x)*log(b*x+a)^2/x,x, algorithm="maxima")
```

```
[Out] 1/2*log(b*x + a)^2*log(x)^2 - b*integrate(log(b*x + a)*log(x)^2/(b*x + a),
x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(x)*log(b*x+a)^2/x,x, algorithm="fricas")
```

```
[Out] integral(log(b*x + a)^2*log(x)/x, x)
```

Sympy [**F**]
time = 0.00, size = 0, normalized size = 0.00

$$-b\int\frac{\log{(x)}^2\log{(a+bx)}}{a+bx}\,dx+\frac{\log{(x)}^2\log{(a+bx)}^2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(x)*ln(b*x+a)**2/x,x)
```

```
[Out] -b*Integral(log(x)**2*log(a + b*x)/(a + b*x), x) + log(x)**2*log(a + b*x)**
2/2
```

Giac [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(x)*log(b*x+a)^2/x,x, algorithm="giac")
```

```
[Out] integrate(log(b*x + a)^2*log(x)/x, x)
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.00

$$\int\frac{{\ln\left(a+b\,x\right)}^2\,\ln\left(x\right)}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((log(a + b*x)^2*log(x))/x,x)
```

```
[Out] int((log(a + b*x)^2*log(x))/x, x)
```

3.375 $\int \frac{\log(fx^m)}{a+b\log(c(d+ex)^n)}\,dx$

Optimal. Leaf size=26

$$\operatorname{Int}\left(\frac{\log(fx^m)}{a+b\log(c(d+ex)^n)},x\right)$$

```
[Out] Unintegrable(ln(f*x^m)/(a+b*ln(c*(e*x+d)^n)),x)
```

Rubi [A]
time = 0.01, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int \frac{\log(fx^m)}{a+b\log(c(d+ex)^n)}\,dx$$

Verification is not applicable to the result.

```
[In] Int[Log[f*x^m]/(a + b*Log[c*(d + e*x)^n]),x]
[Out] Defer[Int][Log[f*x^m]/(a + b*Log[c*(d + e*x)^n]), x]
```

Rubi steps

$$\int \frac{\log(fx^m)}{a+b\log(c(d+ex)^n)}\,dx = \int \frac{\log(fx^m)}{a+b\log(c(d+ex)^n)}\,dx$$

Mathematica [A]
time = 0.03, size = 0, normalized size = 0.00

$$\int \frac{\log(fx^m)}{a+b\log(c(d+ex)^n)}\,dx$$

Verification is not applicable to the result.

```
[In] Integrate[Log[f*x^m]/(a + b*Log[c*(d + e*x)^n]),x]
[Out] Integrate[Log[f*x^m]/(a + b*Log[c*(d + e*x)^n]), x]
```

Maple [A]
time = 0.04, size = 0, normalized size = 0.00

$$\int \frac{\ln(f\,x^m)}{a+b\ln(c\,(ex+d)^n)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(f*x^m)/(a+b*ln(c*(e*x+d)^n)),x)
[Out] int(ln(f*x^m)/(a+b*ln(c*(e*x+d)^n)),x)
```

Maxima [A]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(f*x^m)/(a+b*log(c*(e*x+d)^n)),x, algorithm="maxima")
[Out] integrate(log(f*x^m)/(b*log((x*e + d)^n*c) + a), x)
```

Fricas [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(f*x^m)/(a+b*log(c*(e*x+d)^n)),x, algorithm="fricas")
[Out] integral(log(f*x^m)/(b*log((x*e + d)^n*c) + a), x)
```

Sympy [A]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\log\left(fx^{m}\right)}{a + b\log\left(c\left(d + ex\right)^{n}\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(f*x**m)/(a+b*ln(c*(e*x+d)**n)),x)
[Out] Integral(log(f*x**m)/(a + b*log(c*(d + e*x)**n)), x)
```

Giac [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(f*x^m)/(a+b*log(c*(e*x+d)^n)),x, algorithm="giac")
[Out] integrate(log(f*x^m)/(b*log((x*e + d)^n*c) + a), x)
```

Mupad [A]
time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{\ln\left(f\,x^m\right)}{a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(log(f*x^m)/(a + b*log(c*(d + e*x)^n)),x)
[Out] int(log(f*x^m)/(a + b*log(c*(d + e*x)^n)), x)
```

3.376 $\int \frac{\log(fx^m)}{(a+b\log(c(d+ex)^n))^2}\,dx$

Optimal. Leaf size=26

$$\text{Int}\left(\frac{\log(fx^m)}{(a+b\log(c(d+ex)^n))^2},x\right)$$

```
[Out] Unintegrable(ln(f*x^m)/(a+b*ln(c*(e*x+d)^n))^2,x)
```

Rubi [A]
time = 0.01, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int \frac{\log(fx^m)}{(a+b\log(c(d+ex)^n))^2}\,dx$$

Verification is not applicable to the result.

```
[In] Int[Log[f*x^m]/(a + b*Log[c*(d + e*x)^n])^2,x]
[Out] Defer[Int][Log[f*x^m]/(a + b*Log[c*(d + e*x)^n])^2, x]
```

Rubi steps

$$\int \frac{\log(fx^m)}{(a+b\log(c(d+ex)^n))^2}\,dx = \int \frac{\log(fx^m)}{(a+b\log(c(d+ex)^n))^2}\,dx$$

Mathematica [A]
time = 0.32, size = 0, normalized size = 0.00

$$\int \frac{\log(fx^m)}{(a+b\log(c(d+ex)^n))^2}\,dx$$

Verification is not applicable to the result.

```
[In] Integrate[Log[f*x^m]/(a + b*Log[c*(d + e*x)^n])^2,x]
[Out] Integrate[Log[f*x^m]/(a + b*Log[c*(d + e*x)^n])^2, x]
```

Maple [A]
time = 0.04, size = 0, normalized size = 0.00

$$\int \frac{\ln(f\,x^m)}{(a+b\ln(c\,(ex+d)^n))^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(f*x^m)/(a+b*ln(c*(e*x+d)^n))^2,x)
```

```
[Out] int(ln(f*x^m)/(a+b*ln(c*(e*x+d)^n))^2,x)
```

Maxima [A]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(f*x^m)/(a+b*log(c*(e*x+d)^n))^2,x, algorithm="maxima")
```

```
[Out] -(x*e*log(f) + d*log(f) + (x*e + d)*log(x^m))/(b^2*n*e*log((x*e + d)^n) + (
b^2*n*log(c) + a*b*n)*e) + integrate(((m + log(f))*x*e + x*e*log(x^m) + d*m
)/(b^2*n*x*e*log((x*e + d)^n) + (b^2*n*log(c) + a*b*n)*x*e), x)
```

Fricas [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(f*x^m)/(a+b*log(c*(e*x+d)^n))^2,x, algorithm="fricas")
```

```
[Out] integral(log(f*x^m)/(b^2*log((x*e + d)^n*c)^2 + 2*a*b*log((x*e + d)^n*c) +
a^2), x)
```

Sympy [A]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\log \left(fx^{m}\right)}{\left(a + b\log \left(c\left(d + ex\right)^{n}\right)\right)^{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(f*x**m)/(a+b*ln(c*(e*x+d)**n))**2,x)
```

```
[Out] Integral(log(f*x**m)/(a + b*log(c*(d + e*x)**n))**2, x)
```

Giac [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(f*x^m)/(a+b*log(c*(e*x+d)^n))^2,x, algorithm="giac")
```

```
[Out] integrate(log(f*x^m)/(b*log((x*e + d)^n*c) + a)^2, x)
```

Mupad [A]
time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{\ln\left(f\,x^m\right)}{\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(log(f*x^m)/(a + b*log(c*(d + e*x)^n))^2,x)
[Out] int(log(f*x^m)/(a + b*log(c*(d + e*x)^n))^2, x)
```

3.377 $\int \log(fx^m)(a+b\log(c(d+ex)^n))^p\,dx$

Optimal. Leaf size=26

$$\text{Int}(\log(fx^m)(a+b\log(c(d+ex)^n))^p, x)$$

```
[Out] Unintegrable(ln(f*x^m)*(a+b*ln(c*(e*x+d)^n))^p,x)
```

Rubi [A]
time = 0.01, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int \log(fx^m)(a+b\log(c(d+ex)^n))^p\,dx$$

Verification is not applicable to the result.

```
[In] Int[Log[f*x^m]*(a + b*Log[c*(d + e*x)^n])^p,x]
```

```
[Out] Defer[Int][Log[f*x^m]*(a + b*Log[c*(d + e*x)^n])^p, x]
```

Rubi steps

$$\int \log(fx^m)(a+b\log(c(d+ex)^n))^p\,dx = \int \log(fx^m)(a+b\log(c(d+ex)^n))^p\,dx$$

Mathematica [A]
time = 0.07, size = 0, normalized size = 0.00

$$\int \log(fx^m)(a+b\log(c(d+ex)^n))^p\,dx$$

Verification is not applicable to the result.

```
[In] Integrate[Log[f*x^m]*(a + b*Log[c*(d + e*x)^n])^p,x]
```

```
[Out] Integrate[Log[f*x^m]*(a + b*Log[c*(d + e*x)^n])^p, x]
```

Maple [A]
time = 0.05, size = 0, normalized size = 0.00

$$\int \ln(f\,x^m)(a+b\ln(c(ex+d)^n))^p\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(f*x^m)*(a+b*ln(c*(e*x+d)^n))^p,x)
[Out] int(ln(f*x^m)*(a+b*ln(c*(e*x+d)^n))^p,x)
```

Maxima [**F(-2)**]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(f*x^m)*(a+b*log(c*(e*x+d)^n))^p,x, algorithm="maxima")
[Out] Exception raised: RuntimeError >> ECL says: In function CAR, the value of t
he first argument is  0which is not of the expected type LIST
```

Fricas [**A**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(f*x^m)*(a+b*log(c*(e*x+d)^n))^p,x, algorithm="fricas")
[Out] integral((b*log((x*e + d)^n*c) + a)^p*log(f*x^m), x)
```

Sympy [**F(-1)**] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(f*x**m)*(a+b*ln(c*(e*x+d)**n))**p,x)
[Out] Timed out
```

Giac [**A**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(f*x^m)*(a+b*log(c*(e*x+d)^n))^p,x, algorithm="giac")
[Out] integrate((b*log((x*e + d)^n*c) + a)^p*log(f*x^m), x)
```

Mupad [**A**]
time = 0.00, size = -1, normalized size = -0.04

$$\int \ln\left(f\,x^m\right)\,{\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)}^p \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(log(f*x^m)*(a + b*log(c*(d + e*x)^n))^p,x)
[Out] int(log(f*x^m)*(a + b*log(c*(d + e*x)^n))^p, x)
```

3.378 $\int \frac{\log(a+bx)\log(c+dx)}{x}\,dx$

Optimal. Leaf size=364

$$\log\left(-\frac{bx}{a}\right)\log(a+bx)\log(c+dx)+\frac{1}{2}\left(\log\left(-\frac{bx}{a}\right)+\log\left(\frac{bc-ad}{b(c+dx)}\right)-\log\left(-\frac{(bc-ad)x}{a(c+dx)}\right)\right)\log^2\left(\frac{a(c+}{c(a+}\right.$$

```
[Out] ln(-b*x/a)*ln(b*x+a)*ln(d*x+c)+1/2*(ln(-b*x/a)+ln((-a*d+b*c)/b/(d*x+c))-ln(
-(-a*d+b*c)*x/a/(d*x+c)))*ln(a*(d*x+c)/c/(b*x+a))^2-1/2*(ln(-b*x/a)-ln(-d*x
/c))*(ln(b*x+a)+ln(a*(d*x+c)/c/(b*x+a)))^2+(ln(d*x+c)-ln(a*(d*x+c)/c/(b*x+a
)))*polylog(2,1+b*x/a)+ln(a*(d*x+c)/c/(b*x+a))*polylog(2,c*(b*x+a)/a/(d*x+c
))-ln(a*(d*x+c)/c/(b*x+a))*polylog(2,d*(b*x+a)/b/(d*x+c))+(ln(b*x+a)+ln(a*(
d*x+c)/c/(b*x+a)))*polylog(2,1+d*x/c)-polylog(3,1+b*x/a)+polylog(3,c*(b*x+a
)/a/(d*x+c))-polylog(3,d*(b*x+a)/b/(d*x+c))-polylog(3,1+d*x/c)
```

Rubi [A]
time = 0.04, antiderivative size = 364, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.062, Rules used = {2485}

$$\text{PolyLog}\left(3,\frac{c(a+bx)}{a(c+dx)}\right)-\text{PolyLog}\left(3,\frac{d(a+bx)}{b(c+dx)}\right)+\log\left(\frac{a(c+dx)}{c(a+bx)}\right)\text{PolyLog}\left(2,\frac{c(a+bx)}{a(c+dx)}\right)-\log\left(\frac{a(c+dx)}{c(a+bx)}\right)\text{PolyLog}\left(2,\frac{d(a+bx)}{b(c+dx)}\right)+\text{PolyLog}\left(2,\frac{bx}{a}+1\right)\left(\log(c+dx)-\log\left(\frac{a(c+dx)}{c(a+bx)}\right)\right)+\text{PolyLog}\left(2,\frac{dx}{c}+1\right)\left(\log\left(\frac{a(c+dx)}{c(a+bx)}\right)+\log(a+bx)\right)-\text{PolyLog}\left(3,\frac{bx}{a}+1\right)-\text{PolyLog}\left(3,\frac{dx}{c}+1\right)+\frac{1}{2}\left(\log\left(\frac{bc-ad}{b(c+dx)}\right)-\log\left(-\frac{x(bc-ad)}{a(c+dx)}\right)+\log\left(-\frac{bx}{a}\right)\right)\log^2\left(\frac{a(c+dx)}{c(a+bx)}\right)-\frac{1}{2}\left(\log\left(-\frac{bx}{a}\right)-\log\left(-\frac{dx}{c}\right)\right)\left(\log\left(\frac{a(c+dx)}{c(a+bx)}\right)+\log(a+bx)\right)^2+\log\left(-\frac{bx}{a}\right)\log(a+bx)\log(c+dx)$$

Antiderivative was successfully verified.

```
[In] Int[(Log[a + b*x]*Log[c + d*x])/x,x]
```

```
[Out] Log[-((b*x)/a)]*Log[a + b*x]*Log[c + d*x] + ((Log[-((b*x)/a)] + Log[(b*c -
a*d)/(b*(c + d*x))] - Log[-(((b*c - a*d)*x)/(a*(c + d*x)))])*Log[(a*(c + d*
x))/(c*(a + b*x))]^2)/2 - ((Log[-((b*x)/a)] - Log[-((d*x)/c)])*(Log[a + b*x
] + Log[(a*(c + d*x))/(c*(a + b*x))])^2)/2 + (Log[c + d*x] - Log[(a*(c + d*
x))/(c*(a + b*x))])*PolyLog[2, 1 + (b*x)/a] + Log[(a*(c + d*x))/(c*(a + b*x
))]*PolyLog[2, (c*(a + b*x))/(a*(c + d*x))] - Log[(a*(c + d*x))/(c*(a + b*x
))]*PolyLog[2, (d*(a + b*x))/(b*(c + d*x))] + (Log[a + b*x] + Log[(a*(c + d
*x))/(c*(a + b*x))])*PolyLog[2, 1 + (d*x)/c] - PolyLog[3, 1 + (b*x)/a] + Po
lyLog[3, (c*(a + b*x))/(a*(c + d*x))] - PolyLog[3, (d*(a + b*x))/(b*(c + d*
x))] - PolyLog[3, 1 + (d*x)/c]
```

Rule 2485

```
Int[(Log[(a_) + (b_.)*(x_)]*Log[(c_) + (d_.)*(x_)])/(x_), x_Symbol] :> Simp
[Log[(-b)*(x/a)]*Log[a + b*x]*Log[c + d*x], x] + (Simp[(1/2)*(Log[(-b)*(x/a
)] - Log[(-(b*c - a*d))*(x/(a*(c + d*x)))] + Log[(b*c - a*d)/(b*(c + d*x))]
)*Log[a*((c + d*x)/(c*(a + b*x)))]^2, x] - Simp[(1/2)*(Log[(-b)*(x/a)] - Lo
g[(-d)*(x/c)])*(Log[a + b*x] + Log[a*((c + d*x)/(c*(a + b*x)))])^2, x] + Si
mp[(Log[c + d*x] - Log[a*((c + d*x)/(c*(a + b*x)))])*PolyLog[2, 1 + b*(x/a)
], x] + Simp[(Log[a + b*x] + Log[a*((c + d*x)/(c*(a + b*x)))])*PolyLog[2, 1
 + d*(x/c)], x] + Simp[Log[a*((c + d*x)/(c*(a + b*x)))]*PolyLog[2, c*((a +
```

```
b*x)/(a*(c + d*x)))], x] - Simp[Log[a*((c + d*x)/(c*(a + b*x)))]*PolyLog[2,
 d*((a + b*x)/(b*(c + d*x)))], x] - Simp[PolyLog[3, 1 + b*(x/a)], x] - Simp
[PolyLog[3, 1 + d*(x/c)], x] + Simp[PolyLog[3, c*((a + b*x)/(a*(c + d*x)))]
, x] - Simp[PolyLog[3, d*((a + b*x)/(b*(c + d*x)))], x]) /; FreeQ[{a, b, c,
 d}, x] && NeQ[b*c - a*d, 0]
```

Rubi steps

$$\int \frac{\log(a+bx)\log(c+dx)}{x}\,dx = \log\left(-\frac{bx}{a}\right)\log(a+bx)\log(c+dx) + \frac{1}{2}\left(\log\left(-\frac{bx}{a}\right) + \log\left(\frac{bc-ad}{b(c+dx)}\right) - \right.$$

Mathematica [A]
time = 0.04, size = 394, normalized size = 1.08

$$\log\left(-\frac{bx}{a}\right)\log(a+bx)\log(c+dx)+\frac{1}{2}\log^2\left(\frac{a(c+dx)}{c(a+bx)}\right)\left(\log\left(-\frac{bx}{a}\right)+\log\left(\frac{-bc+ad}{d(a+bx)}\right)-\log\left(\frac{bcx-adx}{ac+bcx}\right)\right)+\left(-\log\left(-\frac{bx}{a}\right)+\log\left(-\frac{dx}{c}\right)\right)\log\left(\frac{a(c+dx)}{c(a+bx)}\right)\log\left(1+\frac{dx}{c}\right)+\frac{1}{2}\left(\log\left(-\frac{bx}{a}\right)-\log\left(-\frac{dx}{c}\right)\right)\log\left(1+\frac{dx}{c}\right)\left(-2\log(a+bx)+\log\left(1+\frac{dx}{c}\right)\right)+\left(\log(c+dx)-\log\left(\frac{a(c+dx)}{c(a+bx)}\right)\right)\mathrm{Li}_2\left(1+\frac{bx}{a}\right)+\log\left(\frac{a(c+dx)}{c(a+bx)}\right)\left(-\mathrm{Li}_2\left(\frac{a(c+dx)}{c(a+bx)}\right)+\mathrm{Li}_2\left(\frac{b(c+dx)}{d(a+bx)}\right)\right)+\left(\log(a+bx)+\log\left(\frac{a(c+dx)}{c(a+bx)}\right)\right)\mathrm{Li}_2\left(1+\frac{dx}{c}\right)-\mathrm{Li}_3\left(1+\frac{bx}{a}\right)+\mathrm{Li}_3\left(\frac{a(c+dx)}{c(a+bx)}\right)-\mathrm{Li}_3\left(\frac{b(c+dx)}{d(a+bx)}\right)-\mathrm{Li}_3\left(1+\frac{dx}{c}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(Log[a + b*x]*Log[c + d*x])/x,x]
```

```
[Out] Log[-((b*x)/a)]*Log[a + b*x]*Log[c + d*x] + (Log[(a*(c + d*x))/(c*(a + b*x)
)]^2*(Log[-((b*x)/a)] + Log[(-(b*c) + a*d)/(d*(a + b*x))] - Log[(b*c*x - a*
d*x)/(a*c + b*c*x)]))/2 + (-Log[-((b*x)/a)] + Log[-((d*x)/c)])*Log[(a*(c +
d*x))/(c*(a + b*x))]*Log[1 + (d*x)/c] + ((Log[-((b*x)/a)] - Log[-((d*x)/c)]
)*Log[1 + (d*x)/c]*(-2*Log[a + b*x] + Log[1 + (d*x)/c]))/2 + (Log[c + d*x]
- Log[(a*(c + d*x))/(c*(a + b*x))])*PolyLog[2, 1 + (b*x)/a] + Log[(a*(c + d
*x))/(c*(a + b*x))]*(-PolyLog[2, (a*(c + d*x))/(c*(a + b*x))] + PolyLog[2,
(b*(c + d*x))/(d*(a + b*x))]) + (Log[a + b*x] + Log[(a*(c + d*x))/(c*(a + b
*x))])*PolyLog[2, 1 + (d*x)/c] - PolyLog[3, 1 + (b*x)/a] + PolyLog[3, (a*(c
 + d*x))/(c*(a + b*x))] - PolyLog[3, (b*(c + d*x))/(d*(a + b*x))] - PolyLog
[3, 1 + (d*x)/c]
```

Maple [F]
time = 0.39, size = 0, normalized size = 0.00

$$\int \frac{\ln(bx+a)\ln(dx+c)}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(b*x+a)*ln(d*x+c)/x,x)
```

```
[Out] int(ln(b*x+a)*ln(d*x+c)/x,x)
```

Maxima [**F**]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(b*x+a)*log(d*x+c)/x,x, algorithm="maxima")
[Out] integrate(log(b*x + a)*log(d*x + c)/x, x)
```

Fricas [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(b*x+a)*log(d*x+c)/x,x, algorithm="fricas")
[Out] integral(log(b*x + a)*log(d*x + c)/x, x)
```

Sympy [**F(-1)**] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(b*x+a)*ln(d*x+c)/x,x)
[Out] Timed out
```

Giac [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(b*x+a)*log(d*x+c)/x,x, algorithm="giac")
[Out] integrate(log(b*x + a)*log(d*x + c)/x, x)
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\ln\left(a+b\,x\right)\,\ln\left(c+d\,x\right)}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((log(a + b*x)*log(c + d*x))/x,x)
[Out] int((log(a + b*x)*log(c + d*x))/x, x)
```

3.379 $\int x^2(a+b\log(c(d+ex)^n))(f+g\log(c(d+ex)^n))\,d$

Optimal. Leaf size=258

$$\frac{2bd^2gn^2x}{e^2}-\frac{bdgn^2(d+ex)^2}{2e^3}+\frac{2bgn^2(d+ex)^3}{27e^3}-\frac{bd^3gn^2\log^2(d+ex)}{3e^3}+\frac{1}{3}x^3(a+b\log(c(d+ex)^n))(f+g\log(c($$

```
[Out] 2*b*d^2*g*n^2*x/e^2-1/2*b*d*g*n^2*(e*x+d)^2/e^3+2/27*b*g*n^2*(e*x+d)^3/e^3-
1/3*b*d^3*g*n^2*ln(e*x+d)^2/e^3+1/3*x^3*(a+b*ln(c*(e*x+d)^n))*(f+g*ln(c*(e*
x+d)^n))-d^2*n*(e*x+d)*(b*f+a*g+2*b*g*ln(c*(e*x+d)^n))/e^3+1/2*d*n*(e*x+d)^
2*(b*f+a*g+2*b*g*ln(c*(e*x+d)^n))/e^3-1/9*n*(e*x+d)^3*(b*f+a*g+2*b*g*ln(c*(
e*x+d)^n))/e^3+1/3*d^3*n*ln(e*x+d)*(b*f+a*g+2*b*g*ln(c*(e*x+d)^n))/e^3
```

Rubi [A]
time = 0.21, antiderivative size = 258, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 7, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}} = 0.219$, Rules used = {2483, 2458, 45, 2372, 12, 14, 2338}

$$\frac{d^3n\log(d+ex)(ag+2bg\log(c(d+ex)^n)+bf)}{3e^3}-\frac{d^2n(d+ex)(ag+2bg\log(c(d+ex)^n)+bf)}{e^3}+\frac{dn(d+ex)^2(ag+2bg\log(c(d+ex)^n)+bf)}{2e^3}-\frac{n(d+ex)^3(ag+2bg\log(c(d+ex)^n)+bf)}{9e^3}+\frac{1}{3}x^3(a+b\log(c(d+ex)^n))(g\log(c(d+ex)^n)+f)-\frac{bd^3gn^2\log^2(d+ex)}{3e^3}+\frac{2bd^2gn^2x}{e^2}-\frac{bdgn^2(d+ex)^2}{2e^3}+\frac{2bgn^2(d+ex)^3}{27e^3}$$

Antiderivative was successfully verified.

```
[In] Int[x^2*(a + b*Log[c*(d + e*x)^n])*(f + g*Log[c*(d + e*x)^n]),x]
```

```
[Out] (2*b*d^2*g*n^2*x)/e^2 - (b*d*g*n^2*(d + e*x)^2)/(2*e^3) + (2*b*g*n^2*(d + e
*x)^3)/(27*e^3) - (b*d^3*g*n^2*Log[d + e*x]^2)/(3*e^3) + (x^3*(a + b*Log[c*
(d + e*x)^n])*(f + g*Log[c*(d + e*x)^n]))/3 - (d^2*n*(d + e*x)*(b*f + a*g +
 2*b*g*Log[c*(d + e*x)^n]))/e^3 + (d*n*(d + e*x)^2*(b*f + a*g + 2*b*g*Log[c
*(d + e*x)^n]))/(2*e^3) - (n*(d + e*x)^3*(b*f + a*g + 2*b*g*Log[c*(d + e*x)
^n]))/(9*e^3) + (d^3*n*Log[d + e*x]*(b*f + a*g + 2*b*g*Log[c*(d + e*x)^n]))
/(3*e^3)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] &&  !LinearQ[u, x] &&  !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
```

```
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2338

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2372

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*(x_)^(m_.)*((d_) + (e_.)*(x_)^(r_
.))^(q_.), x_Symbol] :> With[{u = IntHide[x^m*(d + e*x^r)^q, x]}, Dist[a +
b*Log[c*x^n], u, x] - Dist[b*n, Int[SimplifyIntegrand[u/x, x], x], x]] /; F
reeQ[{a, b, c, d, e, n, r}, x] && IGtQ[q, 0] && IntegerQ[m] &&  !(EqQ[q, 1]
 && EqQ[m, -1])
```

Rule 2458

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[(g*(x/e))^q*((e*h - d*i)/e + i*(x/e))^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2483

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(c_.)
*((d_) + (e_.)*(x_))^(n_.)]*(g_.))*(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)*
(a + b*Log[c*(d + e*x)^n])*((f + g*Log[c*(d + e*x)^n])/(m + 1)), x] - Dist[
e*(n/(m + 1)), Int[(x^(m + 1)*(b*f + a*g + 2*b*g*Log[c*(d + e*x)^n]))/(d +
e*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n, m}, x] && NeQ[m, -1]
```

Rubi steps

$$\int x^2(a+b\log(c(d+ex)^n))(f+g\log(c(d+ex)^n))\,dx = \frac{1}{3}x^3(a+b\log(c(d+ex)^n))(f+g\log(c(d+ex)^n)$$

$$= \frac{1}{3}x^3(a+b\log(c(d+ex)^n))(f+g\log(c(d+ex)^n)$$

$$= -\frac{1}{18}gn\Bigg(\frac{18d^2(d+ex)}{e^3} - \frac{9d(d+ex)^2}{e^3} + \frac{2(d+ex}{e^3}$$

$$= -\frac{1}{18}gn\Bigg(\frac{18d^2(d+ex)}{e^3} - \frac{9d(d+ex)^2}{e^3} + \frac{2(d+ex}{e^3}$$

$$= -\frac{1}{18}gn\Bigg(\frac{18d^2(d+ex)}{e^3} - \frac{9d(d+ex)^2}{e^3} + \frac{2(d+ex}{e^3}$$

$$= -\frac{1}{18}gn\Bigg(\frac{18d^2(d+ex)}{e^3} - \frac{9d(d+ex)^2}{e^3} + \frac{2(d+ex}{e^3}$$

$$= 2\Bigg(\frac{bd^2gn^2x}{e^2} - \frac{bdgn^2(d+ex)^2}{4e^3} + \frac{bgn^2(d+ex)^3}{27e^3} -$$

Mathematica [A]
time = 0.15, size = 226, normalized size = 0.88

$$\frac{-18bd^3gn^2\log^2(d+ex)+6d^3n\log(d+ex)\left(3bf+3ag-11bgn+6bg\log\left(c(d+ex)^n\right)\right)+ex\left(3a(-6d^2gn+3degnx+2e^2(3f-gn)x^2)+bn(d^2(-18f+66gn)+3de(3f-5gn)x+2e^2(-3f+2gn)x^2)-6(-3ae^2gx^2+b(6d^2gn-3degnx+e^2(-3f+2gn)x^2))\log\left(c(d+ex)^n\right)+18be^2gx^2\log^2\left(c(d+ex)^n\right)\right)}{54e^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2*(a + b*Log[c*(d + e*x)^n])*(f + g*Log[c*(d + e*x)^n]),x]
```

```
[Out] (-18*b*d^3*g*n^2*Log[d + e*x]^2 + 6*d^3*n*Log[d + e*x]*(3*b*f + 3*a*g - 11*
b*g*n + 6*b*g*Log[c*(d + e*x)^n]) + e*x*(3*a*(-6*d^2*g*n + 3*d*e*g*n*x + 2*
e^2*(3*f - g*n)*x^2) + b*n*(d^2*(-18*f + 66*g*n) + 3*d*e*(3*f - 5*g*n)*x +
2*e^2*(-3*f + 2*g*n)*x^2) - 6*(-3*a*e^2*g*x^2 + b*(6*d^2*g*n - 3*d*e*g*n*x
+ e^2*(-3*f + 2*g*n)*x^2))*Log[c*(d + e*x)^n] + 18*b*e^2*g*x^2*Log[c*(d + e
*x)^n]^2))/(54*e^3)
```

Maple [C] Result contains higher order function than in optimal. Order 9 vs. order 3.
time = 0.49, size = 1785, normalized size = 6.92

method	result	size
risch	Expression too large to display	1785

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(a+b*ln(c*(e*x+d)^n))*(f+g*ln(c*(e*x+d)^n)),x,method=_RETURNVERBOSE
)
```

```
[Out] 11/9*b*d^2*g*n^2*x/e^2+2/27*b*g*n^2*x^3-1/9*n*a*g*x^3-1/9*n*b*f*x^3-1/3*I/e
^3*ln(e*x+d)*Pi*b*d^3*g*n*csgn(I*c*(e*x+d)^n)^3-1/6*I/e*Pi*b*d*g*n*x^2*csgn
(I*c*(e*x+d)^n)^3+1/3*I/e^2*Pi*b*d^2*g*n*x*csgn(I*c*(e*x+d)^n)^3+1/3*x^3*a*
f-1/3*Pi^2*b*g*x^3*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^4-1/12*P
i^2*b*g*x^3*csgn(I*c)^2*csgn(I*(e*x+d)^n)^2*csgn(I*c*(e*x+d)^n)^2+1/6*Pi^2*
b*g*x^3*csgn(I*c)^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^3+1/6*Pi^2*b*g*x^
3*csgn(I*c)*csgn(I*(e*x+d)^n)^2*csgn(I*c*(e*x+d)^n)^3+1/3/e*ln(c)*b*d*g*n*x
^2-2/3/e^2*ln(c)*b*d^2*g*n*x+2/3/e^3*ln(c)*ln(e*x+d)*b*d^3*g*n+1/9*I*n*Pi*b
*g*x^3*csgn(I*c*(e*x+d)^n)^3+1/6*I*Pi*a*g*x^3*csgn(I*c)*csgn(I*c*(e*x+d)^n)
^2+1/3*I/e^3*ln(e*x+d)*Pi*b*d^3*g*n*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+1/3*I/e
^3*ln(e*x+d)*Pi*b*d^3*g*n*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+1/6*I/e*P
i*b*d*g*n*x^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-1/3*I/e^2*Pi*b*d^2*g*
n*x*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-1/3*I/e^2*Pi*b*d^2*g*n*x*csgn(I*(e*x+d)
^n)*csgn(I*c*(e*x+d)^n)^2-1/3/e^2*a*d^2*g*n*x+1/3*I*ln(c)*Pi*b*g*x^3*csgn(I
*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-1/6*I*Pi*a*g*x^3*csgn(I*c)*csgn(I*(e*x+d)
^n)*csgn(I*c*(e*x+d)^n)-1/6*I*Pi*b*f*x^3*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I
*c*(e*x+d)^n)+1/3*I*ln(c)*Pi*b*g*x^3*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-1/9*I*
n*Pi*b*g*x^3*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-1/9*I*n*Pi*b*g*x^3*csgn(I*(e*x
+d)^n)*csgn(I*c*(e*x+d)^n)^2+1/9*(-3*I*Pi*b*e^3*g*x^3*csgn(I*c)*csgn(I*(e*x
+d)^n)*csgn(I*c*(e*x+d)^n)+3*I*Pi*b*e^3*g*x^3*csgn(I*c)*csgn(I*c*(e*x+d)^n)
^2+3*I*Pi*b*e^3*g*x^3*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-3*I*Pi*b*e^3*
g*x^3*csgn(I*c*(e*x+d)^n)^3+6*ln(c)*b*e^3*g*x^3-2*b*e^3*g*n*x^3+3*a*e^3*g*x
^3+3*b*d*e^2*g*n*x^2+3*b*e^3*f*x^3+6*ln(e*x+d)*b*d^3*g*n-6*b*d^2*e*g*n*x)/e
^3*ln((e*x+d)^n)+1/3*x^3*b*g*ln((e*x+d)^n)^2+1/6*I/e*Pi*b*d*g*n*x^2*csgn(I*
c)*csgn(I*c*(e*x+d)^n)^2-1/12*Pi^2*b*g*x^3*csgn(I*c)^2*csgn(I*c*(e*x+d)^n)^
4+1/6*Pi^2*b*g*x^3*csgn(I*c)*csgn(I*c*(e*x+d)^n)^5-1/6*I*Pi*a*g*x^3*csgn(I*
c*(e*x+d)^n)^3-1/6*I*Pi*b*f*x^3*csgn(I*c*(e*x+d)^n)^3+1/6/e*a*d*g*n*x^2+1/6
/e*b*d*f*n*x^2-5/18/e*b*d*g*n^2*x^2+1/3/e^3*ln(e*x+d)*a*d^3*g*n+1/9*I*n*Pi*
b*g*x^3*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-1/3*I*ln(c)*Pi*b*g*
x^3*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-2/9*n*ln(c)*b*g*x^3-1/1
2*Pi^2*b*g*x^3*csgn(I*c*(e*x+d)^n)^6+1/3/e^3*ln(e*x+d)*b*d^3*f*n-1/12*Pi^2*
b*g*x^3*csgn(I*(e*x+d)^n)^2*csgn(I*c*(e*x+d)^n)^4+1/6*Pi^2*b*g*x^3*csgn(I*(
e*x+d)^n)*csgn(I*c*(e*x+d)^n)^5-1/6*I/e*Pi*b*d*g*n*x^2*csgn(I*c)*csgn(I*(e*
x+d)^n)*csgn(I*c*(e*x+d)^n)+1/3*I/e^2*Pi*b*d^2*g*n*x*csgn(I*c)*csgn(I*(e*x+
d)^n)*csgn(I*c*(e*x+d)^n)-1/3*I/e^3*ln(e*x+d)*Pi*b*d^3*g*n*csgn(I*c)*csgn(I
*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+1/6*I*Pi*b*f*x^3*csgn(I*c)*csgn(I*c*(e*x+d)
^n)^2+1/6*I*Pi*b*f*x^3*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+1/6*I*Pi*a*g
*x^3*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-1/3*I*ln(c)*Pi*b*g*x^3*csgn(I*
c*(e*x+d)^n)^3-11/9*b*d^3*g*n^2/e^3*ln(e*x+d)+1/3*ln(c)^2*b*g*x^3+1/3*ln(c)
*a*g*x^3+1/3*ln(c)*b*f*x^3-1/3*b*d^3*g*n^2*ln(e*x+d)^2/e^3-1/3*b*d^2*f*n*x/
e^2
```

<u>Maxima</u> [A]

time = 0.29, size = 278, normalized size = 1.08

$$\frac{1}{3}\,bgx^{3}\log\left((xe+d)^{n}c\right)^{2}+\frac{1}{3}\,bfx^{3}\log\left((xe+d)^{n}c\right)+\frac{1}{3}\,agx^{3}\log\left((xe+d)^{n}c\right)+\frac{1}{3}\,afx^{3}+\frac{1}{18}\left(6\,d^{3}e^{(-4)}\log\left(xe+d\right)-\left(2\,x^{3}e^{2}-3\,dx^{2}e+6\,d^{2}x\right)e^{(-3)}\right)bfne+\frac{1}{18}\left(6\,d^{3}e^{(-4)}\log\left(xe+d\right)-\left(2\,x^{3}e^{2}-3\,dx^{2}e+6\,d^{2}x\right)e^{(-3)}\right)agne-\frac{1}{54}\left(\left(18\,d^{3}\log\left(xe+d\right)^{2}-4\,x^{3}e^{3}+15\,dx^{2}e^{2}-66\,d^{2}xe+66\,d^{3}\log\left(xe+d\right)\right)n^{2}e^{(-3)}-6\left(6\,d^{3}e^{(-4)}\log\left(xe+d\right)-\left(2\,x^{3}e^{2}-3\,dx^{2}e+6\,d^{2}x\right)e^{(-3)}\right)ne\log\left((xe+d)^{n}c\right)\right)bg$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*log(c*(e*x+d)^n))*(f+g*log(c*(e*x+d)^n)),x, algorithm="m
axima")
```

```
[Out] 1/3*b*g*x^3*log((x*e + d)^n*c)^2 + 1/3*b*f*x^3*log((x*e + d)^n*c) + 1/3*a*g
*x^3*log((x*e + d)^n*c) + 1/3*a*f*x^3 + 1/18*(6*d^3*e^(-4)*log(x*e + d) - (
2*x^3*e^2 - 3*d*x^2*e + 6*d^2*x)*e^(-3))*b*f*n*e + 1/18*(6*d^3*e^(-4)*log(x
*e + d) - (2*x^3*e^2 - 3*d*x^2*e + 6*d^2*x)*e^(-3))*a*g*n*e - 1/54*((18*d^3
*log(x*e + d)^2 - 4*x^3*e^3 + 15*d*x^2*e^2 - 66*d^2*x*e + 66*d^3*log(x*e +
d))*n^2*e^(-3) - 6*(6*d^3*e^(-4)*log(x*e + d) - (2*x^3*e^2 - 3*d*x^2*e + 6*
d^2*x)*e^(-3))*n*e*log((x*e + d)^n*c))*b*g
```

Fricas [A]
time = 0.36, size = 295, normalized size = 1.14

$$\frac{1}{54}\left(18\,bgx^{3}e^{3}\log\left(c\right)^{2}+2\left(2\,bgn^{2}+9\,af-3\left(bf+ag\right)n\right)x^{3}e^{3}-3\left(5\,bdgn^{2}-3\left(bdf+adg\right)n\right)x^{2}e^{2}+6\left(11\,bd^{2}gn^{2}-3\left(bd^{2}f+ad^{2}g\right)n\right)xe+18\left(bgn^{2}x^{3}e^{3}+bd^{3}gn^{2}\right)\log\left(xe+d\right)^{2}+6\left(3\,bdgn^{2}x^{2}e^{2}-6\,bd^{2}gn^{2}xe-11\,bd^{3}gn^{2}-\left(2\,bgn^{2}-3\left(bf+ag\right)n\right)x^{3}e^{3}+3\left(bd^{3}f+ad^{3}g\right)n+6\left(bgnx^{3}e^{3}+bd^{3}gn\right)\log\left(c\right)\right)\log\left(xe+d\right)+6\left(3\,bdgnx^{2}e^{2}-6\,bd^{2}gnxe-\left(2\,bgn-3\,bf-3\,ag\right)x^{3}e^{3}\right)\log\left(c\right)\right)e^{(-3)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*log(c*(e*x+d)^n))*(f+g*log(c*(e*x+d)^n)),x, algorithm="f
ricas")
```

```
[Out] 1/54*(18*b*g*x^3*e^3*log(c)^2 + 2*(2*b*g*n^2 + 9*a*f - 3*(b*f + a*g)*n)*x^3
*e^3 - 3*(5*b*d*g*n^2 - 3*(b*d*f + a*d*g)*n)*x^2*e^2 + 6*(11*b*d^2*g*n^2 -
3*(b*d^2*f + a*d^2*g)*n)*x*e + 18*(b*g*n^2*x^3*e^3 + b*d^3*g*n^2)*log(x*e +
 d)^2 + 6*(3*b*d*g*n^2*x^2*e^2 - 6*b*d^2*g*n^2*x*e - 11*b*d^3*g*n^2 - (2*b*
g*n^2 - 3*(b*f + a*g)*n)*x^3*e^3 + 3*(b*d^3*f + a*d^3*g)*n + 6*(b*g*n*x^3*e
^3 + b*d^3*g*n)*log(c))*log(x*e + d) + 6*(3*b*d*g*n*x^2*e^2 - 6*b*d^2*g*n*x
*e - (2*b*g*n - 3*b*f - 3*a*g)*x^3*e^3)*log(c))*e^(-3)
```

Sympy [A]
time = 1.20, size = 384, normalized size = 1.49

$$\begin{cases} \frac{ad^{3}g\log\left(c(d+ex)^{n}\right)}{3e^{3}}-\frac{ad^{2}gnx}{3e^{2}}+\frac{adgnx^{2}}{6e}+\frac{afx^{3}}{3}-\frac{agnx^{3}}{9}+\frac{agx^{3}\log\left(c(d+ex)^{n}\right)}{3}+\frac{bd^{3}f\log\left(c(d+ex)^{n}\right)}{3e^{3}}-\frac{11bd^{3}gn\log\left(c(d+ex)^{n}\right)}{9e^{3}}+\frac{bd^{3}g\log\left(c(d+ex)^{n}\right)^{2}}{3e^{3}}-\frac{bd^{2}fnx}{3e^{2}}+\frac{11bd^{2}gn^{2}x}{9e^{2}}-\frac{2bd^{2}gnx\log\left(c(d+ex)^{n}\right)}{3e^{2}}+\frac{bdfnx^{2}}{6e}-\frac{5bdgn^{2}x^{2}}{18e}+\frac{bdgnx^{2}\log\left(c(d+ex)^{n}\right)}{3e}-\frac{bfnx^{3}}{9}+\frac{bfx^{3}\log\left(c(d+ex)^{n}\right)}{3}+\frac{2bgn^{2}x^{3}}{27}-\frac{2bgnx^{3}\log\left(c(d+ex)^{n}\right)}{9}+\frac{bgx^{3}\log\left(c(d+ex)^{n}\right)^{2}}{3} & \text{for}\: e \neq 0 \\ \frac{x^{3}\left(a+b\log\left(cd^{n}\right)\right)\left(f+g\log\left(cd^{n}\right)\right)}{3} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(a+b*ln(c*(e*x+d)**n))*(f+g*ln(c*(e*x+d)**n)),x)
```

```
[Out] Piecewise((a*d**3*g*log(c*(d + e*x)**n)/(3*e**3) - a*d**2*g*n*x/(3*e**2) +
a*d*g*n*x**2/(6*e) + a*f*x**3/3 - a*g*n*x**3/9 + a*g*x**3*log(c*(d + e*x)**
n)/3 + b*d**3*f*log(c*(d + e*x)**n)/(3*e**3) - 11*b*d**3*g*n*log(c*(d + e*x
)**n)/(9*e**3) + b*d**3*g*log(c*(d + e*x)**n)**2/(3*e**3) - b*d**2*f*n*x/(3
```

```
*e**2) + 11*b*d**2*g*n**2*x/(9*e**2) - 2*b*d**2*g*n*x*log(c*(d + e*x)**n)/(
3*e**2) + b*d*f*n*x**2/(6*e) - 5*b*d*g*n**2*x**2/(18*e) + b*d*g*n*x**2*log(
c*(d + e*x)**n)/(3*e) - b*f*n*x**3/9 + b*f*x**3*log(c*(d + e*x)**n)/3 + 2*b
*g*n**2*x**3/27 - 2*b*g*n*x**3*log(c*(d + e*x)**n)/9 + b*g*x**3*log(c*(d +
e*x)**n)**2/3, Ne(e, 0)), (x**3*(a + b*log(c*d**n))*(f + g*log(c*d**n))/3,
True))
```

Giac [B] Leaf count of result is larger than twice the leaf count of optimal. 756 vs. 2(249) = 498.
time = 3.62, size = 756, normalized size = 2.93

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*log(c*(e*x+d)^n))*(f+g*log(c*(e*x+d)^n)),x, algorithm="g
iac")
```

```
[Out] 1/3*(x*e + d)^3*b*g*n^2*e^(-3)*log(x*e + d)^2 - (x*e + d)^2*b*d*g*n^2*e^(-3
)*log(x*e + d)^2 + (x*e + d)*b*d^2*g*n^2*e^(-3)*log(x*e + d)^2 - 2/9*(x*e +
 d)^3*b*g*n^2*e^(-3)*log(x*e + d) + (x*e + d)^2*b*d*g*n^2*e^(-3)*log(x*e +
d) - 2*(x*e + d)*b*d^2*g*n^2*e^(-3)*log(x*e + d) + 2/3*(x*e + d)^3*b*g*n*e^
(-3)*log(x*e + d)*log(c) - 2*(x*e + d)^2*b*d*g*n*e^(-3)*log(x*e + d)*log(c)
 + 2*(x*e + d)*b*d^2*g*n*e^(-3)*log(x*e + d)*log(c) + 2/27*(x*e + d)^3*b*g*
n^2*e^(-3) - 1/2*(x*e + d)^2*b*d*g*n^2*e^(-3) + 2*(x*e + d)*b*d^2*g*n^2*e^(
-3) + 1/3*(x*e + d)^3*b*f*n*e^(-3)*log(x*e + d) - (x*e + d)^2*b*d*f*n*e^(-3
)*log(x*e + d) + (x*e + d)*b*d^2*f*n*e^(-3)*log(x*e + d) + 1/3*(x*e + d)^3*
a*g*n*e^(-3)*log(x*e + d) - (x*e + d)^2*a*d*g*n*e^(-3)*log(x*e + d) + (x*e
+ d)*a*d^2*g*n*e^(-3)*log(x*e + d) - 2/9*(x*e + d)^3*b*g*n*e^(-3)*log(c) +
(x*e + d)^2*b*d*g*n*e^(-3)*log(c) - 2*(x*e + d)*b*d^2*g*n*e^(-3)*log(c) + 1
/3*(x*e + d)^3*b*g*e^(-3)*log(c)^2 - (x*e + d)^2*b*d*g*e^(-3)*log(c)^2 + (x
*e + d)*b*d^2*g*e^(-3)*log(c)^2 - 1/9*(x*e + d)^3*b*f*n*e^(-3) + 1/2*(x*e +
 d)^2*b*d*f*n*e^(-3) - (x*e + d)*b*d^2*f*n*e^(-3) - 1/9*(x*e + d)^3*a*g*n*e
^(-3) + 1/2*(x*e + d)^2*a*d*g*n*e^(-3) - (x*e + d)*a*d^2*g*n*e^(-3) + 1/3*(
x*e + d)^3*b*f*e^(-3)*log(c) - (x*e + d)^2*b*d*f*e^(-3)*log(c) + (x*e + d)*
b*d^2*f*e^(-3)*log(c) + 1/3*(x*e + d)^3*a*g*e^(-3)*log(c) - (x*e + d)^2*a*d
*g*e^(-3)*log(c) + (x*e + d)*a*d^2*g*e^(-3)*log(c) + 1/3*(x*e + d)^3*a*f*e^
(-3) - (x*e + d)^2*a*d*f*e^(-3) + (x*e + d)*a*d^2*f*e^(-3)
```

Mupad [B]
time = 0.40, size = 323, normalized size = 1.25

$$\ln\left(c\,{\left(d+e\,x\right)}^n\right)\,\left(\frac{x^3\,\left(a\,g+b\,f-\frac{2\,b\,g\,n}{3}\right)}{3}+\frac{x^2\,\left(\frac{3\,d\,\left(a\,g+b\,f\right)}{2\,e}-\frac{d\,\left(9\,a\,g+9\,b\,f-6\,b\,g\,n\right)}{6\,e}\right)}{3}-\frac{d\,x\,\left(\frac{9\,d\,\left(a\,g+b\,f\right)}{e}-\frac{d\,\left(9\,a\,g+9\,b\,f-6\,b\,g\,n\right)}{e}\right)}{9\,e}\right)+x^2\,\left(\frac{d\,\left(3\,a\,f-b\,g\,n^2\right)}{6\,e}-\frac{d\,\left(a\,f-\frac{a\,g\,n}{3}-\frac{b\,f\,n}{3}+\frac{2\,b\,g\,n^2}{9}\right)}{2\,e}\right)+{\ln\left(c\,{\left(d+e\,x\right)}^n\right)}^2\,\left(\frac{b\,g\,x^3}{3}+\frac{b\,d^3\,g}{3\,e^3}\right)-x\,\left(\frac{d\,\left(\frac{d\,\left(3\,a\,f-b\,g\,n^2\right)}{3\,e}-\frac{d\,\left(a\,f-\frac{a\,g\,n}{3}-\frac{b\,f\,n}{3}+\frac{2\,b\,g\,n^2}{9}\right)}{e}\right)}{e}-\frac{2\,b\,d^2\,g\,n^2}{3\,e^2}\right)+x^3\,\left(\frac{a\,f}{3}-\frac{a\,g\,n}{9}-\frac{b\,f\,n}{9}+\frac{2\,b\,g\,n^2}{27}\right)+\frac{\ln\left(d+e\,x\right)\,\left(3\,a\,d^3\,g\,n+3\,b\,d^3\,f\,n-11\,b\,d^3\,g\,n^2\right)}{9\,e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(a + b*log(c*(d + e*x)^n))*(f + g*log(c*(d + e*x)^n)),x)
```

```
[Out] log(c*(d + e*x)^n)*((x^3*(a*g + b*f - (2*b*g*n)/3))/3 + (x^2*((3*d*(a*g + b
*f))/(2*e) - (d*(9*a*g + 9*b*f - 6*b*g*n))/(6*e)))/3 - (d*x*((9*d*(a*g + b*
f))/e - (d*(9*a*g + 9*b*f - 6*b*g*n))/e))/(9*e)) + x^2*((d*(3*a*f - b*g*n^2
))/(6*e) - (d*(a*f - (a*g*n)/3 - (b*f*n)/3 + (2*b*g*n^2)/9))/(2*e)) + log(c
*(d + e*x)^n)^2*((b*g*x^3)/3 + (b*d^3*g)/(3*e^3)) - x*((d*((d*(3*a*f - b*g*
n^2))/(3*e) - (d*(a*f - (a*g*n)/3 - (b*f*n)/3 + (2*b*g*n^2)/9))/e))/e - (2*
b*d^2*g*n^2)/(3*e^2)) + x^3*((a*f)/3 - (a*g*n)/9 - (b*f*n)/9 + (2*b*g*n^2)/
27) + (log(d + e*x)*(3*a*d^3*g*n + 3*b*d^3*f*n - 11*b*d^3*g*n^2))/(9*e^3)
```

3.380 $\int x(a+b\log(c(d+ex)^n))(f+g\log(c(d+ex)^n))\, d$

Optimal. Leaf size=196

$$-\frac{2bdgn^2x}{e}+\frac{bgn^2(d+ex)^2}{4e^2}+\frac{bd^2gn^2\log^2(d+ex)}{2e^2}+\frac{1}{2}x^2(a+b\log(c(d+ex)^n))(f+g\log(c(d+ex)^n))+\frac{dn(}{}$$

```
[Out] -2*b*d*g*n^2*x/e+1/4*b*g*n^2*(e*x+d)^2/e^2+1/2*b*d^2*g*n^2*ln(e*x+d)^2/e^2+
1/2*x^2*(a+b*ln(c*(e*x+d)^n))*(f+g*ln(c*(e*x+d)^n))+d*n*(e*x+d)*(b*f+a*g+2*
b*g*ln(c*(e*x+d)^n))/e^2-1/4*n*(e*x+d)^2*(b*f+a*g+2*b*g*ln(c*(e*x+d)^n))/e^
2-1/2*d^2*n*ln(e*x+d)*(b*f+a*g+2*b*g*ln(c*(e*x+d)^n))/e^2
```

Rubi [A]
time = 0.17, antiderivative size = 196, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 7, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}} = 0.233$, Rules used = {2483, 2458, 45, 2372, 12, 14, 2338}

$$-\frac{d^2n\log(d+ex)(ag+2bg\log(c(d+ex)^n)+bf)}{2e^2}+\frac{dn(d+ex)(ag+2bg\log(c(d+ex)^n)+bf)}{e^2}-\frac{n(d+ex)^2(ag+2bg\log(c(d+ex)^n)+bf)}{4e^2}+\frac{1}{2}x^2(a+b\log(c(d+ex)^n))(g\log(c(d+ex)^n)+f)+\frac{bd^2gn^2\log^2(d+ex)}{2e^2}+\frac{bgn^2(d+ex)^2}{4e^2}-\frac{2bdgn^2x}{e}$$

Antiderivative was successfully verified.

```
[In] Int[x*(a + b*Log[c*(d + e*x)^n])*(f + g*Log[c*(d + e*x)^n]),x]
```

```
[Out] (-2*b*d*g*n^2*x)/e + (b*g*n^2*(d + e*x)^2)/(4*e^2) + (b*d^2*g*n^2*Log[d + e
*x]^2)/(2*e^2) + (x^2*(a + b*Log[c*(d + e*x)^n])*(f + g*Log[c*(d + e*x)^n])
)/2 + (d*n*(d + e*x)*(b*f + a*g + 2*b*g*Log[c*(d + e*x)^n]))/e^2 - (n*(d +
e*x)^2*(b*f + a*g + 2*b*g*Log[c*(d + e*x)^n]))/(4*e^2) - (d^2*n*Log[d + e*x
]*(b*f + a*g + 2*b*g*Log[c*(d + e*x)^n]))/(2*e^2)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] &&  !LinearQ[u, x] &&  !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2338

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2372

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*(x_)^(m_.)*((d_) + (e_.)*(x_)^(r_
.))^(q_.), x_Symbol] :> With[{u = IntHide[x^m*(d + e*x^r)^q, x]}, Dist[a +
b*Log[c*x^n], u, x] - Dist[b*n, Int[SimplifyIntegrand[u/x, x], x], x]] /; F
reeQ[{a, b, c, d, e, n, r}, x] && IGtQ[q, 0] && IntegerQ[m] &&  !(EqQ[q, 1]
 && EqQ[m, -1])
```

Rule 2458

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[(g*(x/e))^q*((e*h - d*i)/e + i*(x/e))^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2483

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(c_.)
*((d_) + (e_.)*(x_))^(n_.)]*(g_.))*(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)*
(a + b*Log[c*(d + e*x)^n])*((f + g*Log[c*(d + e*x)^n])/(m + 1)), x] - Dist[
e*(n/(m + 1)), Int[(x^(m + 1)*(b*f + a*g + 2*b*g*Log[c*(d + e*x)^n]))/(d +
e*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n, m}, x] && NeQ[m, -1]
```

Rubi steps

$$
\begin{aligned}
\int x(a+b\log(c(d+ex)^n))(f+g\log(c(d+ex)^n))\,dx &= \frac{1}{2}x^2(a+b\log(c(d+ex)^n))(f+g\log(c(d+ex)^n\\
&= \frac{1}{2}x^2(a+b\log(c(d+ex)^n))(f+g\log(c(d+ex)^n\\
&= \frac{1}{4}gn\left(\frac{4d(d+ex)}{e^2}-\frac{(d+ex)^2}{e^2}-\frac{2d^2\log(d+ex)}{e^2}\right.\\
&= \frac{1}{4}gn\left(\frac{4d(d+ex)}{e^2}-\frac{(d+ex)^2}{e^2}-\frac{2d^2\log(d+ex)}{e^2}\right.\\
&= \frac{1}{4}gn\left(\frac{4d(d+ex)}{e^2}-\frac{(d+ex)^2}{e^2}-\frac{2d^2\log(d+ex)}{e^2}\right.\\
&= \frac{1}{4}gn\left(\frac{4d(d+ex)}{e^2}-\frac{(d+ex)^2}{e^2}-\frac{2d^2\log(d+ex)}{e^2}\right.\\
&= 2\left(-\frac{bdgn^2x}{e}+\frac{bgn^2(d+ex)^2}{8e^2}+\frac{bd^2gn^2\log^2(d+}{4e^2}\right.
\end{aligned}
$$

Mathematica [A]
time = 0.04, size = 263, normalized size = 1.34

$$
\frac{bdfnx}{2e}+\frac{adgnx}{2e}-\frac{3bdgn^2x}{2e}+\frac{1}{2}afx^2-\frac{1}{4}bfnx^2-\frac{1}{4}agnx^2+\frac{1}{4}bgn^2x^2-\frac{bd^2fn\log(d+ex)}{2e^2}-\frac{ad^2gn\log(d+ex)}{2e^2}+\frac{3bd^2gn\log(c(d+ex)^n)}{2e^2}+\frac{bdgnx\log(c(d+ex)^n)}{e}+\frac{1}{2}bfx^2\log(c(d+ex)^n)+\frac{1}{2}agx^2\log(c(d+ex)^n)-\frac{1}{2}bgnx^2\log(c(d+ex)^n)-\frac{bd^2g\log^2(c(d+ex)^n)}{2e^2}+\frac{1}{2}bgx^2\log^2(c(d+ex)^n)
$$

Antiderivative was successfully verified.

```
[In] Integrate[x*(a + b*Log[c*(d + e*x)^n])*(f + g*Log[c*(d + e*x)^n]),x]
```

```
[Out] (b*d*f*n*x)/(2*e) + (a*d*g*n*x)/(2*e) - (3*b*d*g*n^2*x)/(2*e) + (a*f*x^2)/2
 - (b*f*n*x^2)/4 - (a*g*n*x^2)/4 + (b*g*n^2*x^2)/4 - (b*d^2*f*n*Log[d + e*x
])/(2*e^2) - (a*d^2*g*n*Log[d + e*x])/(2*e^2) + (3*b*d^2*g*n*Log[c*(d + e*x
)^n])/(2*e^2) + (b*d*g*n*x*Log[c*(d + e*x)^n])/e + (b*f*x^2*Log[c*(d + e*x)
^n])/2 + (a*g*x^2*Log[c*(d + e*x)^n])/2 - (b*g*n*x^2*Log[c*(d + e*x)^n])/2
- (b*d^2*g*Log[c*(d + e*x)^n]^2)/(2*e^2) + (b*g*x^2*Log[c*(d + e*x)^n]^2)/2
```

Maple [C] Result contains higher order function than in optimal. Order 9 vs. order 3.
time = 0.55, size = 1558, normalized size = 7.95

method	result	size
risch	Expression too large to display	1558

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(a+b*ln(c*(e*x+d)^n))*(f+g*ln(c*(e*x+d)^n)),x,method=_RETURNVERBOSE)
```

```
[Out] -3/2*b*d*g*n^2*x/e+1/4*x^2*b*g*n^2+1/2*x^2*a*f-1/4*n*b*f*x^2+1/2*I/e^2*Pi*l
n(e*x+d)*b*d^2*g*n*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-1/4*n*a*
g*x^2+1/2*ln(c)*a*g*x^2+1/2*ln(c)*b*f*x^2+1/2*ln(c)^2*b*g*x^2+1/2*x^2*b*g*l
n((e*x+d)^n)^2-1/8*Pi^2*b*g*x^2*csgn(I*c)^2*csgn(I*c*(e*x+d)^n)^4-1/2*I/e*P
i*b*d*g*n*x*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-1/2*I*Pi*ln(c)*
b*g*x^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+1/4*I*n*Pi*b*g*x^2*
csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+1/2*I/e^2*Pi*ln(e*x+d)*b*d^
2*g*n*csgn(I*c*(e*x+d)^n)^3-1/2*I/e*Pi*b*d*g*n*x*csgn(I*c*(e*x+d)^n)^3+1/2*
I/e*Pi*b*d*g*n*x*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-1/2*I/e^2*Pi*ln(e*x+d)*b*d
^2*g*n*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+1/4*Pi^2*b*g*x^2*csgn(I*c)*c
sgn(I*c*(e*x+d)^n)^5-1/8*Pi^2*b*g*x^2*csgn(I*(e*x+d)^n)^2*csgn(I*c*(e*x+d)^
n)^4+1/4*Pi^2*b*g*x^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^5-1/2*I/e^2*Pi*
ln(e*x+d)*b*d^2*g*n*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-1/2*n*ln(c)*b*g*x^2-1/8
*Pi^2*b*g*x^2*csgn(I*c*(e*x+d)^n)^6+1/4*Pi^2*b*g*x^2*csgn(I*c)^2*csgn(I*(e*
x+d)^n)*csgn(I*c*(e*x+d)^n)^3+1/4*Pi^2*b*g*x^2*csgn(I*c)*csgn(I*(e*x+d)^n)^
2*csgn(I*c*(e*x+d)^n)^3-1/2*Pi^2*b*g*x^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I
*c*(e*x+d)^n)^4-1/2*I*Pi*ln(c)*b*g*x^2*csgn(I*c*(e*x+d)^n)^3+1/4*I*n*Pi*b*g
*x^2*csgn(I*c*(e*x+d)^n)^3+1/4*I*Pi*a*g*x^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2
+1/4*I*Pi*b*f*x^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+1/4*I*Pi*a*g*x^2*csgn(I*(
e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+1/4*I*Pi*b*f*x^2*csgn(I*(e*x+d)^n)*csgn(I*c
*(e*x+d)^n)^2-1/2*n*b*d^2*f/e^2*ln(e*x+d)-1/e^2*ln(c)*ln(e*x+d)*b*d^2*g*n+1
/e*ln(c)*b*d*g*n*x-1/8*Pi^2*b*g*x^2*csgn(I*c)^2*csgn(I*(e*x+d)^n)^2*csgn(I*
c*(e*x+d)^n)^2+1/2*I*Pi*ln(c)*b*g*x^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-1/4*I
*n*Pi*b*g*x^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+1/2*I*Pi*ln(c)*b*g*x^2*csgn(I
*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-1/4*I*n*Pi*b*g*x^2*csgn(I*(e*x+d)^n)*csgn
(I*c*(e*x+d)^n)^2-1/4*I*Pi*a*g*x^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*
x+d)^n)-1/4*I*Pi*b*f*x^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+1/
2*I/e*Pi*b*d*g*n*x*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+1/2*(-I*Pi*b*e^2
*g*x^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+I*Pi*b*e^2*g*x^2*csg
n(I*c)*csgn(I*c*(e*x+d)^n)^2+I*Pi*b*e^2*g*x^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e
*x+d)^n)^2-I*Pi*b*e^2*g*x^2*csgn(I*c*(e*x+d)^n)^3+2*ln(c)*b*e^2*g*x^2-b*e^2
*g*n*x^2+a*e^2*g*x^2-2*ln(e*x+d)*b*d^2*g*n+2*b*d*e*g*n*x+b*e^2*f*x^2)/e^2*l
n((e*x+d)^n)+3/2*b*d^2*g*n^2/e^2*ln(e*x+d)-1/2*n*a*d^2*g/e^2*ln(e*x+d)+1/2*
d*n*a*g/e*x-1/4*I*Pi*a*g*x^2*csgn(I*c*(e*x+d)^n)^3-1/4*I*Pi*b*f*x^2*csgn(I*
c*(e*x+d)^n)^3+1/2*b*d^2*g*n^2*ln(e*x+d)^2/e^2+1/2*b*d*f*n*x/e
```

Maxima [A]
time = 0.30, size = 231, normalized size = 1.18

$$\frac{1}{2}\,bgx^2\log\left(\left(xe+d\right)^n c\right)^2-\frac{1}{4}\,\left(2\,d^2e^{(-3)}\log\left(xe+d\right)+\left(x^2e-2\,dx\right)e^{(-2)}\right)bfne-\frac{1}{4}\,\left(2\,d^2e^{(-3)}\log\left(xe+d\right)+\left(x^2e-2\,dx\right)e^{(-2)}\right)agne+\frac{1}{2}\,bfx^2\log\left(\left(xe+d\right)^n c\right)+\frac{1}{2}\,agx^2\log\left(\left(xe+d\right)^n c\right)+\frac{1}{2}\,afx^2+\frac{1}{4}\,\left(\left(2\,d^2\log\left(xe+d\right)^2+x^2e^2-6\,dxe+6\,d^2\log\left(xe+d\right)\right)n^2e^{(-2)}-2\,\left(2\,d^2e^{(-3)}\log\left(xe+d\right)+\left(x^2e-2\,dx\right)e^{(-2)}\right)ne\log\left(\left(xe+d\right)^n c\right)\right)bg$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*log(c*(e*x+d)^n))*(f+g*log(c*(e*x+d)^n)),x, algorithm="max
ima")
```

```
[Out] 1/2*b*g*x^2*log((x*e + d)^n*c)^2 - 1/4*(2*d^2*e^(-3)*log(x*e + d) + (x^2*e
- 2*d*x)*e^(-2))*b*f*n*e - 1/4*(2*d^2*e^(-3)*log(x*e + d) + (x^2*e - 2*d*x)
*e^(-2))*a*g*n*e + 1/2*b*f*x^2*log((x*e + d)^n*c) + 1/2*a*g*x^2*log((x*e +
d)^n*c) + 1/2*a*f*x^2 + 1/4*((2*d^2*log(x*e + d)^2 + x^2*e^2 - 6*d*x*e + 6*
d^2*log(x*e + d))*n^2*e^(-2) - 2*(2*d^2*e^(-3)*log(x*e + d) + (x^2*e - 2*d*
x)*e^(-2))*n*e*log((x*e + d)^n*c))*b*g
```

Fricas [A]
time = 0.36, size = 231, normalized size = 1.18

$$\frac{1}{4}\left(2\,bgx^2e^2\log\left(c\right)^2+\left(bgn^2+2\,af-\left(bf+ag\right)n\right)x^2e^2-2\left(3\,bdgn^2-\left(bdf+adg\right)n\right)xe+2\left(bgn^2x^2e^2-bd^2gn^2\right)\log\left(xe+d\right)^2+2\left(2\,bdgn^2xe+3\,bd^2gn^2-\left(bgn^2-\left(bf+ag\right)n\right)x^2e^2-\left(bd^2f+ad^2g\right)n+2\left(bgnx^2e^2-bd^2gn\right)\log\left(c\right)\right)\log\left(xe+d\right)+2\left(2\,bdgnxe-\left(bgn-bf-ag\right)x^2e^2\right)\log\left(c\right)\right)e^{(-2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*log(c*(e*x+d)^n))*(f+g*log(c*(e*x+d)^n)),x, algorithm="fri
cas")
```

```
[Out] 1/4*(2*b*g*x^2*e^2*log(c)^2 + (b*g*n^2 + 2*a*f - (b*f + a*g)*n)*x^2*e^2 - 2
*(3*b*d*g*n^2 - (b*d*f + a*d*g)*n)*x*e + 2*(b*g*n^2*x^2*e^2 - b*d^2*g*n^2)*
log(x*e + d)^2 + 2*(2*b*d*g*n^2*x*e + 3*b*d^2*g*n^2 - (b*g*n^2 - (b*f + a*g
)*n)*x^2*e^2 - (b*d^2*f + a*d^2*g)*n + 2*(b*g*n*x^2*e^2 - b*d^2*g*n)*log(c)
)*log(x*e + d) + 2*(2*b*d*g*n*x*e - (b*g*n - b*f - a*g)*x^2*e^2)*log(c))*e^
(-2)
```

Sympy [A]
time = 0.64, size = 296, normalized size = 1.51

$$\begin{cases} -\frac{ad^2g\log\left(c(d+ex)^n\right)}{2e^2}+\frac{adgnx}{2e}+\frac{afx^2}{2}-\frac{agnx^2}{4}+\frac{agx^2\log\left(c(d+ex)^n\right)}{2}-\frac{bd^2f\log\left(c(d+ex)^n\right)}{2e^2}+\frac{3bd^2gn\log\left(c(d+ex)^n\right)}{2e^2}-\frac{bd^2g\log\left(c(d+ex)^n\right)^2}{2e^2}+\frac{bdfnx}{2e}-\frac{3bdgn^2x}{2e}+\frac{bdgnx\log\left(c(d+ex)^n\right)}{e}-\frac{bfnx^2}{4}+\frac{bfx^2\log\left(c(d+ex)^n\right)}{2}+\frac{bgn^2x^2}{4}-\frac{bgnx^2\log\left(c(d+ex)^n\right)}{2}+\frac{bgx^2\log\left(c(d+ex)^n\right)^2}{2} & \text{for}\: e\neq 0\\ \frac{x^2(a+b\log\left(cd^n\right))(f+g\log\left(cd^n\right))}{2} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*ln(c*(e*x+d)**n))*(f+g*ln(c*(e*x+d)**n)),x)
```

```
[Out] Piecewise((-a*d**2*g*log(c*(d + e*x)**n)/(2*e**2) + a*d*g*n*x/(2*e) + a*f*x
**2/2 - a*g*n*x**2/4 + a*g*x**2*log(c*(d + e*x)**n)/2 - b*d**2*f*log(c*(d +
 e*x)**n)/(2*e**2) + 3*b*d**2*g*n*log(c*(d + e*x)**n)/(2*e**2) - b*d**2*g*l
og(c*(d + e*x)**n)**2/(2*e**2) + b*d*f*n*x/(2*e) - 3*b*d*g*n**2*x/(2*e) + b
*d*g*n*x*log(c*(d + e*x)**n)/e - b*f*n*x**2/4 + b*f*x**2*log(c*(d + e*x)**n
)/2 + b*g*n**2*x**2/4 - b*g*n*x**2*log(c*(d + e*x)**n)/2 + b*g*x**2*log(c*(
d + e*x)**n)**2/2, Ne(e, 0)), (x**2*(a + b*log(c*d**n))*(f + g*log(c*d**n))
/2, True))
```

Giac [B] Leaf count of result is larger than twice the leaf count of optimal. 477 vs. 2(190) = 380.
time = 4.10, size = 477, normalized size = 2.43

$$\frac{1}{2}\left(xe+d\right)^2bgn^2e^{(-2)}\log\left(xe+d\right)^2-\left(xe+d\right)bdgn^2e^{(-2)}\log\left(xe+d\right)^2-\frac{1}{2}\left(xe+d\right)^2bgn^2e^{(-2)}\log\left(xe+d\right)+2\left(xe+d\right)bdgn^2e^{(-2)}\log\left(xe+d\right)+\left(xe+d\right)^2bgne^{(-2)}\log\left(xe+d\right)\log\left(c\right)-2\left(xe+d\right)bdgne^{(-2)}\log\left(xe+d\right)\log\left(c\right)+\frac{1}{4}\left(xe+d\right)^2bgn^2e^{(-2)}-2\left(xe+d\right)bdgn^2e^{(-2)}+\frac{1}{2}\left(xe+d\right)^2bfne^{(-2)}\log\left(xe+d\right)-\left(xe+d\right)bdfne^{(-2)}\log\left(xe+d\right)+\frac{1}{2}\left(xe+d\right)^2agne^{(-2)}\log\left(xe+d\right)-\left(xe+d\right)adgne^{(-2)}\log\left(xe+d\right)-\frac{1}{2}\left(xe+d\right)^2bgne^{(-2)}\log\left(c\right)+2\left(xe+d\right)bdgne^{(-2)}\log\left(c\right)+\frac{1}{2}\left(xe+d\right)^2bge^{(-2)}\log\left(c\right)^2-\left(xe+d\right)bdge^{(-2)}\log\left(c\right)^2-\frac{1}{4}\left(xe+d\right)^2bfne^{(-2)}+\left(xe+d\right)bdfne^{(-2)}-\frac{1}{4}\left(xe+d\right)^2agne^{(-2)}+\left(xe+d\right)adgne^{(-2)}+\frac{1}{2}\left(xe+d\right)^2bfe^{(-2)}\log\left(c\right)-\left(xe+d\right)bdfe^{(-2)}\log\left(c\right)+\frac{1}{2}\left(xe+d\right)^2age^{(-2)}\log\left(c\right)-\left(xe+d\right)adge^{(-2)}\log\left(c\right)+\frac{1}{2}\left(xe+d\right)^2afe^{(-2)}-\left(xe+d\right)adfe^{(-2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*log(c*(e*x+d)^n))*(f+g*log(c*(e*x+d)^n)),x, algorithm="gia
c")
```

```
[Out] 1/2*(x*e + d)^2*b*g*n^2*e^(-2)*log(x*e + d)^2 - (x*e + d)*b*d*g*n^2*e^(-2)*
log(x*e + d)^2 - 1/2*(x*e + d)^2*b*g*n^2*e^(-2)*log(x*e + d) + 2*(x*e + d)*
b*d*g*n^2*e^(-2)*log(x*e + d) + (x*e + d)^2*b*g*n*e^(-2)*log(x*e + d)*log(c
) - 2*(x*e + d)*b*d*g*n*e^(-2)*log(x*e + d)*log(c) + 1/4*(x*e + d)^2*b*g*n^
2*e^(-2) - 2*(x*e + d)*b*d*g*n^2*e^(-2) + 1/2*(x*e + d)^2*b*f*n*e^(-2)*log(
x*e + d) - (x*e + d)*b*d*f*n*e^(-2)*log(x*e + d) + 1/2*(x*e + d)^2*a*g*n*e^
(-2)*log(x*e + d) - (x*e + d)*a*d*g*n*e^(-2)*log(x*e + d) - 1/2*(x*e + d)^2
*b*g*n*e^(-2)*log(c) + 2*(x*e + d)*b*d*g*n*e^(-2)*log(c) + 1/2*(x*e + d)^2*
b*g*e^(-2)*log(c)^2 - (x*e + d)*b*d*g*e^(-2)*log(c)^2 - 1/4*(x*e + d)^2*b*f
*n*e^(-2) + (x*e + d)*b*d*f*n*e^(-2) - 1/4*(x*e + d)^2*a*g*n*e^(-2) + (x*e
+ d)*a*d*g*n*e^(-2) + 1/2*(x*e + d)^2*b*f*e^(-2)*log(c) - (x*e + d)*b*d*f*e
^(-2)*log(c) + 1/2*(x*e + d)^2*a*g*e^(-2)*log(c) - (x*e + d)*a*d*g*e^(-2)*l
og(c) + 1/2*(x*e + d)^2*a*f*e^(-2) - (x*e + d)*a*d*f*e^(-2)
```

Mupad [B]
time = 0.35, size = 203, normalized size = 1.04

$$x\left(\frac{d\,\left(a\,f-b\,g\,n^2\right)}{e}-\frac{d\,\left(a\,f-\frac{a\,g\,n}{2}-\frac{b\,f\,n}{2}+\frac{b\,g\,n^2}{2}\right)}{e}\right)+\ln\left(c\,{\left(d+e\,x\right)}^n\right)\,\left(\left(\frac{a\,g}{2}+\frac{b\,f}{2}-\frac{b\,g\,n}{2}\right)\,x^2+\left(\frac{d\,\left(a\,g+b\,f\right)}{e}-\frac{d\,\left(a\,g+b\,f-b\,g\,n\right)}{e}\right)\,x\right)+{\ln\left(c\,{\left(d+e\,x\right)}^n\right)}^2\,\left(\frac{b\,g\,x^2}{2}-\frac{b\,d^2\,g}{2\,e^2}\right)+x^2\,\left(\frac{a\,f}{2}-\frac{a\,g\,n}{4}-\frac{b\,f\,n}{4}+\frac{b\,g\,n^2}{4}\right)-\frac{\ln\left(d+e\,x\right)\,\left(a\,d^2\,g\,n+b\,d^2\,f\,n-3\,b\,d^2\,g\,n^2\right)}{2\,e^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(a + b*log(c*(d + e*x)^n))*(f + g*log(c*(d + e*x)^n)),x)
```

```
[Out] x*((d*(a*f - b*g*n^2))/e - (d*(a*f - (a*g*n)/2 - (b*f*n)/2 + (b*g*n^2)/2))/
e) + log(c*(d + e*x)^n)*(x*((d*(a*g + b*f))/e - (d*(a*g + b*f - b*g*n))/e)
+ x^2*((a*g)/2 + (b*f)/2 - (b*g*n)/2)) + log(c*(d + e*x)^n)^2*((b*g*x^2)/2
- (b*d^2*g)/(2*e^2)) + x^2*((a*f)/2 - (a*g*n)/4 - (b*f*n)/4 + (b*g*n^2)/4)
- (log(d + e*x)*(a*d^2*g*n + b*d^2*f*n - 3*b*d^2*g*n^2))/(2*e^2)
```

3.381 $\int (a+b\log(c(d+ex)^n))(f+g\log(c(d+ex)^n))\,dx$

Optimal. Leaf size=110

$$-((bf+ag)nx)+2bgn^2x-\frac{2bgn(d+ex)\log(c(d+ex)^n)}{e}+x(a+b\log(c(d+ex)^n))(f+g\log(c(d+ex)^n))+$$

```
[Out] -(a*g+b*f)*n*x+2*b*g*n^2*x-2*b*g*n*(e*x+d)*ln(c*(e*x+d)^n)/e+x*(a+b*ln(c*(e
*x+d)^n))*(f+g*ln(c*(e*x+d)^n))+1/4*d*(b*f+a*g+2*b*g*ln(c*(e*x+d)^n))^2/b/e
/g
```

Rubi [A]
time = 0.12, antiderivative size = 110, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.172$, Rules used = {2478, 2458, 2388, 2338, 2332}

$$\frac{d(ag+2bg\log(c(d+ex)^n)+bf)^2}{4beg}+x(a+b\log(c(d+ex)^n))(g\log(c(d+ex)^n)+f)-nx(ag+bf)-\frac{2bgn(d+ex)\log(c(d+ex)^n)}{e}+2bgn^2x$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])*(f + g*Log[c*(d + e*x)^n]),x]
```

```
[Out] -((b*f + a*g)*n*x) + 2*b*g*n^2*x - (2*b*g*n*(d + e*x)*Log[c*(d + e*x)^n])/e
 + x*(a + b*Log[c*(d + e*x)^n])*(f + g*Log[c*(d + e*x)^n]) + (d*(b*f + a*g
+ 2*b*g*Log[c*(d + e*x)^n])^2)/(4*b*e*g)
```

Rule 2332

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2338

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2388

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.))
/(x_), x_Symbol] :> Dist[d, Int[(d + e*x)^(q - 1)*((a + b*Log[c*x^n])^p/x),
 x], x] + Dist[e, Int[(d + e*x)^(q - 1)*(a + b*Log[c*x^n])^p, x], x] /; Fre
eQ[{a, b, c, d, e, n}, x] && IGtQ[p, 0] && GtQ[q, 0] && IntegerQ[2*q]
```

Rule 2458

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
```

```
[(g*(x/e))^q*((e*h - d*i)/e + i*(x/e))^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2478

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(c_.)
*((d_) + (e_.)*(x_))^(n_.)]*(g_.)), x_Symbol] :> Simp[x*(a + b*Log[c*(d + e
*x)^n])*(f + g*Log[c*(d + e*x)^n]), x] - Dist[e*n, Int[(x*(b*f + a*g + 2*b*
g*Log[c*(d + e*x)^n]))/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n},
 x]
```

Rubi steps

$$\int (a+b\log(c(d+ex)^n))(f+g\log(c(d+ex)^n))\,dx = x(a+b\log(c(d+ex)^n))(f+g\log(c(d+ex)^n)) - ($$

$$= x(a+b\log(c(d+ex)^n))(f+g\log(c(d+ex)^n)) - ($$

$$= x(a+b\log(c(d+ex)^n))(f+g\log(c(d+ex)^n)) - $$

$$= -bfnx - agnx + \frac{dg(a+b\log(c(d+ex)^n))^2}{2be} + x(a$$

$$= -bfnx - agnx + \frac{dg(a+b\log(c(d+ex)^n))^2}{2be} + x(a$$

Mathematica [A]
time = 0.02, size = 76, normalized size = 0.69

$$\frac{e(a(f-gn)+bn(-f+2gn))x+(ag+b(f-2gn))(d+ex)\log(c(d+ex)^n)+bg(d+ex)\log^2(c(d+ex)^n)}{e}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])*(f + g*Log[c*(d + e*x)^n]),x]
```

```
[Out] (e*(a*(f - g*n) + b*n*(-f + 2*g*n))*x + (a*g + b*(f - 2*g*n))*(d + e*x)*Log
[c*(d + e*x)^n] + b*g*(d + e*x)*Log[c*(d + e*x)^n]^2)/e
```

Maple [A]
time = 0.41, size = 156, normalized size = 1.42

method	result
norman	$\left(2bg\,n^{2}-nag-nbf+af\right)x+\left(-2bgn+ag+bf\right)x\ln\left(c\,\mathrm{e}^{n\ln(ex+d)}\right)+bgx\ln\left(c\,\mathrm{e}^{n\ln(ex+d)}\right)^{2}+\frac{n\mathrm{c}}{}$
default	$xaf+xag\ln\left(c(ex+d)^{n}\right)-agnx+\frac{agnd\ln(ex+d)}{e}+xb\ln\left(c(ex+d)^{n}\right)f-bfnx+\frac{bfnd\ln(ex+d)}{e}+b$
risch	Expression too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))*(f+g*ln(c*(e*x+d)^n)),x,method=_RETURNVERBOSE)
```

```
[Out] x*a*f+x*a*g*ln(c*(e*x+d)^n)-a*g*n*x+a*g/e*n*d*ln(e*x+d)+x*b*ln(c*(e*x+d)^n)
*f-b*f*n*x+b*f/e*n*d*ln(e*x+d)+b*g*x*ln(c*exp(n*ln(e*x+d)))^2+b*d*g/e*ln(c*
exp(n*ln(e*x+d)))^2+2*b*g*n^2*x-2*n^2*b*d*g/e*ln(e*x+d)-2*b*g*n*x*ln(c*exp(
n*ln(e*x+d)))
```

Maxima [A]
time = 0.29, size = 169, normalized size = 1.54

$$\left(de^{(-2)}\log\left(xe+d\right)-xe^{(-1)}\right)bfne+\left(de^{(-2)}\log\left(xe+d\right)-xe^{(-1)}\right)agne+bgx\log\left((xe+d)^{n}c\right)^{2}+bfx\log\left((xe+d)^{n}c\right)+agx\log\left((xe+d)^{n}c\right)-\left(\left(d\log\left(xe+d\right)^{2}-2\,xe+2\,d\log\left(xe+d\right)\right)n^{2}e^{(-1)}-2\left(de^{(-2)}\log\left(xe+d\right)-xe^{(-1)}\right)ne\log\left((xe+d)^{n}c\right)\right)bg+afx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))*(f+g*log(c*(e*x+d)^n)),x, algorithm="maxim
a")
```

```
[Out] (d*e^(-2)*log(x*e + d) - x*e^(-1))*b*f*n*e + (d*e^(-2)*log(x*e + d) - x*e^(
-1))*a*g*n*e + b*g*x*log((x*e + d)^n*c)^2 + b*f*x*log((x*e + d)^n*c) + a*g*
x*log((x*e + d)^n*c) - ((d*log(x*e + d)^2 - 2*x*e + 2*d*log(x*e + d))*n^2*e
^(-1) - 2*(d*e^(-2)*log(x*e + d) - x*e^(-1))*n*e*log((x*e + d)^n*c))*b*g +
a*f*x
```

Fricas [A]
time = 0.35, size = 156, normalized size = 1.42

$$\left(bgxe\log\left(c\right)^{2}-\left(2\,bgn-bf-ag\right)xe\log\left(c\right)+\left(2\,bgn^{2}+af-\left(bf+ag\right)n\right)xe+\left(bgn^{2}xe+bdgn^{2}\right)\log\left(xe+d\right)^{2}-\left(2\,bdgn^{2}+\left(2\,bgn^{2}-\left(bf+ag\right)n\right)xe-\left(bdf+adg\right)n-2\left(bgnxe+bdgn\right)\log\left(c\right)\right)\log\left(xe+d\right)\right)e^{(-1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))*(f+g*log(c*(e*x+d)^n)),x, algorithm="frica
s")
```

```
[Out] (b*g*x*e*log(c)^2 - (2*b*g*n - b*f - a*g)*x*e*log(c) + (2*b*g*n^2 + a*f - (
b*f + a*g)*n)*x*e + (b*g*n^2*x*e + b*d*g*n^2)*log(x*e + d)^2 - (2*b*d*g*n^2
 + (2*b*g*n^2 - (b*f + a*g)*n)*x*e - (b*d*f + a*d*g)*n - 2*(b*g*n*x*e + b*d
*g*n)*log(c))*log(x*e + d))*e^(-1)
```

Sympy [A]
time = 0.31, size = 189, normalized size = 1.72

$$\begin{cases} \frac{adg\log\left(c(d+ex)^n\right)}{e} + afx - agnx + agx\log\left(c(d+ex)^n\right) + \frac{bdf\log\left(c(d+ex)^n\right)}{e} - \frac{2bdgn\log\left(c(d+ex)^n\right)}{e} + \frac{bdg\log\left(c(d+ex)^n\right)^2}{e} - bfnx + bfx\log\left(c(d+ex)^n\right) + 2bgn^2x - 2bgnx\log\left(c(d+ex)^n\right) + bgx\log\left(c(d+ex)^n\right)^2 & \text{for}\ e \neq 0 \\ x(a+b\log\left(cd^n\right))\left(f+g\log\left(cd^n\right)\right) & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))*(f+g*ln(c*(e*x+d)**n)),x)
```

```
[Out] Piecewise((a*d*g*log(c*(d + e*x)**n)/e + a*f*x - a*g*n*x + a*g*x*log(c*(d +
 e*x)**n) + b*d*f*log(c*(d + e*x)**n)/e - 2*b*d*g*n*log(c*(d + e*x)**n)/e +
 b*d*g*log(c*(d + e*x)**n)**2/e - b*f*n*x + b*f*x*log(c*(d + e*x)**n) + 2*b
*g*n**2*x - 2*b*g*n*x*log(c*(d + e*x)**n) + b*g*x*log(c*(d + e*x)**n)**2, N
e(e, 0)), (x*(a + b*log(c*d**n))*(f + g*log(c*d**n)), True))
```

Giac [A]
time = 3.58, size = 214, normalized size = 1.95

$$(xe+d)bgn^2e^{(-1)}\log(xe+d)^2 - 2(xe+d)bgn^2e^{(-1)}\log(xe+d) + 2(xe+d)bgne^{(-1)}\log(xe+d)\log(c) + 2(xe+d)bgn^2e^{(-1)} + (xe+d)bfne^{(-1)}\log(xe+d) + (xe+d)agne^{(-1)}\log(xe+d) - 2(xe+d)bgne^{(-1)}\log(c) + (xe+d)bge^{(-1)}\log(c)^2 - (xe+d)bfne^{(-1)} - (xe+d)agne^{(-1)} + (xe+d)bfe^{(-1)}\log(c) + (xe+d)age^{(-1)}\log(c) + (xe+d)afe^{(-1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))*(f+g*log(c*(e*x+d)^n)),x, algorithm="giac"
)
```

```
[Out] (x*e + d)*b*g*n^2*e^(-1)*log(x*e + d)^2 - 2*(x*e + d)*b*g*n^2*e^(-1)*log(x*
e + d) + 2*(x*e + d)*b*g*n*e^(-1)*log(x*e + d)*log(c) + 2*(x*e + d)*b*g*n^2
*e^(-1) + (x*e + d)*b*f*n*e^(-1)*log(x*e + d) + (x*e + d)*a*g*n*e^(-1)*log(
x*e + d) - 2*(x*e + d)*b*g*n*e^(-1)*log(c) + (x*e + d)*b*g*e^(-1)*log(c)^2
- (x*e + d)*b*f*n*e^(-1) - (x*e + d)*a*g*n*e^(-1) + (x*e + d)*b*f*e^(-1)*lo
g(c) + (x*e + d)*a*g*e^(-1)*log(c) + (x*e + d)*a*f*e^(-1)
```

Mupad [B]
time = 0.27, size = 102, normalized size = 0.93

$$\ln\left(c\,{\left(d+e\,x\right)}^n\right)^2\,\left(b\,g\,x+\frac{b\,d\,g}{e}\right)+x\,\left(a\,f-a\,g\,n-b\,f\,n+2\,b\,g\,n^2\right)+x\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\,\left(a\,g+b\,f-2\,b\,g\,n\right)+\frac{\ln\left(d+e\,x\right)\,\left(a\,d\,g\,n-2\,b\,d\,g\,n^2+b\,d\,f\,n\right)}{e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))*(f + g*log(c*(d + e*x)^n)),x)
```

```
[Out] log(c*(d + e*x)^n)^2*(b*g*x + (b*d*g)/e) + x*(a*f - a*g*n - b*f*n + 2*b*g*n
^2) + x*log(c*(d + e*x)^n)*(a*g + b*f - 2*b*g*n) + (log(d + e*x)*(a*d*g*n -
 2*b*d*g*n^2 + b*d*f*n))/e
```

3.382 $\int \frac{(a+b\log(c(d+ex)^n))(f+g\log(c(d+ex)^n))}{x}\,dx$

Optimal. Leaf size=158

$$\log(x)\left(a+b\log\left(c(d+ex)^n\right)\right)\left(f+g\log\left(c(d+ex)^n\right)\right)-\frac{\log(x)\left(bf+ag+2bg\log\left(c(d+ex)^n\right)\right)^2}{4bg}+\frac{\log\left(-\frac{ex}{d}\right)}{}$$

```
[Out] ln(x)*(a+b*ln(c*(e*x+d)^n))*(f+g*ln(c*(e*x+d)^n))-1/4*ln(x)*(b*f+a*g+2*b*g*
ln(c*(e*x+d)^n))^2/b/g+1/4*ln(-e*x/d)*(b*f+a*g+2*b*g*ln(c*(e*x+d)^n))^2/b/g
+n*(b*f+a*g+2*b*g*ln(c*(e*x+d)^n))*polylog(2,1+e*x/d)-2*b*g*n^2*polylog(3,1
+e*x/d)
```

Rubi [A]
time = 0.16, antiderivative size = 158, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}} = 0.188$, Rules used = {2482, 2481, 2422, 2354, 2421, 6724}

$$n\,\text{PolyLog}\left(2,\frac{ex}{d}+1\right)\left(ag+2bg\log\left(c(d+ex)^n\right)+bf\right)-2bgn^2\,\text{PolyLog}\left(3,\frac{ex}{d}+1\right)-\frac{\log(x)\left(ag+2bg\log\left(c(d+ex)^n\right)+bf\right)^2}{4bg}+\frac{\log\left(-\frac{ex}{d}\right)\left(ag+2bg\log\left(c(d+ex)^n\right)+bf\right)^2}{4bg}+\log(x)\left(a+b\log\left(c(d+ex)^n\right)\right)\left(g\log\left(c(d+ex)^n\right)+f\right)$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*Log[c*(d + e*x)^n])*(f + g*Log[c*(d + e*x)^n]))/x,x]
```

```
[Out] Log[x]*(a + b*Log[c*(d + e*x)^n])*(f + g*Log[c*(d + e*x)^n]) - (Log[x]*(b*f
 + a*g + 2*b*g*Log[c*(d + e*x)^n])^2)/(4*b*g) + (Log[-((e*x)/d)]*(b*f + a*g
 + 2*b*g*Log[c*(d + e*x)^n])^2)/(4*b*g) + n*(b*f + a*g + 2*b*g*Log[c*(d + e
*x)^n])*PolyLog[2, 1 + (e*x)/d] - 2*b*g*n^2*PolyLog[3, 1 + (e*x)/d]
```

Rule 2354

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[Log[1 + e*(x/d)]*((a + b*Log[c*x^n])^p/e), x] - Dist[b*n*(p/e),
 Int[Log[1 + e*(x/d)]*((a + b*Log[c*x^n])^(p - 1)/x), x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2421

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> Simp[(-PolyLog[2, (-d)*f*x^m])*((a + b*Log[c
*x^n])^p/m), x] + Dist[b*n*(p/m), Int[PolyLog[2, (-d)*f*x^m]*((a + b*Log[c*
x^n])^(p - 1)/x), x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0
] && EqQ[d*e, 1]
```

Rule 2422

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))^(r_.)]*((a_.) + Log[(c_.)*(x_)^(n_
.)]*(b_.))^(p_.))/(x_), x_Symbol] :> Simp[Log[d*(e + f*x^m)^r]*((a + b*Log[
```

```
c*x^n])^(p + 1)/(b*n*(p + 1))), x] - Dist[f*m*(r/(b*n*(p + 1))), Int[x^(m -
 1)*((a + b*Log[c*x^n])^(p + 1)/(e + f*x^m)), x], x] /; FreeQ[{a, b, c, d,
e, f, r, m, n}, x] && IGtQ[p, 0] && NeQ[d*e, 1]
```

Rule 2481

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[(k*(x/d))^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + j*(x/e))^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2482

```
Int[(((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(c_.
)*((d_) + (e_.)*(x_))^(n_.)]*(g_.)))/(x_), x_Symbol] :> Simp[Log[x]*(a + b*
Log[c*(d + e*x)^n])*(f + g*Log[c*(d + e*x)^n]), x] - Dist[e*n, Int[(Log[x]*
(b*f + a*g + 2*b*g*Log[c*(d + e*x)^n]))/(d + e*x), x], x] /; FreeQ[{a, b, c
, d, e, f, g, n}, x]
```

Rule 6724

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(a+b\log(c(d+ex)^n))(f+g\log(c(d+ex)^n))}{x}\,dx = \log(x)(a+b\log(c(d+ex)^n))(f+g\log(c(d+ex)^n$$

$$= \log(x)(a+b\log(c(d+ex)^n))(f+g\log(c(d+ex)^n$$

$$= -\frac{g\log(x)(a+b\log(c(d+ex)^n))^2}{2b} + \log(x)(a+b\,\mathrm{lo}$$

$$= -\frac{g\log(x)(a+b\log(c(d+ex)^n))^2}{2b} + \frac{g\log\left(-\frac{ex}{d}\right)(a$$

$$= -\frac{g\log(x)(a+b\log(c(d+ex)^n))^2}{2b} + \frac{g\log\left(-\frac{ex}{d}\right)(a$$

$$= -\frac{g\log(x)(a+b\log(c(d+ex)^n))^2}{2b} + \frac{g\log\left(-\frac{ex}{d}\right)(a$$

Mathematica [A]
time = 0.05, size = 227, normalized size = 1.44

$$af\log(x)+bf\log\left(-\frac{ex}{d}\right)\log\left(c(d+ex)^n\right)+ag\log\left(-\frac{ex}{d}\right)\log\left(c(d+ex)^n\right)+bg\log(x)\left(-n\log(d+ex)+\log\left(c(d+ex)^n\right)\right)^2+2bgn(-n\log(d+ex)+\log\left(c(d+ex)^n\right))\left(\log(x)\left(\log(d+ex)-\log\left(1+\frac{ex}{d}\right)\right)-\text{Li}_2\left(-\frac{ex}{d}\right)\right)+bfn\text{Li}_2\left(\frac{d+ex}{d}\right)+agn\text{Li}_2\left(\frac{d+ex}{d}\right)+2bgn^2\left(\frac{1}{2}\log^2(d+ex)\log\left(1-\frac{d+ex}{d}\right)+\log(d+ex)\text{Li}_2\left(\frac{d+ex}{d}\right)-\text{Li}_3\left(\frac{d+ex}{d}\right)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*Log[c*(d + e*x)^n])*(f + g*Log[c*(d + e*x)^n]))/x,x]
```

```
[Out] a*f*Log[x] + b*f*Log[-((e*x)/d)]*Log[c*(d + e*x)^n] + a*g*Log[-((e*x)/d)]*L
og[c*(d + e*x)^n] + b*g*Log[x]*(-(n*Log[d + e*x]) + Log[c*(d + e*x)^n])^2 +
 2*b*g*n*(-(n*Log[d + e*x]) + Log[c*(d + e*x)^n])*(Log[x]*(Log[d + e*x] - L
og[1 + (e*x)/d]) - PolyLog[2, -((e*x)/d)]) + b*f*n*PolyLog[2, (d + e*x)/d]
+ a*g*n*PolyLog[2, (d + e*x)/d] + 2*b*g*n^2*((Log[d + e*x]^2*Log[1 - (d + e
*x)/d])/2 + Log[d + e*x]*PolyLog[2, (d + e*x)/d] - PolyLog[3, (d + e*x)/d])
```

Maple [C] Result contains higher order function than in optimal. Order 9 vs. order 4.
time = 0.73, size = 1534, normalized size = 9.71

method	result	size
risch	Expression too large to display	1534

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))*(f+g*ln(c*(e*x+d)^n))/x,x,method=_RETURNVERBOSE)
```

```
[Out] -ln(x)*ln((e*x+d)/d)*b*f*n+a*f*ln(x)-2*ln(c)*ln(x)*ln((e*x+d)/d)*b*g*n-1/2*
I*ln(x)*Pi*b*f*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+I*ln(x)*ln((
e*x+d)/d)*Pi*b*g*n*csgn(I*c*(e*x+d)^n)^3-1/2*I*ln(x)*Pi*b*f*csgn(I*c*(e*x+d
)^n)^3+1/2*ln(x)*Pi^2*b*g*csgn(I*c)^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)
^3+ln(x)*ln((e*x+d)^n)*a*g+ln(x)*ln((e*x+d)^n)*b*f+I*ln(c)*ln(x)*Pi*b*g*csg
n(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+I*ln(c)*ln(x)*Pi*b*g*csgn(I*c)*csgn(I*
c*(e*x+d)^n)^2+1/2*ln(x)*Pi^2*b*g*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^5-1
/4*ln(x)*Pi^2*b*g*csgn(I*c)^2*csgn(I*c*(e*x+d)^n)^4+2*ln(-e*x/d)*ln((e*x+d)
^n)*ln(e*x+d)*b*g*n-2*ln((e*x+d)^n)*ln(e*x+d)*ln(e*x)*b*g*n+I*ln(x)*Pi*ln((
e*x+d)^n)*b*g*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+1/2*I*ln(x)*Pi*b*f*csgn(I*(e*
x+d)^n)*csgn(I*c*(e*x+d)^n)^2-ln(x)*ln((e*x+d)/d)*a*g*n+ln(1-(e*x+d)/d)*ln(
e*x+d)^2*b*g*n^2-I*dilog((e*x+d)/d)*Pi*b*g*n*csgn(I*(e*x+d)^n)*csgn(I*c*(e*
x+d)^n)^2-1/2*I*ln(x)*Pi*a*g*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n
)-I*dilog((e*x+d)/d)*Pi*b*g*n*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I*ln(x)*Pi*ln
((e*x+d)^n)*b*g*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-I*ln(c)*ln(x)*Pi*b*
g*csgn(I*c*(e*x+d)^n)^3-dilog((e*x+d)/d)*a*g*n-dilog((e*x+d)/d)*b*f*n-I*ln(
x)*Pi*ln((e*x+d)^n)*b*g*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+1/2
*ln(x)*Pi^2*b*g*csgn(I*c)*csgn(I*c*(e*x+d)^n)^5+2*ln(c)*ln(x)*ln((e*x+d)^n)
*b*g+2*dilog(-e*x/d)*ln((e*x+d)^n)*b*g*n+I*dilog((e*x+d)/d)*Pi*b*g*n*csgn(I
*c*(e*x+d)^n)^3-I*ln(c)*ln(x)*Pi*b*g*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(
e*x+d)^n)-1/4*ln(x)*Pi^2*b*g*csgn(I*c*(e*x+d)^n)^6+I*dilog((e*x+d)/d)*Pi*b*
```

```
g*n*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-I*ln(x)*ln((e*x+d)/d)*P
i*b*g*n*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+1/2*I*ln(x)*Pi*a*g*csgn(I*c)*csgn(I
*c*(e*x+d)^n)^2+1/2*I*ln(x)*Pi*b*f*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+ln(c)^2*
ln(x)*b*g+ln(c)*ln(x)*a*g+ln(c)*ln(x)*b*f-ln(x)*Pi^2*b*g*csgn(I*c)*csgn(I*(
e*x+d)^n)*csgn(I*c*(e*x+d)^n)^4-1/4*ln(x)*Pi^2*b*g*csgn(I*c)^2*csgn(I*(e*x+
d)^n)^2*csgn(I*c*(e*x+d)^n)^2-2*ln(-e*x/d)*ln(e*x+d)^2*b*g*n^2+ln(e*x+d)^2*
ln(e*x)*b*g*n^2-2*polylog(3,(e*x+d)/d)*b*g*n^2-I*ln(x)*Pi*ln((e*x+d)^n)*b*g
*csgn(I*c*(e*x+d)^n)^3+I*ln(x)*ln((e*x+d)/d)*Pi*b*g*n*csgn(I*c)*csgn(I*(e*x
+d)^n)*csgn(I*c*(e*x+d)^n)-I*ln(x)*ln((e*x+d)/d)*Pi*b*g*n*csgn(I*(e*x+d)^n)
*csgn(I*c*(e*x+d)^n)^2+ln((e*x+d)^n)^2*ln(e*x)*b*g+1/2*ln(x)*Pi^2*b*g*csgn(
I*c)*csgn(I*(e*x+d)^n)^2*csgn(I*c*(e*x+d)^n)^3-2*dilog(-e*x/d)*ln(e*x+d)*b*
g*n^2+2*polylog(2,(e*x+d)/d)*ln(e*x+d)*b*g*n^2-2*ln(c)*dilog((e*x+d)/d)*b*g
*n-1/4*ln(x)*Pi^2*b*g*csgn(I*(e*x+d)^n)^2*csgn(I*c*(e*x+d)^n)^4-1/2*I*ln(x)
*Pi*a*g*csgn(I*c*(e*x+d)^n)^3+1/2*I*ln(x)*Pi*a*g*csgn(I*(e*x+d)^n)*csgn(I*c
*(e*x+d)^n)^2
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))*(f+g*log(c*(e*x+d)^n))/x,x, algorithm="max
ima")
```

```
[Out] a*f*log(x) + integrate((b*g*log((x*e + d)^n)^2 + a*g*log(c) + (g*log(c)^2 +
 f*log(c))*b + ((2*g*log(c) + f)*b + a*g)*log((x*e + d)^n))/x, x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))*(f+g*log(c*(e*x+d)^n))/x,x, algorithm="fri
cas")
```

```
[Out] integral((b*g*log((x*e + d)^n*c)^2 + a*f + (b*f + a*g)*log((x*e + d)^n*c))/
x, x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a + b\log{(c(d + ex)^n)})(f + g\log{(c(d + ex)^n)})}{x}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))*(f+g*ln(c*(e*x+d)**n))/x,x)
```

```
[Out] Integral((a + b*log(c*(d + e*x)**n))*(f + g*log(c*(d + e*x)**n))/x, x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))*(f+g*log(c*(e*x+d)^n))/x,x, algorithm="gia
c")
```

```
[Out] integrate((b*log((x*e + d)^n*c) + a)*(g*log((x*e + d)^n*c) + f)/x, x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right))\,\left(f+g\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*log(c*(d + e*x)^n))*(f + g*log(c*(d + e*x)^n)))/x,x)
```

```
[Out] int(((a + b*log(c*(d + e*x)^n))*(f + g*log(c*(d + e*x)^n)))/x, x)
```

3.383 $\int \frac{(a+b\log(c(d+ex)^n))(f+g\log(c(d+ex)^n))}{x^2}\,dx$

Optimal. Leaf size=96

$$-\frac{(a+b\log(c(d+ex)^n))(f+g\log(c(d+ex)^n))}{x}+\frac{en(bf+ag+2bg\log(c(d+ex)^n))\log\left(1-\frac{d}{d+ex}\right)}{d}-\frac{2begn$$

```
[Out] -(a+b*ln(c*(e*x+d)^n))*(f+g*ln(c*(e*x+d)^n))/x+e*n*(b*f+a*g+2*b*g*ln(c*(e*x
+d)^n))*ln(1-d/(e*x+d))/d-2*b*e*g*n^2*polylog(2,d/(e*x+d))/d
```

Rubi [A]
time = 0.13, antiderivative size = 96, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}} = 0.125$, Rules used = {2483, 2458, 2379, 2438}

$$-\frac{2begn^2\text{PolyLog}\left(2,\frac{d}{d+ex}\right)}{d}+\frac{en\log\left(1-\frac{d}{d+ex}\right)(ag+2bg\log(c(d+ex)^n)+bf)}{d}-\frac{(a+b\log(c(d+ex)^n))(g\log(c(d+ex)^n)+f)}{x}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*Log[c*(d + e*x)^n])*(f + g*Log[c*(d + e*x)^n]))/x^2,x]
```

```
[Out] -(((a + b*Log[c*(d + e*x)^n])*(f + g*Log[c*(d + e*x)^n]))/x) + (e*n*(b*f +
a*g + 2*b*g*Log[c*(d + e*x)^n])*Log[1 - d/(d + e*x)])/d - (2*b*e*g*n^2*Poly
Log[2, d/(d + e*x)])/d
```

Rule 2379

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((x_)*((d_) + (e_.)*(x_)^(r
_.))), x_Symbol] :> Simp[(-Log[1 + d/(e*x^r)])*((a + b*Log[c*x^n])^p/(d*r))
, x] + Dist[b*n*(p/(d*r)), Int[Log[1 + d/(e*x^r)]*((a + b*Log[c*x^n])^(p -
1)/x), x], x] /; FreeQ[{a, b, c, d, e, n, r}, x] && IGtQ[p, 0]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2458

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[(g*(x/e))^q*((e*h - d*i)/e + i*(x/e))^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2483

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(c_.)
*((d_) + (e_.)*(x_))^(n_.)]*(g_.))*(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)*
(a + b*Log[c*(d + e*x)^n])*((f + g*Log[c*(d + e*x)^n])/(m + 1)), x] - Dist[
e*(n/(m + 1)), Int[(x^(m + 1)*(b*f + a*g + 2*b*g*Log[c*(d + e*x)^n]))/(d +
e*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n, m}, x] && NeQ[m, -1]
```

Rubi steps

$$\int \frac{(a+b\log(c(d+ex)^n))(f+g\log(c(d+ex)^n))}{x^2}\,dx = -\frac{(a+b\log(c(d+ex)^n))(f+g\log(c(d+ex)^n))}{x}$$

$$= -\frac{(a+b\log(c(d+ex)^n))(f+g\log(c(d+ex)^n))}{x}$$

$$= -\frac{(a+b\log(c(d+ex)^n))(f+g\log(c(d+ex)^n))}{x}$$

$$= \frac{egn\log\left(-\frac{ex}{d}\right)(a+b\log(c(d+ex)^n))}{d} - \frac{eg(a+b\log$$

$$= \frac{egn\log\left(-\frac{ex}{d}\right)(a+b\log(c(d+ex)^n))}{d} - \frac{eg(a+b\log$$

Mathematica [A]
time = 0.03, size = 180, normalized size = 1.88

$$-\frac{af}{x}+\frac{befn\log(x)}{d}+\frac{aegn\log(x)}{d}-\frac{befn\log(d+ex)}{d}-\frac{aegn\log(d+ex)}{d}-\frac{bf\log(c(d+ex)^n)}{x}-\frac{ag\log(c(d+ex)^n)}{x}+\frac{2begn\log\left(-\frac{ex}{d}\right)\log(c(d+ex)^n)}{d}-\frac{beg\log^2(c(d+ex)^n)}{d}-\frac{bg\log^2(c(d+ex)^n)}{x}+\frac{2begn^2\text{Li}_2\left(\frac{d+ex}{d}\right)}{d}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*Log[c*(d + e*x)^n])*(f + g*Log[c*(d + e*x)^n]))/x^2,x]
```

```
[Out] -((a*f)/x) + (b*e*f*n*Log[x])/d + (a*e*g*n*Log[x])/d - (b*e*f*n*Log[d + e*x
])/d - (a*e*g*n*Log[d + e*x])/d - (b*f*Log[c*(d + e*x)^n])/x - (a*g*Log[c*(
d + e*x)^n])/x + (2*b*e*g*n*Log[-((e*x)/d)]*Log[c*(d + e*x)^n])/d - (b*e*g*
Log[c*(d + e*x)^n]^2)/d - (b*g*Log[c*(d + e*x)^n]^2)/x + (2*b*e*g*n^2*PolyL
og[2, (d + e*x)/d])/d
```

Maple [C] Result contains higher order function than in optimal. Order 9 vs. order 4.
time = 0.34, size = 931, normalized size = 9.70

method	result	size
risch	Expression too large to display	931

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))*(f+g*ln(c*(e*x+d)^n))/x^2,x,method=_RETURNVERBOSE
)
```

```
[Out] -e*n/d*ln(e*x+d)*a*g-e*n/d*ln(e*x+d)*b*f+e*n/d*ln(x)*a*g+e*n/d*ln(x)*b*f-ln
((e*x+d)^n)/x*a*g-ln((e*x+d)^n)/x*b*f-1/x*b*g*ln((e*x+d)^n)^2+I*e*n/d*ln(e*
x+d)*Pi*b*g*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-I*e*n/d*ln(x)*P
i*b*g*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-2*b*g*e*n*ln((e*x+d)^
n)/d*ln(e*x+d)-I*e*n/d*ln(e*x+d)*Pi*b*g*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-I*l
n((e*x+d)^n)/x*Pi*b*g*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-I*ln((e*x+d)^n)/x*Pi*
b*g*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+I*e*n/d*ln(x)*Pi*b*g*csgn(I*(e*
x+d)^n)*csgn(I*c*(e*x+d)^n)^2-2*b*g*e*n^2/d*ln(x)*ln((e*x+d)/d)-2*e*n/d*ln(
e*x+d)*ln(c)*b*g+2*e*n/d*ln(x)*ln(c)*b*g+I*ln((e*x+d)^n)/x*Pi*b*g*csgn(I*c*
(e*x+d)^n)^3-1/4*(-I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+I
*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*
x+d)^n)^2-I*b*Pi*csgn(I*c*(e*x+d)^n)^3+2*b*ln(c)+2*a)*(-I*g*Pi*csgn(I*c)*cs
gn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+I*g*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+
I*g*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-I*g*Pi*csgn(I*c*(e*x+d)^n)^3
+2*g*ln(c)+2*f)/x-2*ln((e*x+d)^n)/x*ln(c)*b*g-I*e*n/d*ln(e*x+d)*Pi*b*g*csgn
(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+I*e*n/d*ln(x)*Pi*b*g*csgn(I*c)*csgn(I*c
*(e*x+d)^n)^2-2*b*g*e*n^2/d*dilog((e*x+d)/d)+b*g*e*n^2/d*ln(e*x+d)^2+I*e*n/
d*ln(e*x+d)*Pi*b*g*csgn(I*c*(e*x+d)^n)^3+I*ln((e*x+d)^n)/x*Pi*b*g*csgn(I*c)
*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+2*b*g*e*n*ln((e*x+d)^n)/d*ln(x)-I*e*
n/d*ln(x)*Pi*b*g*csgn(I*c*(e*x+d)^n)^3
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))*(f+g*log(c*(e*x+d)^n))/x^2,x, algorithm="m
axima")
```

```
[Out] -b*f*n*(log(x*e + d)/d - log(x)/d)*e - a*g*n*(log(x*e + d)/d - log(x)/d)*e
- b*g*(log((x*e + d)^n)^2/x - integrate((x*e*log(c)^2 + d*log(c)^2 + 2*((n
+ log(c))*x*e + d*log(c))*log((x*e + d)^n))/(x^3*e + d*x^2), x)) - b*f*log(
(x*e + d)^n*c)/x - a*g*log((x*e + d)^n*c)/x - a*f/x
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))*(f+g*log(c*(e*x+d)^n))/x^2,x, algorithm="f
ricas")
```

```
[Out] integral((b*g*log((x*e + d)^n*c)^2 + a*f + (b*f + a*g)*log((x*e + d)^n*c))/
x^2, x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a + b\log(c(d + ex)^n))(f + g\log(c(d + ex)^n))}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))*(f+g*ln(c*(e*x+d)**n))/x**2,x)
```

```
[Out] Integral((a + b*log(c*(d + e*x)**n))*(f + g*log(c*(d + e*x)**n))/x**2, x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))*(f+g*log(c*(e*x+d)^n))/x^2,x, algorithm="g
iac")
```

```
[Out] integrate((b*log((x*e + d)^n*c) + a)*(g*log((x*e + d)^n*c) + f)/x^2, x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(a + b\,\ln(c\,(d + e\,x)^n))\,(f + g\,\ln(c\,(d + e\,x)^n))}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*log(c*(d + e*x)^n))*(f + g*log(c*(d + e*x)^n)))/x^2,x)
```

```
[Out] int(((a + b*log(c*(d + e*x)^n))*(f + g*log(c*(d + e*x)^n)))/x^2, x)
```

3.384 $\int \frac{(a+b\log(c(d+ex)^n))(f+g\log(c(d+ex)^n))}{x^3}\,dx$

Optimal. Leaf size=156

$$\frac{be^2gn^2\log(x)}{d^2}-\frac{(a+b\log(c(d+ex)^n))(f+g\log(c(d+ex)^n))}{2x^2}-\frac{en(d+ex)(bf+ag+2bg\log(c(d+ex)^n))}{2d^2x}$$

```
[Out] b*e^2*g*n^2*ln(x)/d^2-1/2*(a+b*ln(c*(e*x+d)^n))*(f+g*ln(c*(e*x+d)^n))/x^2-1
/2*e*n*(e*x+d)*(b*f+a*g+2*b*g*ln(c*(e*x+d)^n))/d^2/x-1/2*e^2*n*(b*f+a*g+2*b
*g*ln(c*(e*x+d)^n))*ln(1-d/(e*x+d))/d^2+b*e^2*g*n^2*polylog(2,d/(e*x+d))/d^
2
```

Rubi [A]
time = 0.23, antiderivative size = 156, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 7, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}} = 0.219$, Rules used = {2483, 2458, 2389, 2379, 2438, 2351, 31}

$$\frac{be^2gn^2\text{PolyLog}\left(2,\frac{d}{d+ex}\right)}{d^2}-\frac{e^2n\log\left(1-\frac{d}{d+ex}\right)(ag+2bg\log(c(d+ex)^n)+bf)}{2d^2}-\frac{en(d+ex)(ag+2bg\log(c(d+ex)^n)+bf)}{2d^2x}-\frac{(a+b\log(c(d+ex)^n))(g\log(c(d+ex)^n)+f)}{2x^2}+\frac{be^2gn^2\log(x)}{d^2}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*Log[c*(d + e*x)^n])*(f + g*Log[c*(d + e*x)^n]))/x^3,x]
```

```
[Out] (b*e^2*g*n^2*Log[x])/d^2 - ((a + b*Log[c*(d + e*x)^n])*(f + g*Log[c*(d + e*
x)^n]))/(2*x^2) - (e*n*(d + e*x)*(b*f + a*g + 2*b*g*Log[c*(d + e*x)^n]))/(2
*d^2*x) - (e^2*n*(b*f + a*g + 2*b*g*Log[c*(d + e*x)^n])*Log[1 - d/(d + e*x)
])/(2*d^2) + (b*e^2*g*n^2*PolyLog[2, d/(d + e*x)])/d^2
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 2351

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_) + (e_.)*(x_)^(r_.))^(q_), x
_Symbol] :> Simp[x*(d + e*x^r)^(q + 1)*((a + b*Log[c*x^n])/d), x] - Dist[b*
(n/d), Int[(d + e*x^r)^(q + 1), x], x] /; FreeQ[{a, b, c, d, e, n, q, r}, x
] && EqQ[r*(q + 1) + 1, 0]
```

Rule 2379

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((x_)*((d_) + (e_.)*(x_)^(r
_.))), x_Symbol] :> Simp[(-Log[1 + d/(e*x^r)])*((a + b*Log[c*x^n])^p/(d*r))
, x] + Dist[b*n*(p/(d*r)), Int[Log[1 + d/(e*x^r)]*((a + b*Log[c*x^n])^(p -
1)/x), x], x] /; FreeQ[{a, b, c, d, e, n, r}, x] && IGtQ[p, 0]
```

Rule 2389

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_))/
(x_), x_Symbol] :> Dist[1/d, Int[(d + e*x)^(q + 1)*((a + b*Log[c*x^n])^p/x)
, x], x] - Dist[e/d, Int[(d + e*x)^q*(a + b*Log[c*x^n])^p, x], x] /; FreeQ[
{a, b, c, d, e, n}, x] && IGtQ[p, 0] && LtQ[q, -1] && IntegerQ[2*q]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2458

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[(g*(x/e))^q*((e*h - d*i)/e + i*(x/e))^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2483

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(c_.)
*((d_) + (e_.)*(x_))^(n_.)]*(g_.))*(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)*
(a + b*Log[c*(d + e*x)^n])*((f + g*Log[c*(d + e*x)^n])/(m + 1)), x] - Dist[
e*(n/(m + 1)), Int[(x^(m + 1)*(b*f + a*g + 2*b*g*Log[c*(d + e*x)^n]))/(d +
e*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n, m}, x] && NeQ[m, -1]
```

Rubi steps

$$\int \frac{(a+b\log(c(d+ex)^n))(f+g\log(c(d+ex)^n))}{x^3}\,dx = -\frac{(a+b\log(c(d+ex)^n))(f+g\log(c(d+ex)^n))}{2x^2} +$$

$$= -\frac{(a+b\log(c(d+ex)^n))(f+g\log(c(d+ex)^n))}{2x^2} +$$

$$= -\frac{(a+b\log(c(d+ex)^n))(f+g\log(c(d+ex)^n))}{2x^2} +$$

$$= -\frac{egn(d+ex)(a+b\log(c(d+ex)^n))}{2d^2x} - \frac{ben(d+ex$$

$$= \frac{be^2gn^2\log(x)}{d^2} - \frac{egn(d+ex)(a+b\log(c(d+ex)^n))}{2d^2x}$$

$$= \frac{be^2gn^2\log(x)}{d^2} - \frac{egn(d+ex)(a+b\log(c(d+ex)^n))}{2d^2x}$$

Mathematica [A]
time = 0.09, size = 254, normalized size = 1.63

$$-\frac{af}{2x^2}+\frac{1}{2}befn\left(-\frac{1}{dx}-\frac{e\log(x)}{d^2}+\frac{e\log(d+ex)}{d^2}\right)+\frac{1}{2}aegn\left(-\frac{1}{dx}-\frac{e\log(x)}{d^2}+\frac{e\log(d+ex)}{d^2}\right)-\frac{bf\log(c(d+ex)^n)}{2x^2}-\frac{ag\log(c(d+ex)^n)}{2x^2}-\frac{bg\log^2(c(d+ex)^n)}{2x^2}+begn\left(\frac{en\left(\frac{\log(x)}{d}-\frac{\log(d+ex)}{d}\right)}{d}-\frac{\log(c(d+ex)^n)}{dx}-\frac{e\log\left(-\frac{ex}{d}\right)\log(c(d+ex)^n)}{d^2}+\frac{e\log^2(c(d+ex)^n)}{2d^2n}-\frac{en\text{Li}_2\left(\frac{d+ex}{d}\right)}{d^2}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*Log[c*(d + e*x)^n])*(f + g*Log[c*(d + e*x)^n]))/x^3,x]
```

```
[Out] -1/2*(a*f)/x^2 + (b*e*f*n*(-(1/(d*x)) - (e*Log[x])/d^2 + (e*Log[d + e*x])/d
^2))/2 + (a*e*g*n*(-(1/(d*x)) - (e*Log[x])/d^2 + (e*Log[d + e*x])/d^2))/2 -
 (b*f*Log[c*(d + e*x)^n])/(2*x^2) - (a*g*Log[c*(d + e*x)^n])/(2*x^2) - (b*g
*Log[c*(d + e*x)^n]^2)/(2*x^2) + b*e*g*n*((e*n*(Log[x]/d - Log[d + e*x]/d))
/d - Log[c*(d + e*x)^n]/(d*x) - (e*Log[-((e*x)/d)]*Log[c*(d + e*x)^n])/d^2
+ (e*Log[c*(d + e*x)^n]^2)/(2*d^2*n) - (e*n*PolyLog[2, (d + e*x)/d])/d^2)
```

Maple [C] Result contains higher order function than in optimal. Order 9 vs. order 4.
time = 0.26, size = 1201, normalized size = 7.70

method	result	size
risch	Expression too large to display	1201

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))*(f+g*ln(c*(e*x+d)^n))/x^3,x,method=_RETURNVERBOSE
)
```

```
[Out] -ln((e*x+d)^n)/x^2*ln(c)*b*g-1/2*I*ln((e*x+d)^n)/x^2*Pi*b*g*csgn(I*(e*x+d)^
n)*csgn(I*c*(e*x+d)^n)^2-1/2*I*ln((e*x+d)^n)/x^2*Pi*b*g*csgn(I*c)*csgn(I*c*
(e*x+d)^n)^2+1/2*I*e^2*n/d^2*ln(x)*Pi*b*g*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(
I*c*(e*x+d)^n)-1/2*I*e^2*n/d^2*ln(e*x+d)*Pi*b*g*csgn(I*c)*csgn(I*(e*x+d)^n)
*csgn(I*c*(e*x+d)^n)+1/2*I*e*n/d/x*Pi*b*g*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(
I*c*(e*x+d)^n)-1/2*e*n/d/x*b*f-1/2*I*e^2*n/d^2*ln(x)*Pi*b*g*csgn(I*(e*x+d)^
n)*csgn(I*c*(e*x+d)^n)^2-1/2*ln((e*x+d)^n)/x^2*a*g-1/2*ln((e*x+d)^n)/x^2*b*
f-1/2/x^2*b*g*ln((e*x+d)^n)^2+1/2*I*e^2*n/d^2*ln(x)*Pi*b*g*csgn(I*c*(e*x+d)
^n)^3+1/2*I*ln((e*x+d)^n)/x^2*Pi*b*g*csgn(I*c*(e*x+d)^n)^3-1/2*b*g*e^2*n^2/
d^2*ln(e*x+d)^2-b*g*e^2*n^2/d^2*ln(e*x+d)+b*g*e^2*n^2/d^2*dilog((e*x+d)/d)+
1/2*I*e*n/d/x*Pi*b*g*csgn(I*c*(e*x+d)^n)^3+1/2*I*e^2*n/d^2*ln(e*x+d)*Pi*b*g
*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-1/2*I*e*n/d/x*Pi*b*g*csgn(I*(e*x+d
)^n)*csgn(I*c*(e*x+d)^n)^2-1/2*I*e^2*n/d^2*ln(x)*Pi*b*g*csgn(I*c)*csgn(I*c*
(e*x+d)^n)^2-1/8*(-I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+I
*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*
x+d)^n)^2-I*b*Pi*csgn(I*c*(e*x+d)^n)^3+2*b*ln(c)+2*a)*(-I*g*Pi*csgn(I*c)*cs
gn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+I*g*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+
I*g*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-I*g*Pi*csgn(I*c*(e*x+d)^n)^3
+2*g*ln(c)+2*f)/x^2+b*g*e^2*n^2/d^2*ln(x)*ln((e*x+d)/d)+1/2*e^2*n/d^2*ln(e*
x+d)*a*g+1/2*e^2*n/d^2*ln(e*x+d)*b*f-1/2*e^2*n/d^2*ln(x)*a*g-1/2*e^2*n/d^2*
ln(x)*b*f-1/2*e*n/d/x*a*g+b*g*e^2*n*ln((e*x+d)^n)/d^2*ln(e*x+d)-b*g*e*n*ln(
(e*x+d)^n)/d/x-b*g*e^2*n*ln((e*x+d)^n)/d^2*ln(x)-1/2*I*e*n/d/x*Pi*b*g*csgn(
I*c)*csgn(I*c*(e*x+d)^n)^2+e^2*n/d^2*ln(e*x+d)*ln(c)*b*g-e^2*n/d^2*ln(x)*ln
(c)*b*g-e*n/d/x*ln(c)*b*g-1/2*I*e^2*n/d^2*ln(e*x+d)*Pi*b*g*csgn(I*c*(e*x+d)
^n)^3+1/2*I*ln((e*x+d)^n)/x^2*Pi*b*g*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(
e*x+d)^n)+1/2*I*e^2*n/d^2*ln(e*x+d)*Pi*b*g*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+
b*e^2*g*n^2*ln(x)/d^2
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))*(f+g*log(c*(e*x+d)^n))/x^3,x, algorithm="m
axima")
```

```
[Out] 1/2*b*f*n*(e*log(x*e + d)/d^2 - e*log(x)/d^2 - 1/(d*x))*e + 1/2*a*g*n*(e*lo
g(x*e + d)/d^2 - e*log(x)/d^2 - 1/(d*x))*e - 1/2*b*g*(log((x*e + d)^n)^2/x^
2 - 2*integrate((x*e*log(c)^2 + d*log(c)^2 + ((n + 2*log(c))*x*e + 2*d*log(
c))*log((x*e + d)^n))/(x^4*e + d*x^3), x)) - 1/2*b*f*log((x*e + d)^n*c)/x^2
 - 1/2*a*g*log((x*e + d)^n*c)/x^2 - 1/2*a*f/x^2
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))*(f+g*log(c*(e*x+d)^n))/x^3,x, algorithm="f
ricas")
```

```
[Out] integral((b*g*log((x*e + d)^n*c)^2 + a*f + (b*f + a*g)*log((x*e + d)^n*c))/
x^3, x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a + b\log(c(d + ex)^n))(f + g\log(c(d + ex)^n))}{x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))*(f+g*ln(c*(e*x+d)**n))/x**3,x)
```

```
[Out] Integral((a + b*log(c*(d + e*x)**n))*(f + g*log(c*(d + e*x)**n))/x**3, x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))*(f+g*log(c*(e*x+d)^n))/x^3,x, algorithm="g
iac")
```

```
[Out] integrate((b*log((x*e + d)^n*c) + a)*(g*log((x*e + d)^n*c) + f)/x^3, x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(a + b\,\ln(c\,(d + e\,x)^n))\,(f + g\,\ln(c\,(d + e\,x)^n))}{x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*log(c*(d + e*x)^n))*(f + g*log(c*(d + e*x)^n)))/x^3,x)
```

```
[Out] int(((a + b*log(c*(d + e*x)^n))*(f + g*log(c*(d + e*x)^n)))/x^3, x)
```

3.385 $\int \frac{(a+b\log(c(d+ex)^n))(f+g\log(c(d+ex)^n))}{x^4}\,dx$

Optimal. Leaf size=234

$$-\frac{be^2gn^2}{3d^2x}-\frac{be^3gn^2\log(x)}{d^3}+\frac{be^3gn^2\log(d+ex)}{3d^3}-\frac{(a+b\log(c(d+ex)^n))(f+g\log(c(d+ex)^n))}{3x^3}-\frac{en(bf+ag$$

```
[Out] -1/3*b*e^2*g*n^2/d^2/x-b*e^3*g*n^2*ln(x)/d^3+1/3*b*e^3*g*n^2*ln(e*x+d)/d^3-
1/3*(a+b*ln(c*(e*x+d)^n))*(f+g*ln(c*(e*x+d)^n))/x^3-1/6*e*n*(b*f+a*g+2*b*g*
ln(c*(e*x+d)^n))/d/x^2+1/3*e^2*n*(e*x+d)*(b*f+a*g+2*b*g*ln(c*(e*x+d)^n))/d^
3/x+1/3*e^3*n*(b*f+a*g+2*b*g*ln(c*(e*x+d)^n))*ln(1-d/(e*x+d))/d^3-2/3*b*e^3
*g*n^2*polylog(2,d/(e*x+d))/d^3
```

Rubi [A]

time = 0.34, antiderivative size = 234, normalized size of antiderivative = 1.00, number of steps used = 11, number of rules used = 9, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}} = 0.281$, Rules used = {2483, 2458, 2389, 2379, 2438, 2351, 31, 2356, 46}

$$-\frac{2be^3gn^2\text{PolyLog}\left(2,\frac{d}{d+ex}\right)}{3d^3}+\frac{e^3n\log\left(1-\frac{d}{d+ex}\right)(ag+2bg\log(c(d+ex)^n)+bf)}{3d^3}+\frac{e^2n(d+ex)(ag+2bg\log(c(d+ex)^n)+bf)}{3d^3x}-\frac{(a+b\log(c(d+ex)^n))(g\log(c(d+ex)^n)+f)}{3x^3}-\frac{en(ag+2bg\log(c(d+ex)^n)+bf)}{6dx^2}-\frac{be^3gn^2\log(x)}{d^3}+\frac{be^3gn^2\log(d+ex)}{3d^3}-\frac{be^2gn^2}{3d^2x}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*Log[c*(d + e*x)^n])*(f + g*Log[c*(d + e*x)^n]))/x^4,x]
```

```
[Out] -1/3*(b*e^2*g*n^2)/(d^2*x) - (b*e^3*g*n^2*Log[x])/d^3 + (b*e^3*g*n^2*Log[d
+ e*x])/(3*d^3) - ((a + b*Log[c*(d + e*x)^n])*(f + g*Log[c*(d + e*x)^n]))/(
3*x^3) - (e*n*(b*f + a*g + 2*b*g*Log[c*(d + e*x)^n]))/(6*d*x^2) + (e^2*n*(d
 + e*x)*(b*f + a*g + 2*b*g*Log[c*(d + e*x)^n]))/(3*d^3*x) + (e^3*n*(b*f + a
*g + 2*b*g*Log[c*(d + e*x)^n])*Log[1 - d/(d + e*x)])/(3*d^3) - (2*b*e^3*g*n
^2*PolyLog[2, d/(d + e*x)])/(3*d^3)
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 46

```
Int[((a_) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[E
xpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m +
 n + 2, 0])
```

Rule 2351

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_) + (e_.)*(x_)^(r_.))^(q_), x
_Symbol] :> Simp[x*(d + e*x^r)^(q + 1)*((a + b*Log[c*x^n])/d), x] - Dist[b*
```

```
(n/d), Int[(d + e*x^r)^(q + 1), x], x] /; FreeQ[{a, b, c, d, e, n, q, r}, x
] && EqQ[r*(q + 1) + 1, 0]
```

Rule 2356

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.),
x_Symbol] :> Simp[(d + e*x)^(q + 1)*((a + b*Log[c*x^n])^p/(e*(q + 1))), x]
- Dist[b*n*(p/(e*(q + 1))), Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^(p -
1))/x, x], x] /; FreeQ[{a, b, c, d, e, n, p, q}, x] && GtQ[p, 0] && NeQ[q,
-1] && (EqQ[p, 1] || (IntegersQ[2*p, 2*q] &&  !IGtQ[q, 0]) || (EqQ[p, 2] &&
 NeQ[q, 1]))
```

Rule 2379

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((x_)*((d_) + (e_.)*(x_)^(r
_.))), x_Symbol] :> Simp[(-Log[1 + d/(e*x^r)])*((a + b*Log[c*x^n])^p/(d*r))
, x] + Dist[b*n*(p/(d*r)), Int[Log[1 + d/(e*x^r)]*((a + b*Log[c*x^n])^(p -
1)/x), x], x] /; FreeQ[{a, b, c, d, e, n, r}, x] && IGtQ[p, 0]
```

Rule 2389

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_))/
(x_), x_Symbol] :> Dist[1/d, Int[(d + e*x)^(q + 1)*((a + b*Log[c*x^n])^p/x)
, x], x] - Dist[e/d, Int[(d + e*x)^q*(a + b*Log[c*x^n])^p, x], x] /; FreeQ[
{a, b, c, d, e, n}, x] && IGtQ[p, 0] && LtQ[q, -1] && IntegerQ[2*q]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2458

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[(g*(x/e))^q*((e*h - d*i)/e + i*(x/e))^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2483

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(c_.)
*((d_) + (e_.)*(x_))^(n_.)]*(g_.))*(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)*
(a + b*Log[c*(d + e*x)^n])*((f + g*Log[c*(d + e*x)^n])/(m + 1)), x] - Dist[
e*(n/(m + 1)), Int[(x^(m + 1)*(b*f + a*g + 2*b*g*Log[c*(d + e*x)^n]))/(d +
e*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n, m}, x] && NeQ[m, -1]
```

Rubi steps

$$\int \frac{(a+b\log(c(d+ex)^n))(f+g\log(c(d+ex)^n))}{x^4}\,dx = -\frac{(a+b\log(c(d+ex)^n))(f+g\log(c(d+ex)^n))}{3x^3}$$

$$= -\frac{(a+b\log(c(d+ex)^n))(f+g\log(c(d+ex)^n))}{3x^3}$$

$$= -\frac{(a+b\log(c(d+ex)^n))(f+g\log(c(d+ex)^n))}{3x^3}$$

$$= -\frac{egn(a+b\log(c(d+ex)^n))}{6dx^2} - \frac{ben(f+g\log(c(d}{6dx^2}$$

$$= -\frac{egn(a+b\log(c(d+ex)^n))}{6dx^2} + \frac{e^2gn(d+ex)(a+}{3d}$$

$$= -\frac{2be^3gn^2\log(x)}{3d^3} + 2\left(-\frac{be^2gn^2}{6d^2x} - \frac{be^3gn^2\log(x)}{6d^3} + \right.$$

$$= -\frac{2be^3gn^2\log(x)}{3d^3} + 2\left(-\frac{be^2gn^2}{6d^2x} - \frac{be^3gn^2\log(x)}{6d^3} + \right.$$

Mathematica [A]
time = 0.12, size = 351, normalized size = 1.50

$$-\frac{af}{3x^3} - \frac{be^2gn^2}{3d^2x} - \frac{be^3gn^2\log(x)}{d^3} + \frac{be^3gn^2\log(d+ex)}{d^3} + \frac{1}{3}befn\left(-\frac{1}{2dx^2} + \frac{e}{d^2x} + \frac{e^2\log(x)}{d^3} - \frac{e^2\log(d+ex)}{d^3}\right) + \frac{1}{3}aegn\left(-\frac{1}{2dx^2} + \frac{e}{d^2x} + \frac{e^2\log(x)}{d^3} - \frac{e^2\log(d+ex)}{d^3}\right) - \frac{bf\log(c(d+ex)^n)}{3x^3} - \frac{ag\log(c(d+ex)^n)}{3x^3} - \frac{begn\log(c(d+ex)^n)}{3dx^2} + \frac{2be^2gn\log(c(d+ex)^n)}{3d^2x} + \frac{2be^3gn\log\left(-\frac{ex}{d}\right)\log(c(d+ex)^n)}{3d^3} - \frac{be^3g\log^2(c(d+ex)^n)}{3d^3} - \frac{bg\log^2(c(d+ex)^n)}{3x^3} + \frac{2be^3gn^2\text{Li}_2\left(\frac{d+ex}{d}\right)}{3d^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*Log[c*(d + e*x)^n])*(f + g*Log[c*(d + e*x)^n]))/x^4,x]
```

```
[Out] -1/3*(a*f)/x^3 - (b*e^2*g*n^2)/(3*d^2*x) - (b*e^3*g*n^2*Log[x])/d^3 + (b*e^
3*g*n^2*Log[d + e*x])/d^3 + (b*e*f*n*(-1/2*1/(d*x^2) + e/(d^2*x) + (e^2*Log
[x])/d^3 - (e^2*Log[d + e*x])/d^3))/3 + (a*e*g*n*(-1/2*1/(d*x^2) + e/(d^2*x
) + (e^2*Log[x])/d^3 - (e^2*Log[d + e*x])/d^3))/3 - (b*f*Log[c*(d + e*x)^n]
)/(3*x^3) - (a*g*Log[c*(d + e*x)^n])/(3*x^3) - (b*e*g*n*Log[c*(d + e*x)^n])
/(3*d*x^2) + (2*b*e^2*g*n*Log[c*(d + e*x)^n])/(3*d^2*x) + (2*b*e^3*g*n*Log[
-((e*x)/d)]*Log[c*(d + e*x)^n])/(3*d^3) - (b*e^3*g*Log[c*(d + e*x)^n]^2)/(3
*d^3) - (b*g*Log[c*(d + e*x)^n]^2)/(3*x^3) + (2*b*e^3*g*n^2*PolyLog[2, (d +
 e*x)/d])/(3*d^3)
```

Maple [C] Result contains higher order function than in optimal. Order 9 vs. order 4.
time = 0.32, size = 1437, normalized size = 6.14

method	result	size
risch	Expression too large to display	1437

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))*(f+g*ln(c*(e*x+d)^n))/x^4,x,method=_RETURNVERBOSE
)
```

```
[Out] -1/3*b*e^2*g*n^2/d^2/x+1/3*I*e^3*n/d^3*ln(e*x+d)*Pi*b*g*csgn(I*c)*csgn(I*(e
*x+d)^n)*csgn(I*c*(e*x+d)^n)+1/6*I*e*n/d/x^2*Pi*b*g*csgn(I*c)*csgn(I*(e*x+d
)^n)*csgn(I*c*(e*x+d)^n)-1/3*I*e^3*n/d^3*ln(e*x+d)*Pi*b*g*csgn(I*c)*csgn(I*
c*(e*x+d)^n)^2-1/3*I*e^2*n/d^2/x*Pi*b*g*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*
c*(e*x+d)^n)-1/3/x^3*b*g*ln((e*x+d)^n)^2-2/3*b*g*e^3*n^2/d^3*dilog((e*x+d)/
d)+1/3*b*g*e^3*n^2/d^3*ln(e*x+d)^2-1/3*I*ln((e*x+d)^n)/x^3*Pi*b*g*csgn(I*c)
*csgn(I*c*(e*x+d)^n)^2-1/3*I*ln((e*x+d)^n)/x^3*Pi*b*g*csgn(I*(e*x+d)^n)*csg
n(I*c*(e*x+d)^n)^2-2/3*b*g*e^3*n^2/d^3*ln(x)*ln((e*x+d)/d)-1/3*e*n/d/x^2*ln
(c)*b*g+2/3*e^2*n/d^2/x*ln(c)*b*g-2/3*e^3*n/d^3*ln(e*x+d)*ln(c)*b*g+2/3*e^3
*n/d^3*ln(x)*ln(c)*b*g-1/3*I*e^3*n/d^3*ln(x)*Pi*b*g*csgn(I*c)*csgn(I*(e*x+d
)^n)*csgn(I*c*(e*x+d)^n)-b*e^3*g*n^2*ln(x)/d^3+b*e^3*g*n^2*ln(e*x+d)/d^3+1/
3*I*ln((e*x+d)^n)/x^3*Pi*b*g*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n
)+1/3*I*e^2*n/d^2/x*Pi*b*g*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+1/6*I*e*n/d/x^2*
Pi*b*g*csgn(I*c*(e*x+d)^n)^3-1/3*I*e^2*n/d^2/x*Pi*b*g*csgn(I*c*(e*x+d)^n)^3
-2/3*b*g*e^3*n*ln((e*x+d)^n)/d^3*ln(e*x+d)-1/3*b*g*e*n*ln((e*x+d)^n)/d/x^2+
2/3*b*g*e^3*n*ln((e*x+d)^n)/d^3*ln(x)-1/3*ln((e*x+d)^n)/x^3*a*g-1/3*ln((e*x
+d)^n)/x^3*b*f-1/3*I*e^3*n/d^3*ln(e*x+d)*Pi*b*g*csgn(I*(e*x+d)^n)*csgn(I*c*
(e*x+d)^n)^2-1/3*I*e^3*n/d^3*ln(x)*Pi*b*g*csgn(I*c*(e*x+d)^n)^3+1/3*I*e^3*n
/d^3*ln(e*x+d)*Pi*b*g*csgn(I*c*(e*x+d)^n)^3+1/3*I*e^3*n/d^3*ln(x)*Pi*b*g*cs
gn(I*c)*csgn(I*c*(e*x+d)^n)^2+1/3*I*e^3*n/d^3*ln(x)*Pi*b*g*csgn(I*(e*x+d)^n
)*csgn(I*c*(e*x+d)^n)^2-2/3*ln((e*x+d)^n)/x^3*ln(c)*b*g-1/6*e*n/d/x^2*a*g-1
/6*e*n/d/x^2*b*f+1/3*e^2*n/d^2/x*a*g+1/3*e^2*n/d^2/x*b*f-1/3*e^3*n/d^3*ln(e
*x+d)*a*g-1/3*e^3*n/d^3*ln(e*x+d)*b*f+1/3*e^3*n/d^3*ln(x)*a*g+1/3*e^3*n/d^3
*ln(x)*b*f-1/6*I*e*n/d/x^2*Pi*b*g*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+1/3*I*e^2
*n/d^2/x*Pi*b*g*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+2/3*b*g*e^2*n*ln((e
*x+d)^n)/d^2/x-1/12*(-I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n
)+I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*
(e*x+d)^n)^2-I*b*Pi*csgn(I*c*(e*x+d)^n)^3+2*b*ln(c)+2*a)*(-I*g*Pi*csgn(I*c)
*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+I*g*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)
^2+I*g*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-I*g*Pi*csgn(I*c*(e*x+d)^n
)^3+2*g*ln(c)+2*f)/x^3+1/3*I*ln((e*x+d)^n)/x^3*Pi*b*g*csgn(I*c*(e*x+d)^n)^3
-1/6*I*e*n/d/x^2*Pi*b*g*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))*(f+g*log(c*(e*x+d)^n))/x^4,x, algorithm="m
axima")
```

```
[Out] -1/6*b*f*n*(2*e^2*log(x*e + d)/d^3 - 2*e^2*log(x)/d^3 - (2*x*e - d)/(d^2*x^
2))*e - 1/6*a*g*n*(2*e^2*log(x*e + d)/d^3 - 2*e^2*log(x)/d^3 - (2*x*e - d)/
(d^2*x^2))*e - 1/3*b*g*(log((x*e + d)^n)^2/x^3 - 3*integrate(1/3*(3*x*e*log
(c)^2 + 3*d*log(c)^2 + 2*((n + 3*log(c))*x*e + 3*d*log(c))*log((x*e + d)^n)
)/(x^5*e + d*x^4), x)) - 1/3*b*f*log((x*e + d)^n*c)/x^3 - 1/3*a*g*log((x*e
+ d)^n*c)/x^3 - 1/3*a*f/x^3
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))*(f+g*log(c*(e*x+d)^n))/x^4,x, algorithm="f
ricas")
```

```
[Out] integral((b*g*log((x*e + d)^n*c)^2 + a*f + (b*f + a*g)*log((x*e + d)^n*c))/
x^4, x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a + b\log{(c(d + ex)^n)})(f + g\log{(c(d + ex)^n)})}{x^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))*(f+g*ln(c*(e*x+d)**n))/x**4,x)
```

```
[Out] Integral((a + b*log(c*(d + e*x)**n))*(f + g*log(c*(d + e*x)**n))/x**4, x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))*(f+g*log(c*(e*x+d)^n))/x^4,x, algorithm="g
iac")
```

```
[Out] integrate((b*log((x*e + d)^n*c) + a)*(g*log((x*e + d)^n*c) + f)/x^4, x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(a+b\,\ln(c\,(d+e\,x)^n))\,\left(f+g\,\ln(c\,(d+e\,x)^n)\right)}{x^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*log(c*(d + e*x)^n))*(f + g*log(c*(d + e*x)^n)))/x^4,x)
[Out] int(((a + b*log(c*(d + e*x)^n))*(f + g*log(c*(d + e*x)^n)))/x^4, x)
```

3.386 $\int x^3(a+b\log(c(d+ex)^n))(f+g\log(h(i+jx)^m))$

Optimal. Leaf size=742

$$\frac{agi^3mx}{4j^3}+\frac{bd^3fnx}{4e^3}-\frac{5bd^3gmnx}{16e^3}-\frac{5bgi^3mnx}{16j^3}-\frac{5bdgi^2mnx}{24ej^2}-\frac{5bd^2gimnx}{24e^2j}+\frac{3bd^2gmnx^2}{32e^2}+\frac{3bgi^2mnx^2}{32j^2}+\frac{bdgimnx}{12ej}$$

```
[Out] 1/4*b*g*i^3*m*(e*x+d)*ln(c*(e*x+d)^n)/e/j^3+1/4*b*d^3*g*n*(j*x+i)*ln(h*(j*x
+i)^m)/e^3/j-5/16*b*d^3*g*m*n*x/e^3-5/16*b*g*i^3*m*n*x/j^3+3/32*b*d^2*g*m*n
*x^2/e^2+3/32*b*g*i^2*m*n*x^2/j^2-7/144*b*d*g*m*n*x^3/e-7/144*b*g*i*m*n*x^3
/j-1/4*b*g*i^4*m*n*polylog(2,-j*(e*x+d)/(-d*j+e*i))/j^4-1/4*b*d^4*g*m*n*pol
ylog(2,e*(j*x+i)/(-d*j+e*i))/e^4-1/16*g*m*x^4*(a+b*ln(c*(e*x+d)^n))-1/16*b*
n*x^4*(f+g*ln(h*(j*x+i)^m))-1/8*g*i^2*m*x^2*(a+b*ln(c*(e*x+d)^n))/j^2+1/12*
g*i*m*x^3*(a+b*ln(c*(e*x+d)^n))/j-1/4*g*i^4*m*(a+b*ln(c*(e*x+d)^n))*ln(e*(j
*x+i)/(-d*j+e*i))/j^4-1/8*b*d^2*n*x^2*(f+g*ln(h*(j*x+i)^m))/e^2+1/12*b*d*n*
x^3*(f+g*ln(h*(j*x+i)^m))/e-1/4*b*d^4*n*ln(-j*(e*x+d)/(-d*j+e*i))*(f+g*ln(h
*(j*x+i)^m))/e^4+1/32*b*g*m*n*x^4+1/4*x^4*(a+b*ln(c*(e*x+d)^n))*(f+g*ln(h*(
j*x+i)^m))-5/24*b*d*g*i^2*m*n*x/e/j^2-5/24*b*d^2*g*i*m*n*x/e^2/j+1/12*b*d*g
*i*m*n*x^2/e/j+1/4*a*g*i^3*m*x/j^3+1/4*b*d^3*f*n*x/e^3+1/8*b*d^2*g*i^2*m*n*
ln(e*x+d)/e^2/j^2+1/12*b*d^3*g*i*m*n*ln(e*x+d)/e^3/j+1/12*b*d*g*i^3*m*n*ln(
j*x+i)/e/j^3+1/8*b*d^2*g*i^2*m*n*ln(j*x+i)/e^2/j^2+1/16*b*d^4*g*m*n*ln(e*x+
d)/e^4+1/16*b*g*i^4*m*n*ln(j*x+i)/j^4
```

Rubi [A]
time = 0.61, antiderivative size = 742, normalized size of antiderivative = 1.00, number of steps used = 35, number of rules used = 9, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}} = 0.281$, Rules used = {2489, 45, 2463, 2436, 2332, 2442, 2441, 2440, 2438}

$$-\frac{bd^4gmn\,\text{PolyLog}\left(2,\frac{e(i+jx)}{ei-dj}\right)}{4e^4}-\frac{bgi^4mn\,\text{PolyLog}\left(2,-\frac{j(d+ex)}{ei-dj}\right)}{4j^4}+\frac{1}{4}x^4(a+b\log(c(d+ex)^n))(f+g\log(h(i+jx)^m))-\frac{gi^4m\log\left(\frac{e(i+jx)}{ei-dj}\right)(a+b\log(c(d+ex)^n))}{4j^4}-\frac{gi^2mx^2(a+b\log(c(d+ex)^n))}{8j^2}+\frac{gimx^3(a+b\log(c(d+ex)^n))}{12j}-\frac{1}{16}gmx^4(a+b\log(c(d+ex)^n))+\frac{agi^3mx}{4j^3}+\frac{bgi^3m(d+ex)\log(c(d+ex)^n)}{4ej^3}-\frac{bd^4n\log\left(-\frac{j(d+ex)}{ei-dj}\right)(f+g\log(h(i+jx)^m))}{4e^4}+\frac{bd^4gmn\log(d+ex)}{16e^4}+\frac{bd^3fnx}{4e^3}+\frac{bd^3gn(i+jx)\log(h(i+jx)^m)}{4e^3j}+\frac{bd^3gimn\log(d+ex)}{12e^3j}-\frac{5bd^3gmnx}{16e^3}-\frac{bd^2nx^2(f+g\log(h(i+jx)^m))}{8e^2}+\frac{bd^2gi^2mn\log(d+ex)}{8e^2j^2}+\frac{bd^2gi^2mn\log(i+jx)}{8e^2j^2}-\frac{5bd^2gimnx}{24e^2j}+\frac{3bd^2gmnx^2}{32e^2}+\frac{bdnx^3(f+g\log(h(i+jx)^m))}{12e}+\frac{bdgi^3mn\log(i+jx)}{12ej^3}-\frac{5bdgi^2mnx}{24ej^2}+\frac{bdgimnx^2}{12ej}-\frac{7bdgmnx^3}{144e}-\frac{1}{16}bnx^4(f+g\log(h(i+jx)^m))+\frac{bgi^4mn\log(i+jx)}{16j^4}-\frac{5bgi^3mnx}{16j^3}+\frac{3bgi^2mnx^2}{32j^2}-\frac{7bgimnx^3}{144j}+\frac{1}{32}bgmnx^4$$

Antiderivative was successfully verified.

```
[In] Int[x^3*(a + b*Log[c*(d + e*x)^n])*(f + g*Log[h*(i + j*x)^m]),x]
```

```
[Out] (a*g*i^3*m*x)/(4*j^3) + (b*d^3*f*n*x)/(4*e^3) - (5*b*d^3*g*m*n*x)/(16*e^3)
- (5*b*g*i^3*m*n*x)/(16*j^3) - (5*b*d*g*i^2*m*n*x)/(24*e*j^2) - (5*b*d^2*g*
i*m*n*x)/(24*e^2*j) + (3*b*d^2*g*m*n*x^2)/(32*e^2) + (3*b*g*i^2*m*n*x^2)/(3
2*j^2) + (b*d*g*i*m*n*x^2)/(12*e*j) - (7*b*d*g*m*n*x^3)/(144*e) - (7*b*g*i*
m*n*x^3)/(144*j) + (b*g*m*n*x^4)/32 + (b*d^4*g*m*n*Log[d + e*x])/(16*e^4) +
 (b*d^2*g*i^2*m*n*Log[d + e*x])/(8*e^2*j^2) + (b*d^3*g*i*m*n*Log[d + e*x])/
(12*e^3*j) + (b*g*i^3*m*(d + e*x)*Log[c*(d + e*x)^n])/(4*e*j^3) - (g*i^2*m*
x^2*(a + b*Log[c*(d + e*x)^n]))/(8*j^2) + (g*i*m*x^3*(a + b*Log[c*(d + e*x)
^n]))/(12*j) - (g*m*x^4*(a + b*Log[c*(d + e*x)^n]))/16 + (b*g*i^4*m*n*Log[i
 + j*x])/(16*j^4) + (b*d*g*i^3*m*n*Log[i + j*x])/(12*e*j^3) + (b*d^2*g*i^2*
m*n*Log[i + j*x])/(8*e^2*j^2) - (g*i^4*m*(a + b*Log[c*(d + e*x)^n])*Log[(e*
```

```
(i + j*x))/(e*i - d*j)])/(4*j^4) + (b*d^3*g*n*(i + j*x)*Log[h*(i + j*x)^m])
/(4*e^3*j) - (b*d^2*n*x^2*(f + g*Log[h*(i + j*x)^m]))/(8*e^2) + (b*d*n*x^3*
(f + g*Log[h*(i + j*x)^m]))/(12*e) - (b*n*x^4*(f + g*Log[h*(i + j*x)^m]))/1
6 - (b*d^4*n*Log[-((j*(d + e*x))/(e*i - d*j))]*(f + g*Log[h*(i + j*x)^m]))/
(4*e^4) + (x^4*(a + b*Log[c*(d + e*x)^n])*(f + g*Log[h*(i + j*x)^m]))/4 - (
b*g*i^4*m*n*PolyLog[2, -((j*(d + e*x))/(e*i - d*j))])/(4*j^4) - (b*d^4*g*m*
n*PolyLog[2, (e*(i + j*x))/(e*i - d*j)])/(4*e^4)
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2332

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2436

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + c*e*(x/g)])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2441

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d + e*x
)^n])/g), x] - Dist[b*e*(n/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2442

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[(f + g*x)^(q + 1)*((a + b*Log[c*(d + e*x)^n])/(
g*(q + 1))), x] - Dist[b*e*(n/(g*(q + 1))), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 2463

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rule 2489

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*(x_)^(r_.), x_Symbol] :> Simp[x^(
r + 1)*(a + b*Log[c*(d + e*x)^n])^p*((f + g*Log[h*(i + j*x)^m])/(r + 1)), x
] + (-Dist[g*j*(m/(r + 1)), Int[x^(r + 1)*((a + b*Log[c*(d + e*x)^n])^p/(i
+ j*x)), x], x] - Dist[b*e*n*(p/(r + 1)), Int[x^(r + 1)*(a + b*Log[c*(d + e
*x)^n])^(p - 1)*((f + g*Log[h*(i + j*x)^m])/(d + e*x)), x], x]) /; FreeQ[{a
, b, c, d, e, f, g, h, i, j, m, n}, x] && IGtQ[p, 0] && IntegerQ[r] && (EqQ
[p, 1] || GtQ[r, 0]) && NeQ[r, -1]
```

Rubi steps

$$\int x^3(a+b\log(c(d+ex)^n))(f+g\log(h(386+jx)^m))\,dx = \frac{1}{4}x^4(a+b\log(c(d+ex)^n))(f+g\log(h(386$$

$$= \frac{1}{4}x^4(a+b\log(c(d+ex)^n))(f+g\log(h(386$$

$$= \frac{1}{4}x^4(a+b\log(c(d+ex)^n))(f+g\log(h(386$$

$$= \frac{14378114agmx}{j^3} + \frac{bd^3fnx}{4e^3} - \frac{37249gmx^2(a+$$

$$= \frac{14378114agmx}{j^3} + \frac{bd^3fnx}{4e^3} - \frac{37249gmx^2(a+$$

$$= \frac{14378114agmx}{j^3} + \frac{bd^3fnx}{4e^3} - \frac{5bd^3gmnx}{16e^3} - \frac{35$$

Mathematica [A]
time = 0.71, size = 605, normalized size = 0.82

$$\frac{6bn\log(d+ex)\left(12e^4gi^4m\log(i+jx)-12g(e^4i^4-d^4j^4)m\log\left(\frac{e(i+jx)}{ei-dj}\right)+dj(12e^3gi^3m+6de^2gi^2jm+4d^2egij^2m+3d^3j^3(-4f+gm)-12d^3gj^3\log(h(i+jx)^m))\right)+e(6gim(-12ae^3i^3+b(3e^3i^3+4de^2i^2j+6d^2eij^2+12d^3j^3)n)\log(i+jx)-6be^3\log(c(d+ex)^n)(-12fj^4x^4+gjmx(-12i^3+6i^2jx-4ij^2x^2+3j^3x^3)+12gi^4m\log(i+jx)-12gj^4x^4\log(h(i+jx)^m))+j(6ae^3x(12fj^3x^3+gm(12i^3-6i^2jx+4ij^2x^2-3j^3x^3))-bn(18d^3j^3(-4f+5gm)x+3d^2ej^2x(12fjx+gm(20i-9jx))+e^3x(18fj^3x^3+gm(90i^3-27i^2jx+14ij^2x^2-9j^3x^3))+2de^2(-12fj^3x^3+gm(36i^3+30i^2jx-12ij^2x^2+7j^3x^3)))-6gj^3x(-12ae^3x^3+bn(-12d^3+6d^2ex-4de^2x^2+3e^3x^3))\log(h(i+jx)^m)))-72bg(e^4i^4-d^4j^4)mn\operatorname{Li}_2\left(\frac{j(d+ex)}{-ei+dj}\right)}{288e^4j^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^3*(a + b*Log[c*(d + e*x)^n])*(f + g*Log[h*(i + j*x)^m]),x]
```

```
[Out] (6*b*n*Log[d + e*x]*(12*e^4*g*i^4*m*Log[i + j*x] - 12*g*(e^4*i^4 - d^4*j^4)
*m*Log[(e*(i + j*x))/(e*i - d*j)] + d*j*(12*e^3*g*i^3*m + 6*d*e^2*g*i^2*j*m
 + 4*d^2*e*g*i*j^2*m + 3*d^3*j^3*(-4*f + g*m) - 12*d^3*g*j^3*Log[h*(i + j*x
)^m])) + e*(6*g*i*m*(-12*a*e^3*i^3 + b*(3*e^3*i^3 + 4*d*e^2*i^2*j + 6*d^2*e
*i*j^2 + 12*d^3*j^3)*n)*Log[i + j*x] - 6*b*e^3*Log[c*(d + e*x)^n]*(-12*f*j^
4*x^4 + g*j*m*x*(-12*i^3 + 6*i^2*j*x - 4*i*j^2*x^2 + 3*j^3*x^3) + 12*g*i^4*
m*Log[i + j*x] - 12*g*j^4*x^4*Log[h*(i + j*x)^m]) + j*(6*a*e^3*x*(12*f*j^3*
x^3 + g*m*(12*i^3 - 6*i^2*j*x + 4*i*j^2*x^2 - 3*j^3*x^3)) - b*n*(18*d^3*j^3
*(-4*f + 5*g*m)*x + 3*d^2*e*j^2*x*(12*f*j*x + g*m*(20*i - 9*j*x)) + e^3*x*(
18*f*j^3*x^3 + g*m*(90*i^3 - 27*i^2*j*x + 14*i*j^2*x^2 - 9*j^3*x^3)) + 2*d*
e^2*(-12*f*j^3*x^3 + g*m*(36*i^3 + 30*i^2*j*x - 12*i*j^2*x^2 + 7*j^3*x^3)))
 - 6*g*j^3*x*(-12*a*e^3*x^3 + b*n*(-12*d^3 + 6*d^2*e*x - 4*d*e^2*x^2 + 3*e^
3*x^3))*Log[h*(i + j*x)^m])) - 72*b*g*(e^4*i^4 - d^4*j^4)*m*n*PolyLog[2, (j
*(d + e*x))/(-(e*i) + d*j)])/(288*e^4*j^4)
```

Maple [C] Result contains higher order function than in optimal. Order 9 vs. order 4.
time = 2.70, size = 4217, normalized size = 5.68

method	result	size
risch	Expression too large to display	4217

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(a+b*ln(c*(e*x+d)^n))*(f+g*ln(h*(j*x+i)^m)),x,method=_RETURNVERBOSE
)
```

```
[Out] 1/4*a*g*i^3*m*x/j^3+1/4*b*d^3*f*n*x/e^3+1/4*x^4*a*f+1/4*a*g*x^4*ln((j*x+i)^
m)-1/16*ln(c)*x^4*b*g*m+1/4*ln(h)*ln(c)*x^4*b*g-1/16*ln(h)*x^4*b*g*n+1/8*I*
Pi*x^4*a*g*csgn(I*h)*csgn(I*h*(j*x+i)^m)^2+1/8*I*Pi*x^4*a*g*csgn(I*(j*x+i)^
m)*csgn(I*h*(j*x+i)^m)^2-1/16/e/j^3*g*i^3*m*b*d*n+1/4*ln(c)*x^4*b*f+1/4*ln(
h)*x^4*a*g-205/576/e^4*b*d^4*g*m*n+1/4/e^4*b*d^4*g*m*n*ln(e*x+d)*ln(((e*x+d
)*j-d*j+e*i)/(-d*j+e*i))+(1/4*x^4*b*g*ln((j*x+i)^m)-1/48*b*(6*I*Pi*g*j^4*x^
4*csgn(I*h)*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)-6*I*Pi*g*j^4*x^4*csgn(I*h
)*csgn(I*h*(j*x+i)^m)^2-6*I*Pi*g*j^4*x^4*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)
^m)^2+6*I*Pi*g*j^4*x^4*csgn(I*h*(j*x+i)^m)^3-12*ln(h)*g*j^4*x^4+3*g*j^4*m*x
^4-12*f*j^4*x^4-4*g*i*j^3*m*x^3+6*g*i^2*j^2*m*x^2+12*g*i^4*m*ln(j*x+i)-12*g
*i^3*j*m*x)/j^4)*ln((e*x+d)^n)-1/16*x^4*a*g*m-1/16*x^4*b*f*n+1/4/e^4*b*d^4*
g*m*n*dilog(((e*x+d)*j-d*j+e*i)/(-d*j+e*i))+1/16/j^4*g*i^4*m*ln((e*x+d)*j-d
```

```
*j+e*i)*b*n+1/12/e*x^3*b*d*f*n-1/8/e^2*x^2*b*d^2*f*n+1/12/j*x^3*a*g*i*m-1/8
/j^2*x^2*a*g*i^2*m-1/4/e^4*ln(e*x+d)*b*d^4*f*n-1/8*I/e^4*ln(e*x+d)*Pi*b*d^4
*g*n*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)^2+1/12/e*n*b*g*ln((j*x+i)^m)*d*x
^3-1/8/e^2*n*b*g*ln((j*x+i)^m)*d^2*x^2+1/4/e^3*n*b*g*ln((j*x+i)^m)*d^3*x-1/
32*I*Pi*x^4*b*g*m*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-3/16/e^3/j*b*d^3*g*i*m*n-
11/96/e^2/j^2*b*d^2*g*i^2*m*n+1/16*I/j^2*Pi*x^2*b*g*i^2*m*csgn(I*c*(e*x+d)^
n)^3+1/8*I/e^4*ln(e*x+d)*Pi*b*d^4*g*n*csgn(I*h*(j*x+i)^m)^3-1/16*n*b*g*ln((
j*x+i)^m)*x^4-1/8*I*Pi*ln(c)*x^4*b*g*csgn(I*h*(j*x+i)^m)^3+1/8*I/e^4*ln(e*x
+d)*Pi*b*d^4*g*n*csgn(I*h)*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)+1/24*I/j*P
i*x^3*b*g*i*m*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+1/4*b*ln(c)*g*x^4*ln(
(j*x+i)^m)+1/16*Pi^2*x^4*b*g*csgn(I*h)*csgn(I*h*(j*x+i)^m)^2*csgn(I*c*(e*x+
d)^n)^3+1/16*Pi^2*x^4*b*g*csgn(I*h*(j*x+i)^m)^3*csgn(I*(e*x+d)^n)*csgn(I*c*
(e*x+d)^n)^2+1/8*I*Pi*x^4*b*f*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-1/8*I
*b*Pi*csgn(I*c*(e*x+d)^n)^3*g*x^4*ln((j*x+i)^m)-1/8/j^2*ln(c)*x^2*b*g*i^2*m
+1/12/j*ln(c)*x^3*b*g*i*m+1/12/e*ln(h)*x^3*b*d*g*n-1/8/e^2*ln(h)*x^2*b*d^2*
g*n+1/4/e^3*ln(h)*x*b*d^3*g*n-1/4/e^4*ln(e*x+d)*ln(h)*b*d^4*g*n-1/4*b*ln(c)
*g*m/j^4*i^4*ln(j*x+i)-1/4*a*g*m/j^4*i^4*ln(j*x+i)+1/8*I/e^3*Pi*x*b*d^3*g*n
*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)^2+1/8*I/e^3*Pi*x*b*d^3*g*n*csgn(I*h)
*csgn(I*h*(j*x+i)^m)^2+1/16*Pi^2*x^4*b*g*csgn(I*h)*csgn(I*h*(j*x+i)^m)^2*cs
gn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+1/24*I/e*Pi*x^3*b*d*g*n*csgn(
I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)^2+1/16*b*d^4*g*m*n*ln(e*x+d)/e^4+1/24*I/e*
Pi*x^3*b*d*g*n*csgn(I*h)*csgn(I*h*(j*x+i)^m)^2-1/16*I/e^2*Pi*x^2*b*d^2*g*n*
csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)^2-1/8*I*ln(h)*Pi*x^4*b*g*csgn(I*c)*cs
gn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+1/32*I*Pi*x^4*b*g*m*csgn(I*c)*csgn(I*(e
*x+d)^n)*csgn(I*c*(e*x+d)^n)+1/16*I/e^2*Pi*x^2*b*d^2*g*n*csgn(I*h*(j*x+i)^m
)^3-1/8*I/e^3*Pi*x*b*d^3*g*n*csgn(I*h*(j*x+i)^m)^3-1/16*Pi^2*x^4*b*g*csgn(I
*h)*csgn(I*h*(j*x+i)^m)^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+1/8*b*d^2
*g*i^2*m*n*ln(e*x+d)/e^2/j^2+1/12*b*d^3*g*i*m*n*ln(e*x+d)/e^3/j+1/16*I/j^2*
Pi*x^2*b*g*i^2*m*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-1/24*I/e*P
i*x^3*b*d*g*n*csgn(I*h)*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)+1/16*I/e^2*Pi
*x^2*b*d^2*g*n*csgn(I*h)*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)+1/16*Pi^2*x^
4*b*g*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)^2*csgn(I*c)*csgn(I*(e*x+d)^n)*c
sgn(I*c*(e*x+d)^n)+1/16*Pi^2*x^4*b*g*csgn(I*h)*csgn(I*(j*x+i)^m)*csgn(I*h*(
j*x+i)^m)*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+1/8*I*Pi*x^4*b*f*csgn(I*c)*csgn(I
*c*(e*x+d)^n)^2+1/16*Pi^2*x^4*b*g*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)^2*c
sgn(I*c*(e*x+d)^n)^3+1/16*Pi^2*x^4*b*g*csgn(I*h*(j*x+i)^m)^3*csgn(I*c)*csgn
(I*c*(e*x+d)^n)^2+1/4/j^3*ln(c)*x*b*g*i^3*m-1/24*I/j*Pi*x^3*b*g*i*m*csgn(I*
c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-1/16*Pi^2*x^4*b*g*csgn(I*h*(j*x+i)
^m)^3*csgn(I*c*(e*x+d)^n)^3-1/8*I*Pi*x^4*a*g*csgn(I*h*(j*x+i)^m)^3-1/8*I*Pi
*x^4*b*f*csgn(I*c*(e*x+d)^n)^3-1/8*I/e^4*ln(e*x+d)*Pi*b*d^4*g*n*csgn(I*h)*c
sgn(I*h*(j*x+i)^m)^2+1/4/e^3/j*g*i*m*ln((e*x+d)*j-d*j+e*i)*b*d^3*n+1/8/e^2/
j^2*g*i^2*m*ln((e*x+d)*j-d*j+e*i)*b*d^2*n-1/16*Pi^2*x^4*b*g*csgn(I*h)*csgn(
I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+
d)^n)+1/32*I*Pi*x^4*b*g*n*csgn(I*h*(j*x+i)^m)^3+1/32*I*Pi*x^4*b*g*m*csgn(I*
c*(e*x+d)^n)^3-1/8*I*ln(h)*Pi*x^4*b*g*csgn(I*c*(e*x+d)^n)^3-1/8*I*Pi*x^4*a*
```

```
g*csgn(I*h)*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)+1/16*Pi^2*x^4*b*g*csgn(I*
h)*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)
^n)^2-1/32*I*Pi*x^4*b*g*n*csgn(I*h)*csgn(I*h*(j*x+i)^m)^2+1/24*I/j*Pi*x^3*b
*g*i*m*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-1/8*I/j^3*Pi*x*b*g*i^3*m*csgn(I*c*(e
*x+d)^n)^3-1/32*I*Pi*x^4*b*g*n*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)^2+1/4/
j^4*b*g*i^4*m*n*dilog(((j*x+i)*e+d*j-e*i)/(d*j-e*i))+1/32*b*g*m*n*x^4-1/8*I
/e^3*Pi*x*b*d^3*g*n*csgn(I*h)*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)-1/8*I/j
^3*Pi*x*b*g*i^3*m*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+1/32*I*Pi
*x^4*b*g*n*csgn(I*h)*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)-1/4/e^4*n*b*g*ln
((j*x+i)^m)*d^4*ln(e*x+d)-1/32*I*Pi*x^4*b*g*m*c...
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(a+b*log(c*(e*x+d)^n))*(f+g*log(h*(j*x+i)^m)),x, algorithm="m
axima")
```

```
[Out] 1/4*b*f*x^4*log((x*e + d)^n*c) + 1/4*a*g*x^4*log((j*x + I)^m*h) + 1/4*a*f*x
^4 - 1/48*a*g*j*m*((3*j^3*x^4 - 4*I*j^2*x^3 - 6*j*x^2 + 12*I*x)/j^4 + 12*lo
g(j*x + I)/j^5) - 1/48*(12*d^4*e^(-5)*log(x*e + d) + (3*x^4*e^3 - 4*d*x^3*e
^2 + 6*d^2*x^2*e - 12*d^3*x)*e^(-4))*b*f*n*e + 1/48*b*g*((12*m*n*e^4*log(j*
x + I)*log(x*e + d) + (4*d*j^4*n*x^3*e^3 - 6*d^2*j^4*n*x^2*e^2 + 12*d^3*j^4
*n*x*e - 12*d^4*j^4*n*log(x*e + d) + 12*j^4*x^4*e^4*log((x*e + d)^n) - 3*(j
^4*n - 4*j^4*log(c))*x^4*e^4)*log((j*x + I)^m) + (4*I*j^3*m*x^3*e^4 + 6*j^2
*m*x^2*e^4 - 3*(j^4*m - 4*j^4*log(h))*x^4*e^4 - 12*I*j*m*x*e^4 - 12*m*e^4*l
og(j*x + I))*log((x*e + d)^n))*e^(-4)/j^4 - 48*integrate(-1/48*(6*(j^4*m*n
- 2*j^4*n*log(h) - 2*(j^4*m - 4*j^4*log(h))*log(c))*x^5*e^5 - ((I*j^3*m*n +
 12*I*j^3*n*log(h) - 48*I*j^3*log(c)*log(h))*e^5 + (d*j^4*m*n + 12*(j^4*m -
 4*j^4*log(h))*d*log(c))*e^4)*x^4 + 2*(d^2*j^4*m*n*e^3 + 24*I*d*j^3*e^4*log
(c)*log(h) - j^2*m*n*e^5)*x^3 - 6*(d^3*j^4*m*n*e^2 - I*j*m*n*e^5)*x^2 - 12*
(d^4*j^4*m*n*e + m*n*e^5)*x + 12*(d^5*j^4*m*n - d*m*n*e^4 + (d^4*j^4*m*n*e
- m*n*e^5)*x)*log(x*e + d))/(j^4*x^2*e^5 + I*d*j^3*e^4 + (d*j^4*e^4 + I*j^3
*e^5)*x), x))
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(a+b*log(c*(e*x+d)^n))*(f+g*log(h*(j*x+i)^m)),x, algorithm="f
ricas")
```

```
[Out] 1/48*(48*j^4*integral(1/48*(48*a*d*f*j^4*x^3 + (-4*I*b*g*j^3*m*n*x^3 - 6*b*
g*j^2*m*n*x^2 + 12*I*b*g*j*m*n*x + 3*(16*a*f*j^4 + (b*g*j^4*m - 4*b*f*j^4)*
n)*x^4)*e + 12*(4*a*d*g*j^4*m*x^3 - ((b*g*j^4*m*n - 4*a*g*j^4*m)*x^4 - b*g*
m*n)*e + 4*(b*g*j^4*m*x^4*e + b*d*g*j^4*m*x^3)*log(c))*log(j*x + I) + 48*(b
*f*j^4*x^4*e + b*d*f*j^4*x^3)*log(c) + 12*(4*a*d*g*j^4*x^3 - (b*g*j^4*n - 4
*a*g*j^4)*x^4*e + 4*(b*g*j^4*x^4*e + b*d*g*j^4*x^3)*log(c))*log(h))/(j^4*x*
e + d*j^4), x) + (12*b*g*j^4*n*x^4*log(h) + 4*I*b*g*j^3*m*n*x^3 + 6*b*g*j^2
*m*n*x^2 - 12*I*b*g*j*m*n*x - 3*(b*g*j^4*m - 4*b*f*j^4)*n*x^4 + 12*(b*g*j^4
*m*n*x^4 - b*g*m*n)*log(j*x + I))*log(x*e + d))/j^4
```

Sympy [**F(-1)**] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(a+b*ln(c*(e*x+d)**n))*(f+g*ln(h*(j*x+i)**m)),x)
```

```
[Out] Timed out
```

Giac [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(a+b*log(c*(e*x+d)^n))*(f+g*log(h*(j*x+i)^m)),x, algorithm="g
iac")
```

```
[Out] integrate((b*log((x*e + d)^n*c) + a)*(g*log((j*x + I)^m*h) + f)*x^3, x)
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.00

$$\int x^3\,\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)\,\left(f+g\,\ln\left(h\,{\left(i+j\,x\right)}^m\right)\right) \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(a + b*log(c*(d + e*x)^n))*(f + g*log(h*(i + j*x)^m)),x)
```

```
[Out] int(x^3*(a + b*log(c*(d + e*x)^n))*(f + g*log(h*(i + j*x)^m)), x)
```

3.387 $\int x^2(a+b\log(c(d+ex)^n))(f+g\log(h(i+jx)^m))$

Optimal. Leaf size=558

$$-\frac{agi^2mx}{3j^2}-\frac{bd^2fnx}{3e^2}+\frac{4bd^2gmnx}{9e^2}+\frac{4bgi^2mnx}{9j^2}+\frac{bdgimnx}{3ej}-\frac{5bdgmnx^2}{36e}-\frac{5bgimnx^2}{36j}+\frac{2}{27}bgmnx^3-\frac{bd^3gmn\log(}{9e^3}$$

```
[Out] -1/3*a*g*i^2*m*x/j^2-1/3*b*d^2*f*n*x/e^2+4/9*b*d^2*g*m*n*x/e^2+4/9*b*g*i^2*
m*n*x/j^2+1/3*b*d*g*i*m*n*x/e/j-5/36*b*d*g*m*n*x^2/e-5/36*b*g*i*m*n*x^2/j+2
/27*b*g*m*n*x^3-1/9*b*d^3*g*m*n*ln(e*x+d)/e^3-1/6*b*d^2*g*i*m*n*ln(e*x+d)/e
^2/j-1/3*b*g*i^2*m*(e*x+d)*ln(c*(e*x+d)^n)/e/j^2+1/6*g*i*m*x^2*(a+b*ln(c*(e
*x+d)^n))/j-1/9*g*m*x^3*(a+b*ln(c*(e*x+d)^n))-1/9*b*g*i^3*m*n*ln(j*x+i)/j^3
-1/6*b*d*g*i^2*m*n*ln(j*x+i)/e/j^2+1/3*g*i^3*m*(a+b*ln(c*(e*x+d)^n))*ln(e*(
j*x+i)/(-d*j+e*i))/j^3-1/3*b*d^2*g*n*(j*x+i)*ln(h*(j*x+i)^m)/e^2/j+1/6*b*d*
n*x^2*(f+g*ln(h*(j*x+i)^m))/e-1/9*b*n*x^3*(f+g*ln(h*(j*x+i)^m))+1/3*b*d^3*n
*ln(-j*(e*x+d)/(-d*j+e*i))*(f+g*ln(h*(j*x+i)^m))/e^3+1/3*x^3*(a+b*ln(c*(e*x
+d)^n))*(f+g*ln(h*(j*x+i)^m))+1/3*b*g*i^3*m*n*polylog(2,-j*(e*x+d)/(-d*j+e*
i))/j^3+1/3*b*d^3*g*m*n*polylog(2,e*(j*x+i)/(-d*j+e*i))/e^3
```

Rubi [A]
time = 0.43, antiderivative size = 558, normalized size of antiderivative = 1.00, number of steps used = 29, number of rules used = 9, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.281, Rules used = {2489, 45, 2463, 2436, 2332, 2442, 2441, 2440, 2438}

$$\frac{bd^3gmn\text{PolyLog}\left(2,\frac{e(i+jx)}{ei-dj}\right)}{3e^3}+\frac{bgi^3mn\text{PolyLog}\left(2,-\frac{j(d+ex)}{ei-dj}\right)}{3j^3}+\frac{1}{3}x^3(a+b\log(c(d+ex)^n))(f+g\log(h(i+jx)^m))+\frac{gi^3m\log\left(\frac{e(i+jx)}{ei-dj}\right)(a+b\log(c(d+ex)^n))}{3j^3}+\frac{gimx^2(a+b\log(c(d+ex)^n))}{6j}-\frac{1}{9}gmx^3(a+b\log(c(d+ex)^n))-\frac{agi^2mx}{3j^2}-\frac{bgi^2m(d+ex)\log(c(d+ex)^n)}{3ej^2}+\frac{bd^3n\log\left(-\frac{j(d+ex)}{ei-dj}\right)(f+g\log(h(i+jx)^m))}{3e^3}-\frac{bd^3gmn\log(d+ex)}{9e^3}-\frac{bd^2fnx}{3e^2}-\frac{bd^2gn(i+jx)\log(h(i+jx)^m)}{3e^2j}-\frac{bd^2gimn\log(d+ex)}{6e^2j}+\frac{4bd^2gmnx}{9e^2}+\frac{bdnx^2(f+g\log(h(i+jx)^m))}{6e}-\frac{bdgi^2mn\log(i+jx)}{6ej^2}+\frac{bdgimnx}{3ej}-\frac{5bdgmnx^2}{36e}-\frac{1}{9}bnx^3(f+g\log(h(i+jx)^m))-\frac{bgi^3mn\log(i+jx)}{9j^3}+\frac{4bgi^2mnx}{9j^2}-\frac{5bgimnx^2}{36j}+\frac{2}{27}bgmnx^3$$

Antiderivative was successfully verified.

```
[In] Int[x^2*(a + b*Log[c*(d + e*x)^n])*(f + g*Log[h*(i + j*x)^m]),x]
```

```
[Out] -1/3*(a*g*i^2*m*x)/j^2 - (b*d^2*f*n*x)/(3*e^2) + (4*b*d^2*g*m*n*x)/(9*e^2)
+ (4*b*g*i^2*m*n*x)/(9*j^2) + (b*d*g*i*m*n*x)/(3*e*j) - (5*b*d*g*m*n*x^2)/(
36*e) - (5*b*g*i*m*n*x^2)/(36*j) + (2*b*g*m*n*x^3)/27 - (b*d^3*g*m*n*Log[d
+ e*x])/(9*e^3) - (b*d^2*g*i*m*n*Log[d + e*x])/(6*e^2*j) - (b*g*i^2*m*(d +
e*x)*Log[c*(d + e*x)^n])/(3*e*j^2) + (g*i*m*x^2*(a + b*Log[c*(d + e*x)^n]))
/(6*j) - (g*m*x^3*(a + b*Log[c*(d + e*x)^n]))/9 - (b*g*i^3*m*n*Log[i + j*x]
)/(9*j^3) - (b*d*g*i^2*m*n*Log[i + j*x])/(6*e*j^2) + (g*i^3*m*(a + b*Log[c*
(d + e*x)^n])*Log[(e*(i + j*x))/(e*i - d*j)])/(3*j^3) - (b*d^2*g*n*(i + j*x
)*Log[h*(i + j*x)^m])/(3*e^2*j) + (b*d*n*x^2*(f + g*Log[h*(i + j*x)^m]))/(6
*e) - (b*n*x^3*(f + g*Log[h*(i + j*x)^m]))/9 + (b*d^3*n*Log[-((j*(d + e*x))
/(e*i - d*j))]*(f + g*Log[h*(i + j*x)^m]))/(3*e^3) + (x^3*(a + b*Log[c*(d +
 e*x)^n])*(f + g*Log[h*(i + j*x)^m]))/3 + (b*g*i^3*m*n*PolyLog[2, -((j*(d +
 e*x))/(e*i - d*j))])/(3*j^3) + (b*d^3*g*m*n*PolyLog[2, (e*(i + j*x))/(e*i
- d*j)])/(3*e^3)
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2332

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2436

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + c*e*(x/g)])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2441

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d + e*x
)^n])/g), x] - Dist[b*e*(n/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2442

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[(f + g*x)^(q + 1)*((a + b*Log[c*(d + e*x)^n])/(
g*(q + 1))), x] - Dist[b*e*(n/(g*(q + 1))), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 2463

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
```

```
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rule 2489

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*(x_)^(r_.), x_Symbol] :> Simp[x^(
r + 1)*(a + b*Log[c*(d + e*x)^n])^p*((f + g*Log[h*(i + j*x)^m])/(r + 1)), x
] + (-Dist[g*j*(m/(r + 1)), Int[x^(r + 1)*((a + b*Log[c*(d + e*x)^n])^p/(i
+ j*x)), x], x] - Dist[b*e*n*(p/(r + 1)), Int[x^(r + 1)*(a + b*Log[c*(d + e
*x)^n])^(p - 1)*((f + g*Log[h*(i + j*x)^m])/(d + e*x)), x], x]) /; FreeQ[{a
, b, c, d, e, f, g, h, i, j, m, n}, x] && IGtQ[p, 0] && IntegerQ[r] && (EqQ
[p, 1] || GtQ[r, 0]) && NeQ[r, -1]
```

Rubi steps

$$\int x^2(a+b\log(c(d+ex)^n))(f+g\log(h(387+jx)^m))\,dx = \frac{1}{3}x^3(a+b\log(c(d+ex)^n))(f+g\log(h(387+$$

$$= \frac{1}{3}x^3(a+b\log(c(d+ex)^n))(f+g\log(h(387+$$

$$= \frac{1}{3}x^3(a+b\log(c(d+ex)^n))(f+g\log(h(387+$$

$$= -\frac{49923agmx}{j^2} - \frac{bd^2fnx}{3e^2} + \frac{129gmx^2(a+b\log}{2j}$$

$$= -\frac{49923agmx}{j^2} - \frac{bd^2fnx}{3e^2} + \frac{129gmx^2(a+b\log}{2j}$$

$$= -\frac{49923agmx}{j^2} - \frac{bd^2fnx}{3e^2} + \frac{4bd^2gmnx}{9e^2} + \frac{6656}{}$$

Mathematica [A]
time = 0.52, size = 492, normalized size = 0.88

$$\frac{6bn\log(d+ex)\left(-6e^3gi^3m\log(i+jx)+6g(e^3i^3-d^3j^3)m\log\left(\frac{e(i+jx)}{ei-dj}\right)+dj(-6e^2gi^2m-3degijm+2d^2j^2(3f-gm)+6d^2gj^2\log(h(i+jx)^m))\right)+e(6gim(6ae^2i^2-b(2e^2i^2+3deij+6d^2j^2)n)\log(i+jx)+6be^2\log(c(d+ex)^n)(6fj^3x^3+gjmx(-6i^2+3ijx-2j^2x^2)+6gi^3m\log(i+jx)+6gj^3x^3\log(h(i+jx)^m))+j(6ae^2x(6fj^2x^2+gm(-6i^2+3ijx-2j^2x^2))+bn(12d^2j^2(-3f+4gm)x+3de(6fj^2x^2+gm(12i^2+12ijx-5j^2x^2))+e^2x(-12fj^2x^2+gm(48i^2-15ijx+8j^2x^2)))-6gj^2x(-6ae^2x^2+bn(6d^2-3dex+2e^2x^2))\log(h(i+jx)^m)))+36bg(e^3i^3-d^3j^3)mn\,\mathrm{Li}_2\left(\frac{j(d+ex)}{-ei+dj}\right)}{108e^3j^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2*(a + b*Log[c*(d + e*x)^n])*(f + g*Log[h*(i + j*x)^m]),x]
```

```
[Out] (6*b*n*Log[d + e*x]*(-6*e^3*g*i^3*m*Log[i + j*x] + 6*g*(e^3*i^3 - d^3*j^3)*
m*Log[(e*(i + j*x))/(e*i - d*j)] + d*j*(-6*e^2*g*i^2*m - 3*d*e*g*i*j*m + 2*
```

```
d^2*j^2*(3*f - g*m) + 6*d^2*g*j^2*Log[h*(i + j*x)^m])) + e*(6*g*i*m*(6*a*e^
2*i^2 - b*(2*e^2*i^2 + 3*d*e*i*j + 6*d^2*j^2)*n)*Log[i + j*x] + 6*b*e^2*Log
[c*(d + e*x)^n]*(6*f*j^3*x^3 + g*j*m*x*(-6*i^2 + 3*i*j*x - 2*j^2*x^2) + 6*g
*i^3*m*Log[i + j*x] + 6*g*j^3*x^3*Log[h*(i + j*x)^m]) + j*(6*a*e^2*x*(6*f*j
^2*x^2 + g*m*(-6*i^2 + 3*i*j*x - 2*j^2*x^2)) + b*n*(12*d^2*j^2*(-3*f + 4*g*
m)*x + 3*d*e*(6*f*j^2*x^2 + g*m*(12*i^2 + 12*i*j*x - 5*j^2*x^2)) + e^2*x*(-
12*f*j^2*x^2 + g*m*(48*i^2 - 15*i*j*x + 8*j^2*x^2))) - 6*g*j^2*x*(-6*a*e^2*
x^2 + b*n*(6*d^2 - 3*d*e*x + 2*e^2*x^2))*Log[h*(i + j*x)^m])) + 36*b*g*(e^3
*i^3 - d^3*j^3)*m*n*PolyLog[2, (j*(d + e*x))/(-(e*i) + d*j)])/(108*e^3*j^3)
```

Maple [C] Result contains higher order function than in optimal. Order 9 vs. order 4.
time = 1.59, size = 3680, normalized size = 6.59

method	result	size
risch	Expression too large to display	3680

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(a+b*ln(c*(e*x+d)^n))*(f+g*ln(h*(j*x+i)^m)),x,method=_RETURNVERBOSE
)
```

```
[Out] -1/12*b*Pi^2*csgn(I*c*(e*x+d)^n)^3*x^3*g*csgn(I*h*(j*x+i)^m)^3-1/9*n*b*f*x^
3+1/3*x^3*a*f+49/108/e^3*b*d^3*g*m*n-1/3/e^3*b*d^3*g*m*n*dilog(((e*x+d)*j-d
*j+e*i)/(-d*j+e*i))+1/6*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*g*m/j^3*i^3*
ln(j*x+i)+1/3*ln(h)*x^3*a*g-1/3/e^3*b*d^3*g*m*n*ln(e*x+d)*ln(((e*x+d)*j-d*j
+e*i)/(-d*j+e*i))-1/6*I*Pi*b*f*x^3*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*
x+d)^n)+1/12*b*Pi^2*csgn(I*c*(e*x+d)^n)^3*x^3*g*csgn(I*(j*x+i)^m)*csgn(I*h*
(j*x+i)^m)^2+1/12*b*Pi^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*x^3*g*csgn(I*h*(j*
x+i)^m)^3-1/6*I*Pi*b*f*x^3*csgn(I*c*(e*x+d)^n)^3+1/6/e*b*d*f*n*x^2+2/9/e^2/
j*g*i*m*b*d^2*n-1/9*x^3*a*g*m+1/3*a*g*x^3*ln((j*x+i)^m)+1/12*I/j*Pi*x^2*b*g
*i*m*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+1/18*I*Pi*x^3*b*g*n*csgn(I*h)*csgn(I*(
j*x+i)^m)*csgn(I*h*(j*x+i)^m)+1/18*I*Pi*x^3*b*g*m*csgn(I*c)*csgn(I*(e*x+d)^
n)*csgn(I*c*(e*x+d)^n)-1/6*I*ln(h)*Pi*x^3*b*g*csgn(I*c)*csgn(I*(e*x+d)^n)*c
sgn(I*c*(e*x+d)^n)+1/6*I/e^2*Pi*x*b*d^2*g*n*csgn(I*h)*csgn(I*(j*x+i)^m)*csg
n(I*h*(j*x+i)^m)-1/9*n*b*g*ln((j*x+i)^m)*x^3+1/3*b*ln(c)*g*x^3*ln((j*x+i)^m
)+1/6/j*x^2*a*g*i*m-1/9/j^3*g*i^3*m*ln((e*x+d)*j-d*j+e*i)*b*n+1/3/e^3*ln(e*
x+d)*b*d^3*f*n+1/6*I*Pi*b*f*x^3*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+1/6*I*Pi*b*
f*x^3*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-1/9*ln(h)*x^3*b*g*n-1/9*ln(c)
*x^3*b*g*m+1/3*ln(h)*ln(c)*x^3*b*g+1/9/e/j^2*g*i^2*m*b*d*n+(1/3*x^3*b*g*ln(
(j*x+i)^m)+1/18*b*(-3*I*Pi*g*j^3*x^3*csgn(I*h)*csgn(I*(j*x+i)^m)*csgn(I*h*(
j*x+i)^m)+3*I*Pi*g*j^3*x^3*csgn(I*h)*csgn(I*h*(j*x+i)^m)^2+3*I*Pi*g*j^3*x^3
*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)^2-3*I*Pi*g*j^3*x^3*csgn(I*h*(j*x+i)^
m)^3+6*ln(h)*g*j^3*x^3-2*g*j^3*m*x^3+6*f*j^3*x^3+3*g*i*j^2*m*x^2+6*g*i^3*m*
ln(j*x+i)-6*g*i^2*j*m*x)/j^3)*ln((e*x+d)^n)+1/3*ln(c)*b*f*x^3+1/3*a*g*m/j^3
*i^3*ln(j*x+i)+1/12*b*Pi^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)*
x^3*g*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)^2-1/6*I/e^3*ln(e*x+d)*Pi*b*d^3*
```

```
g*n*csgn(I*h*(j*x+i)^m)^3-1/3/j^3*b*g*i^3*m*n*dilog(((j*x+i)*e+d*j-e*i)/(d*
j-e*i))-1/3/j^3*b*g*i^3*m*n*ln(j*x+i)*ln(((j*x+i)*e+d*j-e*i)/(d*j-e*i))-1/1
8*I*Pi*x^3*b*g*m*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-1/12*b*Pi^2*csgn(I
*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)*x^3*g*csgn(I*h*(j*x+i)^m)^3-1/12*
b*Pi^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*x^3*g*csgn(I*h)*csgn(I*h*(j*x+i)^m)^
2-1/18*I*Pi*x^3*b*g*n*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)^2-1/6*I/j^2*Pi*
x*b*g*i^2*m*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+1/12*I/j*Pi*x^2*b*g*i*m
*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-1/6*I*ln(c)*Pi*x^3*b*g*csgn(I*h)*c
sgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)-1/6*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)
*csgn(I*c*(e*x+d)^n)*g*x^3*ln((j*x+i)^m)+1/6*I*Pi*x^3*a*g*csgn(I*(j*x+i)^m)
*csgn(I*h*(j*x+i)^m)^2-1/6*I*ln(h)*Pi*x^3*b*g*csgn(I*c*(e*x+d)^n)^3-1/6*I*l
n(c)*Pi*x^3*b*g*csgn(I*h*(j*x+i)^m)^3+1/18*I*Pi*x^3*b*g*m*csgn(I*c*(e*x+d)^
n)^3-1/6*I*b*Pi*csgn(I*c*(e*x+d)^n)^3*g*x^3*ln((j*x+i)^m)+1/12*b*Pi^2*csgn(
I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2*x^3*g*csgn(I*h*(j*x+i)^m)^3+1/12*b*Pi^2*
csgn(I*c*(e*x+d)^n)^3*x^3*g*csgn(I*h)*csgn(I*h*(j*x+i)^m)^2-1/9*b*d^3*g*m*n
*ln(e*x+d)/e^3-1/6*b*d^2*g*i*m*n*ln(e*x+d)/e^2/j+1/6*I*b*Pi*csgn(I*(e*x+d)^
n)*csgn(I*c*(e*x+d)^n)^2*g*m/j^3*i^3*ln(j*x+i)+1/12*I/e*Pi*x^2*b*d*g*n*csgn
(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)^2-1/12*I/e*Pi*x^2*b*d*g*n*csgn(I*h)*csgn(
I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)+1/12*I/e*Pi*x^2*b*d*g*n*csgn(I*h)*csgn(I*h
*(j*x+i)^m)^2+1/6*I*Pi*x^3*a*g*csgn(I*h)*csgn(I*h*(j*x+i)^m)^2-1/6*I*b*Pi*c
sgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)*g*m/j^3*i^3*ln(j*x+i)+1/6*I/
j^2*Pi*x*b*g*i^2*m*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+1/12*b*P
i^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*x^3*g*csgn(I*h)*csgn(I*(j*x+i)^m)*csgn(
I*h*(j*x+i)^m)+1/12*b*Pi^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2*x^3*g*cs
gn(I*h)*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)+1/12*b*Pi^2*csgn(I*c)*csgn(I*
(e*x+d)^n)*csgn(I*c*(e*x+d)^n)*x^3*g*csgn(I*h)*csgn(I*h*(j*x+i)^m)^2+2/27*b
*g*m*n*x^3-1/18*I*Pi*x^3*b*g*n*csgn(I*h)*csgn(I*h*(j*x+i)^m)^2-1/6*I*b*Pi*c
sgn(I*c*(e*x+d)^n)^3*g*m/j^3*i^3*ln(j*x+i)+1/6*I/j^2*Pi*x*b*g*i^2*m*csgn(I*
c*(e*x+d)^n)^3+1/6*I/e^2*Pi*x*b*d^2*g*n*csgn(I*h*(j*x+i)^m)^3+1/3/e^3*ln(e*
x+d)*ln(h)*b*d^3*g*n-1/3/e^2*ln(h)*x*b*d^2*g*n+1/6/j*ln(c)*x^2*b*g*i*m-1/3/
j^2*ln(c)*x*b*g*i^2*m+1/6/e*ln(h)*x^2*b*d*g*n+1/3*b*ln(c)*g*m/j^3*i^3*ln(j*
x+i)-1/3/e^2/j*g*i*m*ln((e*x+d)*j-d*j+e*i)*b*d^2*n-1/3/e/j^2*ln(e*x+d)*b*d*
g*i^2*m*n-1/6/e/j^2*g*i^2*m*ln((e*x+d)*j-d*j+e*i)*b*d*n+1/6*I*ln(c)*Pi*x^3*
b*g*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)^2-1/12*b*Pi^2*csgn(I*c)*csgn(I*c*
(e*x+d)^n)^2*x^3*g*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)^2-1/12*b*Pi^2*csgn
(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2*x^3*g*csgn(I*h)*csgn(I*h*(j*x+i)^m)^2-1
/12*b*Pi^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2*x^3*g*csgn(I*(j*x+i)^m)*
csgn(I*h*(j*x+i)^m)^2-1/12*I/j*Pi*x^2*b*g*i*m*csgn(I*c*(e*x+d)^n)^3-1/12*I/
e*Pi*x^2*b*d*g*n*csgn(I*h*(j*x+i)^m)^3-1/6*I/e^3*ln(e*x+d)*Pi*b*d^3*g*n*csg
n(I*h)*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)+1/18*I*Pi*x^3*b*g*n*csgn(I*h*(
j*x+i)^m)^3-1/3*a*g*i^2*m*x/j^2-1/3*b*d^2*f*n*x/e^2+1/3/e^3*n*b*g*ln((j*x+i
)^m)*d^3*ln(e*x+d)+1/6/e*n*b*g*ln((j*x+i)^m)*d*...
```

Maxima [F]

time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*log(c*(e*x+d)^n))*(f+g*log(h*(j*x+i)^m)),x, algorithm="m
axima")
```

```
[Out] 1/3*b*f*x^3*log((x*e + d)^n*c) + 1/3*a*g*x^3*log((j*x + I)^m*h) + 1/3*a*f*x
^3 - 1/18*a*g*j*m*((2*j^2*x^3 - 3*I*j*x^2 - 6*x)/j^3 + 6*I*log(j*x + I)/j^4
) + 1/18*(6*d^3*e^(-4)*log(x*e + d) - (2*x^3*e^2 - 3*d*x^2*e + 6*d^2*x)*e^(
-3))*b*f*n*e + 1/18*b*g*((6*I*m*n*e^3*log(j*x + I)*log(x*e + d) + (3*d*j^3*
n*x^2*e^2 - 6*d^2*j^3*n*x*e + 6*d^3*j^3*n*log(x*e + d) + 6*j^3*x^3*e^3*log(
(x*e + d)^n) - 2*(j^3*n - 3*j^3*log(c))*x^3*e^3)*log((j*x + I)^m) + (3*I*j^
2*m*x^2*e^3 - 2*(j^3*m - 3*j^3*log(h))*x^3*e^3 + 6*j*m*x*e^3 - 6*I*m*e^3*lo
g(j*x + I))*log((x*e + d)^n))*e^(-3)/j^3 - 18*integrate(-1/18*(2*(2*j^3*m*n
 - 3*j^3*n*log(h) - 3*(j^3*m - 3*j^3*log(h))*log(c))*x^4*e^4 + ((-I*j^2*m*n
 - 6*I*j^2*n*log(h) + 18*I*j^2*log(c)*log(h))*e^4 - (d*j^3*m*n + 6*(j^3*m -
 3*j^3*log(h))*d*log(c))*e^3)*x^3 + 3*(d^2*j^3*m*n*e^2 + 6*I*d*j^2*e^3*log(
c)*log(h) - j*m*n*e^4)*x^2 + 6*(d^3*j^3*m*n*e - I*m*n*e^4)*x - 6*(d^4*j^3*m
*n + I*d*m*n*e^3 + (d^3*j^3*m*n*e + I*m*n*e^4)*x)*log(x*e + d))/(j^3*x^2*e^
4 + I*d*j^2*e^3 + (d*j^3*e^3 + I*j^2*e^4)*x), x))
```

Fricas [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*log(c*(e*x+d)^n))*(f+g*log(h*(j*x+i)^m)),x, algorithm="f
ricas")
```

```
[Out] 1/18*(18*j^3*integral(1/18*(18*a*d*f*j^3*x^2 + (-3*I*b*g*j^2*m*n*x^2 - 6*b*
g*j*m*n*x + 2*(9*a*f*j^3 + (b*g*j^3*m - 3*b*f*j^3)*n)*x^3)*e + 6*(3*a*d*g*j
^3*m*x^2 - (-I*b*g*m*n + (b*g*j^3*m*n - 3*a*g*j^3*m)*x^3)*e + 3*(b*g*j^3*m*
x^3*e + b*d*g*j^3*m*x^2)*log(c))*log(j*x + I) + 18*(b*f*j^3*x^3*e + b*d*f*j
^3*x^2)*log(c) + 6*(3*a*d*g*j^3*x^2 - (b*g*j^3*n - 3*a*g*j^3)*x^3*e + 3*(b*
g*j^3*x^3*e + b*d*g*j^3*x^2)*log(c))*log(h))/(j^3*x*e + d*j^3), x) + (6*b*g
*j^3*n*x^3*log(h) + 3*I*b*g*j^2*m*n*x^2 + 6*b*g*j*m*n*x - 2*(b*g*j^3*m - 3*
b*f*j^3)*n*x^3 + 6*(b*g*j^3*m*n*x^3 - I*b*g*m*n)*log(j*x + I))*log(x*e + d)
)/j^3
```

Sympy [**F(-1)**] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(a+b*ln(c*(e*x+d)**n))*(f+g*ln(h*(j*x+i)**m)),x)
```

```
[Out] Timed out
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*log(c*(e*x+d)^n))*(f+g*log(h*(j*x+i)^m)),x, algorithm="g
iac")
```

```
[Out] integrate((b*log((x*e + d)^n*c) + a)*(g*log((j*x + I)^m*h) + f)*x^2, x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int x^2\,\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)\,\left(f+g\,\ln\left(h\,{\left(i+j\,x\right)}^m\right)\right) \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(a + b*log(c*(d + e*x)^n))*(f + g*log(h*(i + j*x)^m)),x)
```

```
[Out] int(x^2*(a + b*log(c*(d + e*x)^n))*(f + g*log(h*(i + j*x)^m)), x)
```

3.388 $\int x(a+b\log(c(d+ex)^n))(f+g\log(h(i+jx)^m))\,d$

Optimal. Leaf size=397

$$\frac{agimx}{2j}+\frac{bdfnx}{2e}-\frac{3bdgmnx}{4e}-\frac{3bgimnx}{4j}+\frac{1}{4}bgmnx^2+\frac{bd^2gmn\log(d+ex)}{4e^2}+\frac{bgim(d+ex)\log(c(d+ex)^n)}{2ej}-\frac{1}{4}$$

```
[Out] 1/2*a*g*i*m*x/j+1/2*b*d*f*n*x/e-3/4*b*d*g*m*n*x/e-3/4*b*g*i*m*n*x/j+1/4*b*g
*m*n*x^2+1/4*b*d^2*g*m*n*ln(e*x+d)/e^2+1/2*b*g*i*m*(e*x+d)*ln(c*(e*x+d)^n)/
e/j-1/4*g*m*x^2*(a+b*ln(c*(e*x+d)^n))+1/4*b*g*i^2*m*n*ln(j*x+i)/j^2-1/2*g*i
^2*m*(a+b*ln(c*(e*x+d)^n))*ln(e*(j*x+i)/(-d*j+e*i))/j^2+1/2*b*d*g*n*(j*x+i)
*ln(h*(j*x+i)^m)/e/j-1/4*b*n*x^2*(f+g*ln(h*(j*x+i)^m))-1/2*b*d^2*n*ln(-j*(e
*x+d)/(-d*j+e*i))*(f+g*ln(h*(j*x+i)^m))/e^2+1/2*x^2*(a+b*ln(c*(e*x+d)^n))*(
f+g*ln(h*(j*x+i)^m))-1/2*b*g*i^2*m*n*polylog(2,-j*(e*x+d)/(-d*j+e*i))/j^2-1
/2*b*d^2*g*m*n*polylog(2,e*(j*x+i)/(-d*j+e*i))/e^2
```

Rubi [A]
time = 0.31, antiderivative size = 397, normalized size of antiderivative = 1.00, number of steps used = 23, number of rules used = 9, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}} = 0.300$, Rules used = {2489, 45, 2463, 2436, 2332, 2442, 2441, 2440, 2438}

$$-\frac{bd^2gmn\text{PolyLog}\left(2,\frac{e(i+jx)}{ei-dj}\right)}{2e^2}-\frac{bgi^2mn\text{PolyLog}\left(2,-\frac{j(d+ex)}{ei-dj}\right)}{2j^2}+\frac{1}{2}x^2(a+b\log(c(d+ex)^n))(f+g\log(h(i+jx)^m))-\frac{gi^2m\log\left(\frac{e(i+jx)}{ei-dj}\right)(a+b\log(c(d+ex)^n))}{2j^2}-\frac{1}{4}gmx^2(a+b\log(c(d+ex)^n))+\frac{agimx}{2j}+\frac{bgim(d+ex)\log(c(d+ex)^n)}{2ej}-\frac{bd^2n\log\left(-\frac{j(d+ex)}{ei-dj}\right)(f+g\log(h(i+jx)^m))}{2e^2}+\frac{bd^2gmn\log(d+ex)}{4e^2}+\frac{bdfnx}{2e}+\frac{bdgn(i+jx)\log(h(i+jx)^m)}{2ej}-\frac{3bdgmnx}{4e}-\frac{1}{4}bnx^2(f+g\log(h(i+jx)^m))+\frac{bgi^2mn\log(i+jx)}{4j^2}-\frac{3bgimnx}{4j}+\frac{1}{4}bgmnx^2$$

Antiderivative was successfully verified.

```
[In] Int[x*(a + b*Log[c*(d + e*x)^n])*(f + g*Log[h*(i + j*x)^m]),x]
```

```
[Out] (a*g*i*m*x)/(2*j) + (b*d*f*n*x)/(2*e) - (3*b*d*g*m*n*x)/(4*e) - (3*b*g*i*m*
n*x)/(4*j) + (b*g*m*n*x^2)/4 + (b*d^2*g*m*n*Log[d + e*x])/(4*e^2) + (b*g*i*
m*(d + e*x)*Log[c*(d + e*x)^n])/(2*e*j) - (g*m*x^2*(a + b*Log[c*(d + e*x)^n
]))/4 + (b*g*i^2*m*n*Log[i + j*x])/(4*j^2) - (g*i^2*m*(a + b*Log[c*(d + e*x
)^n])*Log[(e*(i + j*x))/(e*i - d*j)])/(2*j^2) + (b*d*g*n*(i + j*x)*Log[h*(i
 + j*x)^m])/(2*e*j) - (b*n*x^2*(f + g*Log[h*(i + j*x)^m]))/4 - (b*d^2*n*Log
[-((j*(d + e*x))/(e*i - d*j))]*(f + g*Log[h*(i + j*x)^m]))/(2*e^2) + (x^2*(
a + b*Log[c*(d + e*x)^n])*(f + g*Log[h*(i + j*x)^m]))/2 - (b*g*i^2*m*n*Poly
Log[2, -((j*(d + e*x))/(e*i - d*j))]])/(2*j^2) - (b*d^2*g*m*n*PolyLog[2, (e*
(i + j*x))/(e*i - d*j)]])/(2*e^2)
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2332

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2436

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + c*e*(x/g)])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2441

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d + e*x
)^n])/g), x] - Dist[b*e*(n/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2442

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[(f + g*x)^(q + 1)*((a + b*Log[c*(d + e*x)^n])/(
g*(q + 1))), x] - Dist[b*e*(n/(g*(q + 1))), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 2463

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rule 2489

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*(x_)^(r_.), x_Symbol] :> Simp[x^(
```

```
r + 1)*(a + b*Log[c*(d + e*x)^n])^p*((f + g*Log[h*(i + j*x)^m])/(r + 1)), x
] + (-Dist[g*j*(m/(r + 1)), Int[x^(r + 1)*((a + b*Log[c*(d + e*x)^n])^p/(i
+ j*x)), x], x] - Dist[b*e*n*(p/(r + 1)), Int[x^(r + 1)*(a + b*Log[c*(d + e
*x)^n])^(p - 1)*((f + g*Log[h*(i + j*x)^m])/(d + e*x)), x], x]) /; FreeQ[{a
, b, c, d, e, f, g, h, i, j, m, n}, x] && IGtQ[p, 0] && IntegerQ[r] && (EqQ
[p, 1] || GtQ[r, 0]) && NeQ[r, -1]
```

Rubi steps

$$\int x(a+b\log(c(d+ex)^n))(f+g\log(h(388+jx)^m))\,dx = \frac{1}{2}x^2(a+b\log(c(d+ex)^n))(f+g\log(h(388+$$

$$= \frac{1}{2}x^2(a+b\log(c(d+ex)^n))(f+g\log(h(388+$$

$$= \frac{1}{2}x^2(a+b\log(c(d+ex)^n))(f+g\log(h(388+$$

$$= \frac{194agmx}{j} + \frac{bdfnx}{2e} - \frac{1}{4}gmx^2(a+b\log(c(d+$$

$$= \frac{194agmx}{j} + \frac{bdfnx}{2e} - \frac{1}{4}gmx^2(a+b\log(c(d+$$

$$= \frac{194agmx}{j} + \frac{bdfnx}{2e} - \frac{3bdgmnx}{4e} - \frac{291bgmnx}{j}$$

Mathematica [A]
time = 0.34, size = 341, normalized size = 0.86

$$\frac{bn\log(d+ex)\left(2e^2gi^2m\log(i+jx)+2g(-e^2i^2+d^2j^2)m\log\left(\frac{e(i+jx)}{ei-dj}\right)+dj(-2dfj+2egim+dgjm-2dgj\log(h(i+jx)^m))\right)+e(gim(-2aei+b(ei+2dj)n)\log(i+jx)+j(aex(2fjx+gm(2i-jx))-bn(ex(3gim+fjx-gjmx)+d(2gim-2fjx+3gjmx))+gjx(2aex+bn(2d-ex))\log(h(i+jx)^m))+be\log(c(d+ex)^n)(-2gi^2m\log(i+jx)+jx(2gim+2fjx-gjmx+2gjx\log(h(i+jx)^m))))+2bg(-e^2i^2+d^2j^2)mn\text{Li}_2\left(\frac{j(d+ex)}{-ei+dj}\right)}{4e^2j^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[x*(a + b*Log[c*(d + e*x)^n])*(f + g*Log[h*(i + j*x)^m]),x]
```

```
[Out] (b*n*Log[d + e*x]*(2*e^2*g*i^2*m*Log[i + j*x] + 2*g*(-(e^2*i^2) + d^2*j^2)*
m*Log[(e*(i + j*x))/(e*i - d*j)] + d*j*(-2*d*f*j + 2*e*g*i*m + d*g*j*m - 2*
d*g*j*Log[h*(i + j*x)^m])) + e*(g*i*m*(-2*a*e*i + b*(e*i + 2*d*j)*n)*Log[i
+ j*x] + j*(a*e*x*(2*f*j*x + g*m*(2*i - j*x)) - b*n*(e*x*(3*g*i*m + f*j*x -
 g*j*m*x) + d*(2*g*i*m - 2*f*j*x + 3*g*j*m*x)) + g*j*x*(2*a*e*x + b*n*(2*d
- e*x))*Log[h*(i + j*x)^m]) + b*e*Log[c*(d + e*x)^n]*(-2*g*i^2*m*Log[i + j*
x] + j*x*(2*g*i*m + 2*f*j*x - g*j*m*x + 2*g*j*x*Log[h*(i + j*x)^m]))) + 2*b
*g*(-(e^2*i^2) + d^2*j^2)*m*n*PolyLog[2, (j*(d + e*x))/(-(e*i) + d*j)])/(4*
e^2*j^2)
```

Maple [C] Result contains higher order function than in optimal. Order 9 vs. order 4.
time = 1.94, size = 3163, normalized size = 7.97

method	result	size
risch	Expression too large to display	3163

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(a+b*ln(c*(e*x+d)^n))*(f+g*ln(h*(j*x+i)^m)),x,method=_RETURNVERBOSE)
```

```
[Out] -5/8/e^2*b*d^2*g*m*n+1/2*ln(h)*ln(c)*x^2*b*g-1/4*ln(h)*x^2*b*g*n-1/4*ln(c)*
x^2*b*g*m+(1/2*x^2*b*g*ln((j*x+i)^m)-1/4*b*(I*Pi*g*j^2*x^2*csgn(I*h)*csgn(I
*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)-I*Pi*g*j^2*x^2*csgn(I*h)*csgn(I*h*(j*x+i)^m
)^2-I*Pi*g*j^2*x^2*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)^2+I*Pi*g*j^2*x^2*c
sgn(I*h*(j*x+i)^m)^3-2*ln(h)*g*j^2*x^2+g*j^2*m*x^2+2*g*i^2*m*ln(j*x+i)-2*f*
j^2*x^2-2*g*i*j*m*x)/j^2)*ln((e*x+d)^n)+1/2*x^2*a*f-1/4*n*b*f*x^2-1/4*a*g*m
*x^2+1/2*ln(c)*b*f*x^2-1/4*n*b*g*ln((j*x+i)^m)*x^2+1/2*b*ln(c)*g*x^2*ln((j*
x+i)^m)+1/2*ln(h)*x^2*a*g-1/2*m*a*g*i^2/j^2*ln(j*x+i)+1/2*a*g*x^2*ln((j*x+i
)^m)-1/4/e/j*g*i*m*b*d*n+1/4*I*Pi*b*f*x^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+1
/4*I*Pi*b*f*x^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-1/2*n*b*d^2*f/e^2*l
n(e*x+d)+1/2/e*ln(h)*x*b*d*g*n-1/2/e^2*ln(h)*ln(e*x+d)*b*d^2*g*n-1/2*b*ln(c
)*g*m/j^2*i^2*ln(j*x+i)+1/2/j*ln(c)*x*b*g*i*m+1/8*csgn(I*(j*x+i)^m)*csgn(I*
h)*x^2*Pi^2*csgn(I*(e*x+d)^n)*g*csgn(I*h*(j*x+i)^m)*csgn(I*c*(e*x+d)^n)^2*b
+1/8*Pi^2*x^2*b*g*csgn(I*h)*csgn(I*h*(j*x+i)^m)^2*csgn(I*c)*csgn(I*(e*x+d)^
n)*csgn(I*c*(e*x+d)^n)-1/4*I*Pi*b*f*x^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*
c*(e*x+d)^n)+1/2/j^2*b*g*i^2*m*n*dilog(((j*x+i)*e+d*j-e*i)/(d*j-e*i))+1/2/j
^2*b*g*i^2*m*n*ln(j*x+i)*ln(((j*x+i)*e+d*j-e*i)/(d*j-e*i))-1/4*I*Pi*b*f*x^2
*csgn(I*c*(e*x+d)^n)^3+1/2/e^2*b*d^2*g*m*n*ln(e*x+d)*ln(((e*x+d)*j-d*j+e*i)
/(-d*j+e*i))+1/4/j^2*g*i^2*m*ln((e*x+d)*j-d*j+e*i)*b*n+1/2/e^2*b*d^2*g*m*n*
dilog(((e*x+d)*j-d*j+e*i)/(-d*j+e*i))-1/8*Pi^2*x^2*b*g*csgn(I*(j*x+i)^m)*cs
gn(I*h*(j*x+i)^m)^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-1/4*I*Pi*x^2*a*g*csgn(I
*h)*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)-1/8*I*Pi*x^2*b*g*n*csgn(I*h)*csgn
(I*h*(j*x+i)^m)^2-1/8*I*Pi*x^2*b*g*n*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)^
2+1/4*I*Pi*ln(c)*x^2*b*g*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)^2+1/4*I*b*Pi
*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*g*x^2*ln((j*x+i)^m)+1/4*I*b*Pi*csgn(I*(e*x
+d)^n)*csgn(I*c*(e*x+d)^n)^2*g*x^2*ln((j*x+i)^m)+1/4*I*ln(h)*Pi*x^2*b*g*csg
n(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-1/8*I*Pi*x^2*b*g*m*csgn(I*c)*csgn(I*c*
(e*x+d)^n)^2+1/8*csgn(I*(j*x+i)^m)*x^2*Pi^2*g*csgn(I*h*(j*x+i)^m)^2*csgn(I*
c*(e*x+d)^n)^3*b+1/4*I*Pi*x^2*a*g*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)^2-1
/4*I*ln(h)*Pi*x^2*b*g*csgn(I*c*(e*x+d)^n)^3-1/8*x^2*Pi^2*g*csgn(I*h*(j*x+i)
^m)^3*csgn(I*c*(e*x+d)^n)^3*b-1/4*I*Pi*x^2*a*g*csgn(I*h*(j*x+i)^m)^3-1/4*I/
j*Pi*x*b*g*i*m*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+1/4*I*b*Pi*c
sgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)*g*m/j^2*i^2*ln(j*x+i)+1/2/e*
n*b*g*ln((j*x+i)^m)*d*x-1/2/e^2*n*b*g*ln((j*x+i)^m)*d^2*ln(e*x+d)+1/8*Pi^2*
x^2*b*g*csgn(I*h)*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)*csgn(I*c)*csgn(I*c*
```

```
(e*x+d)^n)^2+1/8*Pi^2*x^2*b*g*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)^2*csgn(
I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-1/4*I/e*Pi*x*b*d*g*n*csgn(I*h*(j
*x+i)^m)^3+1/8*I*Pi*x^2*b*g*n*csgn(I*h)*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^
m)+1/4*b*d^2*g*m*n*ln(e*x+d)/e^2-1/4*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csg
n(I*c*(e*x+d)^n)*g*x^2*ln((j*x+i)^m)-1/4*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^
n)^2*g*m/j^2*i^2*ln(j*x+i)-1/4*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)
^2*g*m/j^2*i^2*ln(j*x+i)+1/4*I/e*Pi*x*b*d*g*n*csgn(I*h)*csgn(I*h*(j*x+i)^m)
^2+1/4*I/j*Pi*x*b*g*i*m*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-1/4*I/e^2*ln(e*x+d)
*Pi*b*d^2*g*n*csgn(I*h)*csgn(I*h*(j*x+i)^m)^2+1/8*csgn(I*h)*x^2*Pi^2*g*csgn
(I*h*(j*x+i)^m)^2*csgn(I*c*(e*x+d)^n)^3*b-1/4*I/j*Pi*x*b*g*i*m*csgn(I*c*(e*
x+d)^n)^3+1/4*I/e^2*ln(e*x+d)*Pi*b*d^2*g*n*csgn(I*h*(j*x+i)^m)^3-1/4*I*ln(h
)*Pi*x^2*b*g*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+1/4*I*b*Pi*csg
n(I*c*(e*x+d)^n)^3*g*m/j^2*i^2*ln(j*x+i)+1/2/e/j*g*i*m*ln((e*x+d)*j-d*j+e*i
)*b*d*n+1/2/e/j*ln(e*x+d)*b*d*g*i*m*n-1/4*I*Pi*ln(c)*x^2*b*g*csgn(I*h*(j*x+
i)^m)^3+1/8*I*Pi*x^2*b*g*m*csgn(I*c*(e*x+d)^n)^3+1/8*I*Pi*x^2*b*g*n*csgn(I*
h*(j*x+i)^m)^3-1/4*I*b*Pi*csgn(I*c*(e*x+d)^n)^3*g*x^2*ln((j*x+i)^m)-1/8*Pi^
2*x^2*b*g*csgn(I*h)*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)*csgn(I*c)*csgn(I*
(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+1/4*b*g*m*n*x^2+1/8*x^2*Pi^2*csgn(I*(e*x+d)^
n)*g*csgn(I*h*(j*x+i)^m)^3*csgn(I*c*(e*x+d)^n)^2*b-1/8*I*Pi*x^2*b*g*m*csgn(
I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-1/8*Pi^2*x^2*b*g*csgn(I*h*(j*x+i)^m)^3*c
sgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-1/8*csgn(I*(j*x+i)^m)*x^2*Pi
^2*csgn(I*(e*x+d)^n)*g*csgn(I*h*(j*x+i)^m)^2*csgn(I*c*(e*x+d)^n)^2*b-1/8*cs
gn(I*(j*x+i)^m)*csgn(I*h)*x^2*Pi^2*g*csgn(I*h*(j*x+i)^m)*csgn(I*c*(e*x+d)^n
)^3*b-1/8*Pi^2*x^2*b*g*csgn(I*h)*csgn(I*h*(j*x+i)^m)^2*csgn(I*c)*csgn(I*c*(
e*x+d)^n)^2-1/8*csgn(I*h)*x^2*Pi^2*csgn(I*(e*x+d)^n)*g*csgn(I*h*(j*x+i)^m)^
2*csgn(I*c*(e*x+d)^n)^2*b+1/4*I*Pi*x^2*a*g*csgn(I*h)*csgn(I*h*(j*x+i)^m)^2+
1/8*Pi^2*x^2*b*g*csgn(I*h*(j*x+i)^m)^3*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+1/4*
I/e*Pi*x*b*d*g*n*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)^2+1/4*I*ln(h)*Pi*x^2
*b*g*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+1/4*I*Pi*ln(c)*x^2*b*g*csgn(I*h)*csgn(
I*h*(j*x+i)^m)^2+1/4*I/j*Pi*x*b*g*i*m*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)
^2+1/2*a*g*i*m*x/j+1/2*b*d*f*n*x/e-1/4*I/e*Pi*x*b*d*g*n*csgn(I*h)*csgn(I*(j
*x+i)^m)*csgn(I*h*(j*x+i)^m)+1/4*I/e^2*ln(e*x+d...
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*log(c*(e*x+d)^n))*(f+g*log(h*(j*x+i)^m)),x, algorithm="max
ima")
```

```
[Out] -1/4*a*g*j*m*((j*x^2 - 2*I*x)/j^2 - 2*log(j*x + I)/j^3) - 1/4*(2*d^2*e^(-3)
*log(x*e + d) + (x^2*e - 2*d*x)*e^(-2))*b*f*n*e + 1/2*b*f*x^2*log((x*e + d)
^n*c) + 1/2*a*g*x^2*log((j*x + I)^m*h) + 1/2*a*f*x^2 - 1/4*b*g*((2*m*n*e^2*
```

```
log(j*x + I)*log(x*e + d) - (2*d*j^2*n*x*e - 2*d^2*j^2*n*log(x*e + d) + 2*j
^2*x^2*e^2*log((x*e + d)^n) - (j^2*n - 2*j^2*log(c))*x^2*e^2)*log((j*x + I)
^m) - (2*I*j*m*x*e^2 - (j^2*m - 2*j^2*log(h))*x^2*e^2 + 2*m*e^2*log(j*x + I
))*log((x*e + d)^n))*e^(-2)/j^2 - 4*integrate(1/4*(2*(j^2*m*n - j^2*n*log(h
) - (j^2*m - 2*j^2*log(h))*log(c))*x^3*e^3 + ((-I*j*m*n - 2*I*j*n*log(h) +
4*I*j*log(c)*log(h))*e^3 - (d*j^2*m*n + 2*(j^2*m - 2*j^2*log(h))*d*log(c))*
e^2)*x^2 - 2*(d^2*j^2*m*n*e - 2*I*d*j*e^2*log(c)*log(h) - m*n*e^3)*x + 2*(d
^3*j^2*m*n + d*m*n*e^2 + (d^2*j^2*m*n*e + m*n*e^3)*x)*log(x*e + d))/(j^2*x^
2*e^3 + I*d*j*e^2 + (d*j^2*e^2 + I*j*e^3)*x), x))
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*log(c*(e*x+d)^n))*(f+g*log(h*(j*x+i)^m)),x, algorithm="fri
cas")
```

```
[Out] 1/4*(4*j^2*integral(1/4*(4*a*d*f*j^2*x + (-2*I*b*g*j*m*n*x + (4*a*f*j^2 + (
b*g*j^2*m - 2*b*f*j^2)*n)*x^2)*e + 2*(2*a*d*g*j^2*m*x - (b*g*m*n + (b*g*j^2
*m*n - 2*a*g*j^2*m)*x^2)*e + 2*(b*g*j^2*m*x^2*e + b*d*g*j^2*m*x)*log(c))*lo
g(j*x + I) + 4*(b*f*j^2*x^2*e + b*d*f*j^2*x)*log(c) + 2*(2*a*d*g*j^2*x - (b
*g*j^2*n - 2*a*g*j^2)*x^2*e + 2*(b*g*j^2*x^2*e + b*d*g*j^2*x)*log(c))*log(h
))/(j^2*x*e + d*j^2), x) + (2*b*g*j^2*n*x^2*log(h) + 2*I*b*g*j*m*n*x - (b*g
*j^2*m - 2*b*f*j^2)*n*x^2 + 2*(b*g*j^2*m*n*x^2 + b*g*m*n)*log(j*x + I))*log
(x*e + d))/j^2
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int x(a + b \log{(c(d + ex)^n)}) (f + g \log{(h(i + jx)^m)}) \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*ln(c*(e*x+d)**n))*(f+g*ln(h*(j*x+i)**m)),x)
```

```
[Out] Integral(x*(a + b*log(c*(d + e*x)**n))*(f + g*log(h*(i + j*x)**m)), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*log(c*(e*x+d)^n))*(f+g*log(h*(j*x+i)^m)),x, algorithm="gia
c")
```

```
[Out] integrate((b*log((x*e + d)^n*c) + a)*(g*log((j*x + I)^m*h) + f)*x, x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int x\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)\,\left(f+g\,\ln\left(h\,{\left(i+j\,x\right)}^m\right)\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(a + b*log(c*(d + e*x)^n))*(f + g*log(h*(i + j*x)^m)),x)
[Out] int(x*(a + b*log(c*(d + e*x)^n))*(f + g*log(h*(i + j*x)^m)), x)
```

3.389 $\int (a+b\log(c(d+ex)^n))(f+g\log(h(i+jx)^m))\,dx$

Optimal. Leaf size=232

$$-agmx-bfnx+2bgmnx-\frac{bgm(d+ex)\log(c(d+ex)^n)}{e}+\frac{gim(a+b\log(c(d+ex)^n))\log\left(\frac{e(i+jx)}{ei-dj}\right)}{j}-\frac{bgn(i+$$

```
[Out] -a*g*m*x-b*f*n*x+2*b*g*m*n*x-b*g*m*(e*x+d)*ln(c*(e*x+d)^n)/e+g*i*m*(a+b*ln(
c*(e*x+d)^n))*ln(e*(j*x+i)/(-d*j+e*i))/j-b*g*n*(j*x+i)*ln(h*(j*x+i)^m)/j+b*
d*n*ln(-j*(e*x+d)/(-d*j+e*i))*(f+g*ln(h*(j*x+i)^m))/e+x*(a+b*ln(c*(e*x+d)^n
))*(f+g*ln(h*(j*x+i)^m))+b*g*i*m*n*polylog(2,-j*(e*x+d)/(-d*j+e*i))/j+b*d*g
*m*n*polylog(2,e*(j*x+i)/(-d*j+e*i))/e
```

Rubi [A]
time = 0.20, antiderivative size = 232, normalized size of antiderivative = 1.00, number of steps used = 17, number of rules used = 8, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.276$, Rules used = {2479, 45, 2463, 2436, 2332, 2441, 2440, 2438}

$$\frac{bgimn\text{PolyLog}\left(2,-\frac{j(d+ex)}{ei-dj}\right)}{j}+\frac{bdgmn\text{PolyLog}\left(2,\frac{e(i+jx)}{ei-dj}\right)}{e}+x(a+b\log(c(d+ex)^n))(f+g\log(h(i+jx)^m))+\frac{gim\log\left(\frac{e(i+jx)}{ei-dj}\right)(a+b\log(c(d+ex)^n))}{j}-agmx-\frac{bgm(d+ex)\log(c(d+ex)^n)}{e}+\frac{bdn\log\left(-\frac{j(d+ex)}{ei-dj}\right)(f+g\log(h(i+jx)^m))}{e}-bfnx-\frac{bgn(i+jx)\log(h(i+jx)^m)}{j}+2bgmnx$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])*(f + g*Log[h*(i + j*x)^m]),x]
```

```
[Out] -(a*g*m*x) - b*f*n*x + 2*b*g*m*n*x - (b*g*m*(d + e*x)*Log[c*(d + e*x)^n])/e
 + (g*i*m*(a + b*Log[c*(d + e*x)^n])*Log[(e*(i + j*x))/(e*i - d*j)])/j - (b
*g*n*(i + j*x)*Log[h*(i + j*x)^m])/j + (b*d*n*Log[-((j*(d + e*x))/(e*i - d*
j))]*(f + g*Log[h*(i + j*x)^m]))/e + x*(a + b*Log[c*(d + e*x)^n])*(f + g*Lo
g[h*(i + j*x)^m]) + (b*g*i*m*n*PolyLog[2, -((j*(d + e*x))/(e*i - d*j))])/j
+ (b*d*g*m*n*PolyLog[2, (e*(i + j*x))/(e*i - d*j)])/e
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2332

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2436

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
```

```
, b, c, d, e, n, p}, x]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + c*e*(x/g)])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2441

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d + e*x
)^n])/g), x] - Dist[b*e*(n/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2463

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rule 2479

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.)), x_Symbol] :> Simp[x*(a + b*Log[c
*(d + e*x)^n])^p*(f + g*Log[h*(i + j*x)^m]), x] + (-Dist[g*j*m, Int[x*((a +
 b*Log[c*(d + e*x)^n])^p/(i + j*x)), x], x] - Dist[b*e*n*p, Int[x*(a + b*Lo
g[c*(d + e*x)^n])^(p - 1)*((f + g*Log[h*(i + j*x)^m])/(d + e*x)), x], x]) /
; FreeQ[{a, b, c, d, e, f, g, h, i, j, m, n}, x] && IGtQ[p, 0]
```

Rubi steps

$$\int (a+b\log(c(d+ex)^n))(f+g\log(h(389+jx)^m))\,dx = x(a+b\log(c(d+ex)^n))(f+g\log(h(389+jx)^{m}$$

$$= x(a+b\log(c(d+ex)^n))(f+g\log(h(389+jx)^{m}$$

$$= x(a+b\log(c(d+ex)^n))(f+g\log(h(389+jx)^{m}$$

$$= -agmx - bfnx + \frac{389gm(a+b\log(c(d+ex)^n))}{j}$$

$$= -agmx - bfnx + \frac{389gm(a+b\log(c(d+ex)^n))}{j}$$

$$= -agmx - bfnx + 2bgmnx - \frac{bgm(d+ex)\log(c(}{e}$$

Mathematica [A]
time = 0.13, size = 329, normalized size = 1.42

$$\frac{-bdfjn + bdgjmn + aefjx - aegjmx - befjnx + 2begjmnx + befjx\log(c(d+ex)^n) - begjmx\log(c(d+ex)^n) + aegim\log(i+jx) - begimn\log(i+jx) + bdgjmn\log(i+jx) + begim\log(c(d+ex)^n)\log(i+jx) - bdgjn\log(h(i+jx)^m) + aegjx\log(h(i+jx)^m) - begjnx\log(h(i+jx)^m) + begjx\log(c(d+ex)^n)\log(h(i+jx)^m) + bn\log(d+ex)\left(-egim\log(i+jx) + g(ei-dj)m\log\left(\frac{e(i+jx)}{ei-dj}\right) + dj(f-gm+g\log(h(i+jx)^m))\right) + bg(ei-dj)mn\mathrm{Li}_2\left(\frac{j(d+ex)}{-ei+dj}\right)}{ej}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])*(f + g*Log[h*(i + j*x)^m]),x]
```

```
[Out] (-(b*d*f*j*n) + b*d*g*j*m*n + a*e*f*j*x - a*e*g*j*m*x - b*e*f*j*n*x + 2*b*e
*g*j*m*n*x + b*e*f*j*x*Log[c*(d + e*x)^n] - b*e*g*j*m*x*Log[c*(d + e*x)^n]
+ a*e*g*i*m*Log[i + j*x] - b*e*g*i*m*n*Log[i + j*x] + b*d*g*j*m*n*Log[i + j
*x] + b*e*g*i*m*Log[c*(d + e*x)^n]*Log[i + j*x] - b*d*g*j*n*Log[h*(i + j*x)
^m] + a*e*g*j*x*Log[h*(i + j*x)^m] - b*e*g*j*n*x*Log[h*(i + j*x)^m] + b*e*g
*j*x*Log[c*(d + e*x)^n]*Log[h*(i + j*x)^m] + b*n*Log[d + e*x]*(-(e*g*i*m*Lo
g[i + j*x]) + g*(e*i - d*j)*m*Log[(e*(i + j*x))/(e*i - d*j)] + d*j*(f - g*m
 + g*Log[h*(i + j*x)^m])) + b*g*(e*i - d*j)*m*n*PolyLog[2, (j*(d + e*x))/(-
(e*i) + d*j)])/(e*j)
```

Maple [C] Result contains higher order function than in optimal. Order 9 vs. order 4.
time = 1.07, size = 2544, normalized size = 10.97

method	result	size
risch	Expression too large to display	2544

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))*(f+g*ln(h*(j*x+i)^m)),x,method=_RETURNVERBOSE)
```

```
[Out] -n*b*g*ln((j*x+i)^m)*x+b*ln(c)*g*x*ln((j*x+i)^m)+x*a*f+1/2*I*b*Pi*csgn(I*c)
*csgn(I*c*(e*x+d)^n)^2*g*x*ln((j*x+i)^m)+1/2*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(
I*c*(e*x+d)^n)^2*g*x*ln((j*x+i)^m)-1/j*b*g*i*m*n*dilog(((j*x+i)*e+d*j-e*i)/
(d*j-e*i))-1/2*I*b*Pi*csgn(I*c*(e*x+d)^n)^3*g*x*ln((j*x+i)^m)+a*g*m/j*i*ln(
j*x+i)+b*f/e*n*d*ln(e*x+d)+1/2*I*ln(c)*Pi*b*g*csgn(I*(j*x+i)^m)*csgn(I*h*(j
*x+i)^m)^2*x-1/2*I*Pi*b*g*m*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2*x-1/2*I
*Pi*b*g*n*csgn(I*h)*csgn(I*h*(j*x+i)^m)^2*x-1/2*I*Pi*a*g*csgn(I*h*(j*x+i)^m
)^3*x-1/2*I*Pi*b*f*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)*x-1/2*I*
Pi*b*g*m*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*x-1/2*I*ln(c)*Pi*b*g*csgn(I*h*(j*x
+i)^m)^3*x-1/2*I*ln(h)*Pi*b*g*csgn(I*c*(e*x+d)^n)^3*x+1/4*b*Pi^2*csgn(I*c)*
csgn(I*c*(e*x+d)^n)^2*x*g*csgn(I*h*(j*x+i)^m)^3+1/4*b*Pi^2*csgn(I*(e*x+d)^n
)*csgn(I*c*(e*x+d)^n)^2*x*g*csgn(I*h*(j*x+i)^m)^3-ln(c)*b*g*m*x-ln(h)*b*g*n
*x+ln(c)*ln(h)*b*g*x+1/2*I*Pi*a*g*csgn(I*h)*csgn(I*h*(j*x+i)^m)^2*x+1/2*I*P
i*a*g*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)^2*x+1/e*b*d*g*m*n+(x*b*g*ln((j*
x+i)^m)+1/2*b*(-I*Pi*g*j*x*csgn(I*h)*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)+
I*Pi*g*j*x*csgn(I*h)*csgn(I*h*(j*x+i)^m)^2+I*Pi*g*j*x*csgn(I*(j*x+i)^m)*csg
n(I*h*(j*x+i)^m)^2-I*Pi*g*j*x*csgn(I*h*(j*x+i)^m)^3+2*ln(h)*g*j*x+2*g*i*m*l
n(j*x+i)-2*x*g*m*j+2*f*j*x)/j)*ln((e*x+d)^n)+1/4*b*Pi^2*csgn(I*c*(e*x+d)^n)
^3*x*g*csgn(I*h)*csgn(I*h*(j*x+i)^m)^2+1/4*b*Pi^2*csgn(I*c*(e*x+d)^n)^3*x*g
*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)^2+1/2*I*ln(h)*Pi*b*g*csgn(I*(e*x+d)^
n)*csgn(I*c*(e*x+d)^n)^2*x-1/2*I*Pi*a*g*csgn(I*h)*csgn(I*(j*x+i)^m)*csgn(I*
h*(j*x+i)^m)*x-1/4*b*Pi^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*x*g*csgn(I*h)*csg
n(I*h*(j*x+i)^m)^2-1/4*b*Pi^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*x*g*csgn(I*(j
*x+i)^m)*csgn(I*h*(j*x+i)^m)^2-1/4*b*Pi^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d
)^n)^2*x*g*csgn(I*h)*csgn(I*h*(j*x+i)^m)^2-1/2*I/e*ln(e*x+d)*Pi*b*d*g*n*csg
n(I*h*(j*x+i)^m)^3-1/2*I*ln(c)*Pi*b*g*csgn(I*h)*csgn(I*(j*x+i)^m)*csgn(I*h*
(j*x+i)^m)*x-1/2*I*Pi*b*f*csgn(I*c*(e*x+d)^n)^3*x-1/4*b*Pi^2*csgn(I*c*(e*x+
d)^n)^3*x*g*csgn(I*h*(j*x+i)^m)^3-1/2*I*Pi*b*g*n*csgn(I*(j*x+i)^m)*csgn(I*h
*(j*x+i)^m)^2*x+1/2*I*ln(c)*Pi*b*g*csgn(I*h)*csgn(I*h*(j*x+i)^m)^2*x-1/2*I*
ln(h)*Pi*b*g*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)*x+1/2*I*Pi*b*g
*m*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)*x+ln(c)*b*f*x+ln(h)*a*g*
x+1/2*I*Pi*b*f*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*x-g*i*m/j*ln((e*x+d)*j-d*j+e
*i)*b*n-1/e*ln(e*x+d)*b*d*g*m*n-1/e*b*d*g*m*n*dilog(((e*x+d)*j-d*j+e*i)/(-d
*j+e*i))-1/e*b*d*g*m*n*ln(e*x+d)*ln(((e*x+d)*j-d*j+e*i)/(-d*j+e*i))-1/4*b*P
i^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2*x*g*csgn(I*(j*x+i)^m)*csgn(I*h*
(j*x+i)^m)^2-1/4*b*Pi^2*csgn(I*c*(e*x+d)^n)^3*x*g*csgn(I*h)*csgn(I*(j*x+i)^
m)*csgn(I*h*(j*x+i)^m)+1/2*I*ln(h)*Pi*b*g*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*x
-1/4*b*Pi^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)*x*g*csgn(I*h*(j
*x+i)^m)^3+a*g*x*ln((j*x+i)^m)-1/j*b*g*i*m*n*ln(j*x+i)*ln(((j*x+i)*e+d*j-e*
i)/(d*j-e*i))+1/e*n*b*g*ln((j*x+i)^m)*d*ln(e*x+d)+1/2*I*Pi*b*g*n*csgn(I*h*(
j*x+i)^m)^3*x+1/e*ln(e*x+d)*ln(h)*b*d*g*n+b*ln(c)*g*m/j*i*ln(j*x+i)+1/2*I*P
i*b*f*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2*x+1/2*I*Pi*b*g*m*csgn(I*c*(e*
x+d)^n)^3*x+1/4*b*Pi^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*x*g*csgn(I*h)*csgn(I
```

```
*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)+1/4*b*Pi^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+
d)^n)^2*x*g*csgn(I*h)*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)-1/2*I*b*Pi*csgn
(I*c*(e*x+d)^n)^3*g*m/j*i*ln(j*x+i)-a*g*m*x-b*f*n*x-1/4*b*Pi^2*csgn(I*c)*cs
gn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)*x*g*csgn(I*h)*csgn(I*(j*x+i)^m)*csgn(I*
h*(j*x+i)^m)-1/2*I/e*ln(e*x+d)*Pi*b*d*g*n*csgn(I*h)*csgn(I*(j*x+i)^m)*csgn(
I*h*(j*x+i)^m)+1/2*I/e*ln(e*x+d)*Pi*b*d*g*n*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x
+i)^m)^2+1/2*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*g*m/j*i*ln(j*x+i)+1/2*I
*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2*g*m/j*i*ln(j*x+i)+1/2*I/e*ln(
e*x+d)*Pi*b*d*g*n*csgn(I*h)*csgn(I*h*(j*x+i)^m)^2+1/2*I*Pi*b*g*n*csgn(I*h)*
csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)*x-1/2*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)
^n)*csgn(I*c*(e*x+d)^n)*g*x*ln((j*x+i)^m)+1/4*b*Pi^2*csgn(I*c)*csgn(I*(e*x+
d)^n)*csgn(I*c*(e*x+d)^n)*x*g*csgn(I*h)*csgn(I*h*(j*x+i)^m)^2+1/4*b*Pi^2*cs
gn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)*x*g*csgn(I*(j*x+i)^m)*csgn(I*
h*(j*x+i)^m)^2+2*b*g*m*n*x-1/2*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*
(e*x+d)^n)*g*m/j*i*ln(j*x+i)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))*(f+g*log(h*(j*x+i)^m)),x, algorithm="maxim
a")
```

```
[Out] -a*g*j*m*(x/j - I*log(j*x + I)/j^2) + (d*e^(-2)*log(x*e + d) - x*e^(-1))*b*
f*n*e + b*f*x*log((x*e + d)^n*c) + a*g*x*log((j*x + I)^m*h) + a*f*x + b*g*(
(-I*m*n*e*log(j*x + I)*log(x*e + d) + (d*j*n*log(x*e + d) + j*x*e*log((x*e
+ d)^n) - (j*n - j*log(c))*x*e)*log((j*x + I)^m) - ((j*m - j*log(h))*x*e -
I*m*e*log(j*x + I))*log((x*e + d)^n))*e^(-1)/j + integrate(((2*j*m*n - j*n*
log(h) - (j*m - j*log(h))*log(c))*x^2*e^2 + I*d*e*log(c)*log(h) + ((I*m*n -
 I*n*log(h) + I*log(c)*log(h))*e^2 + (d*j*m*n - (j*m - j*log(h))*d*log(c))*
e)*x - (d^2*j*m*n - I*d*m*n*e + (d*j*m*n*e - I*m*n*e^2)*x)*log(x*e + d))/(j
*x^2*e^2 + (d*j*e + I*e^2)*x + I*d*e), x))
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))*(f+g*log(h*(j*x+i)^m)),x, algorithm="frica
s")
```

```
[Out] (j*integral((a*d*f*j + (a*f*j + (b*g*j*m - b*f*j)*n)*x*e + (a*d*g*j*m + (-I
*b*g*m*n - (b*g*j*m*n - a*g*j*m)*x)*e + (b*g*j*m*x*e + b*d*g*j*m)*log(c))*l
```

```
og(j*x + I) + (b*f*j*x*e + b*d*f*j)*log(c) + (a*d*g*j - (b*g*j*n - a*g*j)*x
*e + (b*g*j*x*e + b*d*g*j)*log(c))*log(h))/(j*x*e + d*j), x) + (b*g*j*n*x*l
og(h) - (b*g*j*m - b*f*j)*n*x + (b*g*j*m*n*x + I*b*g*m*n)*log(j*x + I))*log
(x*e + d))/j
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int (a+b\log (c(d+ex)^n)) (f+g\log (h(i+jx)^m)) \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))*(f+g*ln(h*(j*x+i)**m)),x)
[Out] Integral((a + b*log(c*(d + e*x)**n))*(f + g*log(h*(i + j*x)**m)), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))*(f+g*log(h*(j*x+i)^m)),x, algorithm="giac"
)
[Out] integrate((b*log((x*e + d)^n*c) + a)*(g*log((j*x + I)^m*h) + f), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)\,\left(f+g\,\ln\left(h\,{\left(i+j\,x\right)}^m\right)\right) \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))*(f + g*log(h*(i + j*x)^m)),x)
[Out] int((a + b*log(c*(d + e*x)^n))*(f + g*log(h*(i + j*x)^m)), x)
```

3.390 $\int \frac{(a+b\log(c(d+ex)^n))(f+g\log(h(i+jx)^m))}{x}\,dx$

Optimal. Leaf size=637

$$f\log\left(-\frac{ex}{d}\right)(a+b\log\left(c(d+ex)^n\right))+bgmn\log\left(-\frac{ex}{d}\right)\log(d+ex)\log(i+jx)-bgm\log\left(-\frac{jx}{i}\right)(n\log(d+ex$$

```
[Out] f*ln(-e*x/d)*(a+b*ln(c*(e*x+d)^n))+b*g*m*n*ln(-e*x/d)*ln(e*x+d)*ln(j*x+i)-b
*g*m*ln(-j*x/i)*(n*ln(e*x+d)-ln(c*(e*x+d)^n))*ln(j*x+i)+1/2*b*g*m*n*(ln(-e*
x/d)+ln((-d*j+e*i)/e/(j*x+i))-ln(-(-d*j+e*i)*x/d/(j*x+i)))*ln(d*(j*x+i)/i/(
e*x+d))^2-1/2*b*g*m*n*(ln(-e*x/d)-ln(-j*x/i))*(ln(e*x+d)+ln(d*(j*x+i)/i/(e*
x+d)))^2-b*g*ln(-e*x/d)*ln(c*(e*x+d)^n)*(m*ln(j*x+i)-ln(h*(j*x+i)^m))+a*g*l
n(-j*x/i)*ln(h*(j*x+i)^m)+b*f*n*polylog(2,1+e*x/d)+b*g*m*n*(ln(j*x+i)-ln(d*
(j*x+i)/i/(e*x+d)))*polylog(2,1+e*x/d)-b*g*n*(m*ln(j*x+i)-ln(h*(j*x+i)^m))*
polylog(2,1+e*x/d)+b*g*m*n*ln(d*(j*x+i)/i/(e*x+d))*polylog(2,i*(e*x+d)/d/(j
*x+i))-b*g*m*n*ln(d*(j*x+i)/i/(e*x+d))*polylog(2,j*(e*x+d)/e/(j*x+i))+a*g*m
*polylog(2,1+j*x/i)-b*g*m*(n*ln(e*x+d)-ln(c*(e*x+d)^n))*polylog(2,1+j*x/i)+
b*g*m*n*(ln(e*x+d)+ln(d*(j*x+i)/i/(e*x+d)))*polylog(2,1+j*x/i)-b*g*m*n*poly
log(3,1+e*x/d)+b*g*m*n*polylog(3,i*(e*x+d)/d/(j*x+i))-b*g*m*n*polylog(3,j*(
e*x+d)/e/(j*x+i))-b*g*m*n*polylog(3,1+j*x/i)
```

Rubi [A]
time = 0.31, antiderivative size = 637, normalized size of antiderivative = 1.00, number of steps used = 13, number of rules used = 5, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}} = 0.156$, Rules used = {2488, 2441, 2352, 2487, 2485}

Antiderivative was successfully verified.

```
[In] Int[((a + b*Log[c*(d + e*x)^n])*(f + g*Log[h*(i + j*x)^m]))/x,x]
```

```
[Out] f*Log[-((e*x)/d)]*(a + b*Log[c*(d + e*x)^n]) + b*g*m*n*Log[-((e*x)/d)]*Log[
d + e*x]*Log[i + j*x] - b*g*m*Log[-((j*x)/i)]*(n*Log[d + e*x] - Log[c*(d +
e*x)^n])*Log[i + j*x] + (b*g*m*n*(Log[-((e*x)/d)] + Log[(e*i - d*j)/(e*(i +
 j*x))] - Log[-(((e*i - d*j)*x)/(d*(i + j*x)))])*Log[(d*(i + j*x))/(i*(d +
e*x))]^2)/2 - (b*g*m*n*(Log[-((e*x)/d)] - Log[-((j*x)/i)])*(Log[d + e*x] +
Log[(d*(i + j*x))/(i*(d + e*x))])^2)/2 - b*g*Log[-((e*x)/d)]*Log[c*(d + e*x
)^n]*(m*Log[i + j*x] - Log[h*(i + j*x)^m]) + a*g*Log[-((j*x)/i)]*Log[h*(i +
 j*x)^m] + b*f*n*PolyLog[2, 1 + (e*x)/d] + b*g*m*n*(Log[i + j*x] - Log[(d*(
i + j*x))/(i*(d + e*x))])*PolyLog[2, 1 + (e*x)/d] - b*g*n*(m*Log[i + j*x] -
 Log[h*(i + j*x)^m])*PolyLog[2, 1 + (e*x)/d] + b*g*m*n*Log[(d*(i + j*x))/(i
*(d + e*x))]*PolyLog[2, (i*(d + e*x))/(d*(i + j*x))] - b*g*m*n*Log[(d*(i +
j*x))/(i*(d + e*x))]*PolyLog[2, (j*(d + e*x))/(e*(i + j*x))] + a*g*m*PolyLo
g[2, 1 + (j*x)/i] - b*g*m*(n*Log[d + e*x] - Log[c*(d + e*x)^n])*PolyLog[2,
1 + (j*x)/i] + b*g*m*n*(Log[d + e*x] + Log[(d*(i + j*x))/(i*(d + e*x))])*Po
```

```
lyLog[2, 1 + (j*x)/i] - b*g*m*n*PolyLog[3, 1 + (e*x)/d] + b*g*m*n*PolyLog[3
, (i*(d + e*x))/(d*(i + j*x))] - b*g*m*n*PolyLog[3, (j*(d + e*x))/(e*(i + j
*x))] - b*g*m*n*PolyLog[3, 1 + (j*x)/i]
```

Rule 2352

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> Simp[(-e^(-1))*PolyLo
g[2, 1 - c*x], x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2441

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d + e*x
)^n])/g), x] - Dist[b*e*(n/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2485

```
Int[(Log[(a_) + (b_.)*(x_)]*Log[(c_) + (d_.)*(x_)])/(x_), x_Symbol] :> Simp
[Log[(-b)*(x/a)]*Log[a + b*x]*Log[c + d*x], x] + (Simp[(1/2)*(Log[(-b)*(x/a
)] - Log[(-(b*c - a*d))*(x/(a*(c + d*x)))] + Log[(b*c - a*d)/(b*(c + d*x))]
)*Log[a*((c + d*x)/(c*(a + b*x)))]^2, x] - Simp[(1/2)*(Log[(-b)*(x/a)] - Lo
g[(-d)*(x/c)])*(Log[a + b*x] + Log[a*((c + d*x)/(c*(a + b*x)))])^2, x] + Si
mp[(Log[c + d*x] - Log[a*((c + d*x)/(c*(a + b*x)))])*PolyLog[2, 1 + b*(x/a)
], x] + Simp[(Log[a + b*x] + Log[a*((c + d*x)/(c*(a + b*x)))])*PolyLog[2, 1
 + d*(x/c)], x] + Simp[Log[a*((c + d*x)/(c*(a + b*x)))]*PolyLog[2, c*((a +
b*x)/(a*(c + d*x)))], x] - Simp[Log[a*((c + d*x)/(c*(a + b*x)))]*PolyLog[2,
 d*((a + b*x)/(b*(c + d*x)))], x] - Simp[PolyLog[3, 1 + b*(x/a)], x] - Simp
[PolyLog[3, 1 + d*(x/c)], x] + Simp[PolyLog[3, c*((a + b*x)/(a*(c + d*x)))]
, x] - Simp[PolyLog[3, d*((a + b*x)/(b*(c + d*x)))], x]) /; FreeQ[{a, b, c,
 d}, x] && NeQ[b*c - a*d, 0]
```

Rule 2487

```
Int[(Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*Log[(h_.)*((i_.) + (j_.)*(x_))^(m
_.)])/(x_), x_Symbol] :> Dist[m, Int[Log[i + j*x]*(Log[c*(d + e*x)^n]/x), x
], x] - Dist[m*Log[i + j*x] - Log[h*(i + j*x)^m], Int[Log[c*(d + e*x)^n]/x,
 x], x] /; FreeQ[{c, d, e, h, i, j, m, n}, x] && NeQ[e*i - d*j, 0] && NeQ[i
 + j*x, h*(i + j*x)^m]
```

Rule 2488

```
Int[(((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*(Log[(h_.)*((i_.)
 + (j_.)*(x_))^(m_.)]*(g_.) + (f_)))/(x_), x_Symbol] :> Dist[f, Int[(a + b*
Log[c*(d + e*x)^n])/x, x], x] + Dist[g, Int[Log[h*(i + j*x)^m]*((a + b*Log[
c*(d + e*x)^n])/x), x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, j, m, n}, x
```

```
] && NeQ[e*i - d*j, 0]
```

Rubi steps

$$\int \frac{(a+b\log(c(d+ex)^n))(f+g\log(h(390+jx)^m))}{x}\,dx = f\int \frac{a+b\log(c(d+ex)^n)}{x}\,dx + g\int \frac{(a+b\log(c$$

$$= f\log\left(-\frac{ex}{d}\right)(a+b\log(c(d+ex)^n)) + (ag)\int \frac{\mathrm{lo}}{}$$

$$= f\log\left(-\frac{ex}{d}\right)(a+b\log(c(d+ex)^n)) + ag\log\left(-\right.$$

$$= f\log\left(-\frac{ex}{d}\right)(a+b\log(c(d+ex)^n)) - bg\log\left(-\right.$$

$$= -bgm\log(390)\log(x)(n\log(d+ex) - \log(c(d+$$

$$= -bgm\log(390)\log(x)(n\log(d+ex) - \log(c(d+$$

Mathematica [A]
time = 0.17, size = 605, normalized size = 0.95

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*Log[c*(d + e*x)^n])*(f + g*Log[h*(i + j*x)^m]))/x,x]
```

```
[Out] Log[x]*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])*(f - g*m*Log[i + j*x]
+ g*Log[h*(i + j*x)^m]) + b*n*(f - g*m*Log[i + j*x] + g*Log[h*(i + j*x)^m])
*(Log[x]*(Log[d + e*x] - Log[1 + (e*x)/d]) - PolyLog[2, -((e*x)/d)]) + a*g*
m*(Log[x]*(Log[i + j*x] - Log[1 + (j*x)/i]) - PolyLog[2, -((j*x)/i)]) + b*g
*m*(-(n*Log[d + e*x]) + Log[c*(d + e*x)^n])*(Log[x]*(Log[i + j*x] - Log[1 +
 (j*x)/i]) - PolyLog[2, -((j*x)/i)]) + b*g*m*n*(Log[-((e*x)/d)]*Log[d + e*x
]*Log[i + j*x] + (Log[(d*(i + j*x))/(i*(d + e*x))]^2*(Log[-((e*x)/d)] + Log
[(-(e*i) + d*j)/(j*(d + e*x))] - Log[(e*i*x - d*j*x)/(d*i + e*i*x)]))/2 + (
-Log[-((e*x)/d)] + Log[-((j*x)/i)])*Log[(d*(i + j*x))/(i*(d + e*x))]*Log[1
+ (j*x)/i] + ((Log[-((e*x)/d)] - Log[-((j*x)/i)])*Log[1 + (j*x)/i]*(-2*Log[
d + e*x] + Log[1 + (j*x)/i]))/2 + (Log[i + j*x] - Log[(d*(i + j*x))/(i*(d +
 e*x))])*PolyLog[2, 1 + (e*x)/d] + Log[(d*(i + j*x))/(i*(d + e*x))]*(-PolyL
og[2, (d*(i + j*x))/(i*(d + e*x))] + PolyLog[2, (e*(i + j*x))/(j*(d + e*x))
]) + (Log[d + e*x] + Log[(d*(i + j*x))/(i*(d + e*x))])*PolyLog[2, 1 + (j*x)
/i] - PolyLog[3, 1 + (e*x)/d] + PolyLog[3, (d*(i + j*x))/(i*(d + e*x))] - P
olyLog[3, (e*(i + j*x))/(j*(d + e*x))] - PolyLog[3, 1 + (j*x)/i])
```

Maple [F]
time = 0.07, size = 0, normalized size = 0.00

$$\int \frac{(a + b\ln(c(ex + d)^n))(f + g\ln(h(jx + i)^m))}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))*(f+g*ln(h*(j*x+i)^m))/x,x)
```

```
[Out] int((a+b*ln(c*(e*x+d)^n))*(f+g*ln(h*(j*x+i)^m))/x,x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))*(f+g*log(h*(j*x+i)^m))/x,x, algorithm="max
ima")
```

```
[Out] a*f*log(x) + integrate(((g*log(h) + f)*b*log((x*e + d)^n) + (g*log(h) + f)*
b*log(c) + a*g*log(h) + (b*g*log((x*e + d)^n) + b*g*log(c) + a*g)*log((j*x
+ I)^m))/x, x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))*(f+g*log(h*(j*x+i)^m))/x,x, algorithm="fri
cas")
```

```
[Out] integral((b*f*log(c) + a*f + (b*g*m*log(c) + a*g*m)*log(j*x + I) + (b*g*m*n
*log(j*x + I) + b*g*n*log(h) + b*f*n)*log(x*e + d) + (b*g*log(c) + a*g)*log
(h))/x, x)
```

Sympy [F(-1)] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))*(f+g*ln(h*(j*x+i)**m))/x,x)
```

```
[Out] Timed out
```

Giac [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))*(f+g*log(h*(j*x+i)^m))/x,x, algorithm="gia
c")
```

```
[Out] integrate((b*log((x*e + d)^n*c) + a)*(g*log((j*x + I)^m*h) + f)/x, x)
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right))\,\left(f+g\,\ln\left(h\,{\left(i+j\,x\right)}^m\right)\right)}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*log(c*(d + e*x)^n))*(f + g*log(h*(i + j*x)^m)))/x,x)
```

```
[Out] int(((a + b*log(c*(d + e*x)^n))*(f + g*log(h*(i + j*x)^m)))/x, x)
```

3.391 $\int \frac{(a+b\log(c(d+ex)^n))(f+g\log(h(i+jx)^m))}{x^2}\,dx$

Optimal. Leaf size=270

$$\frac{gjm\log\left(-\frac{ex}{d}\right)(a+b\log(c(d+ex)^n))}{i}-\frac{gjm(a+b\log(c(d+ex)^n))\log\left(\frac{e(i+jx)}{ei-dj}\right)}{i}+\frac{ben\log\left(-\frac{jx}{i}\right)(f+g\log$$

```
[Out] g*j*m*ln(-e*x/d)*(a+b*ln(c*(e*x+d)^n))/i-g*j*m*(a+b*ln(c*(e*x+d)^n))*ln(e*(
j*x+i)/(-d*j+e*i))/i+b*e*n*ln(-j*x/i)*(f+g*ln(h*(j*x+i)^m))/d-b*e*n*ln(-j*(
e*x+d)/(-d*j+e*i))*(f+g*ln(h*(j*x+i)^m))/d-(a+b*ln(c*(e*x+d)^n))*(f+g*ln(h*
(j*x+i)^m))/x-b*g*j*m*n*polylog(2,-j*(e*x+d)/(-d*j+e*i))/i+b*g*j*m*n*polylo
g(2,1+e*x/d)/i-b*e*g*m*n*polylog(2,e*(j*x+i)/(-d*j+e*i))/d+b*e*g*m*n*polylo
g(2,1+j*x/i)/d
```

Rubi [A]
time = 0.24, antiderivative size = 270, normalized size of antiderivative = 1.00, number of steps used = 15, number of rules used = 9, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}} = 0.281$, Rules used = {2489, 36, 29, 31, 2463, 2441, 2352, 2440, 2438}

$$-\frac{bgjmn\text{PolyLog}\left(2,-\frac{j(d+ex)}{ei-dj}\right)}{i}+\frac{bgjmn\text{PolyLog}\left(2,\frac{ex}{d}+1\right)}{i}-\frac{begmn\text{PolyLog}\left(2,\frac{e(i+jx)}{ei-dj}\right)}{d}+\frac{begmn\text{PolyLog}\left(2,\frac{jx}{i}+1\right)}{d}-\frac{(a+b\log(c(d+ex)^n))(f+g\log(h(i+jx)^m))}{x}+\frac{gjm\log\left(-\frac{ex}{d}\right)(a+b\log(c(d+ex)^n))}{i}-\frac{gjm\log\left(\frac{e(i+jx)}{ei-dj}\right)(a+b\log(c(d+ex)^n))}{i}+\frac{ben\log\left(-\frac{jx}{i}\right)(f+g\log(h(i+jx)^m))}{d}-\frac{ben\log\left(-\frac{j(d+ex)}{ei-dj}\right)(f+g\log(h(i+jx)^m))}{d}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*Log[c*(d + e*x)^n])*(f + g*Log[h*(i + j*x)^m]))/x^2,x]
```

```
[Out] (g*j*m*Log[-((e*x)/d)]*(a + b*Log[c*(d + e*x)^n]))/i - (g*j*m*(a + b*Log[c*
(d + e*x)^n])*Log[(e*(i + j*x))/(e*i - d*j)])/i + (b*e*n*Log[-((j*x)/i)]*(f
 + g*Log[h*(i + j*x)^m]))/d - (b*e*n*Log[-((j*(d + e*x))/(e*i - d*j))]*(f +
 g*Log[h*(i + j*x)^m]))/d - ((a + b*Log[c*(d + e*x)^n])*(f + g*Log[h*(i + j
*x)^m]))/x - (b*g*j*m*n*PolyLog[2, -((j*(d + e*x))/(e*i - d*j))])/i + (b*g*
j*m*n*PolyLog[2, 1 + (e*x)/d])/i - (b*e*g*m*n*PolyLog[2, (e*(i + j*x))/(e*i
 - d*j)])/d + (b*e*g*m*n*PolyLog[2, 1 + (j*x)/i])/d
```

Rule 29

```
Int[(x_)^(-1), x_Symbol] :> Simp[Log[x], x]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 36

```
Int[1/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))), x_Symbol] :> Dist[b/(b*c
 - a*d), Int[1/(a + b*x), x], x] - Dist[d/(b*c - a*d), Int[1/(c + d*x), x],
```

```
x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0]
```

Rule 2352

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> Simp[(-e^(-1))*PolyLo
g[2, 1 - c*x], x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + c*e*(x/g)])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2441

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d + e*x
)^n])/g), x] - Dist[b*e*(n/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2463

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rule 2489

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*(x_)^(r_.), x_Symbol] :> Simp[x^(
r + 1)*(a + b*Log[c*(d + e*x)^n])^p*((f + g*Log[h*(i + j*x)^m])/(r + 1)), x
] + (-Dist[g*j*(m/(r + 1)), Int[x^(r + 1)*((a + b*Log[c*(d + e*x)^n])^p/(i
+ j*x)), x], x] - Dist[b*e*n*(p/(r + 1)), Int[x^(r + 1)*(a + b*Log[c*(d + e
*x)^n])^(p - 1)*((f + g*Log[h*(i + j*x)^m])/(d + e*x)), x], x]) /; FreeQ[{a
, b, c, d, e, f, g, h, i, j, m, n}, x] && IGtQ[p, 0] && IntegerQ[r] && (EqQ
[p, 1] || GtQ[r, 0]) && NeQ[r, -1]
```

Rubi steps

$$\int \frac{(a+b\log(c(d+ex)^n))(f+g\log(h(391+jx)^m))}{x^2}\,dx = -\frac{(a+b\log(c(d+ex)^n))(f+g\log(h(391+jx}{x}$$

$$= -\frac{(a+b\log(c(d+ex)^n))(f+g\log(h(391+jx}{x}$$

$$= -\frac{(a+b\log(c(d+ex)^n))(f+g\log(h(391+jx}{x}$$

$$= \frac{1}{391}gjm\log\left(-\frac{ex}{d}\right)(a+b\log(c(d+ex)^n)) - \frac{}{3}$$

$$= \frac{1}{391}gjm\log\left(-\frac{ex}{d}\right)(a+b\log(c(d+ex)^n)) - \frac{}{3}$$

$$= \frac{1}{391}gjm\log\left(-\frac{ex}{d}\right)(a+b\log(c(d+ex)^n)) - \frac{}{3}$$

Mathematica [A]
time = 0.12, size = 476, normalized size = 1.76

[illegible]

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*Log[c*(d + e*x)^n])*(f + g*Log[h*(i + j*x)^m]))/x^2,x]
```

```
[Out] -((a*d*f*i - b*e*f*i*n*x*Log[x] - a*d*g*j*m*x*Log[-((j*x)/i)] + b*e*f*i*n*x
*Log[d + e*x] - b*d*g*j*m*n*x*Log[-((e*x)/d)]*Log[d + e*x] + b*d*g*j*m*n*x*
Log[-((j*x)/i)]*Log[d + e*x] + b*d*f*i*Log[c*(d + e*x)^n] - b*d*g*j*m*x*Log
[-((j*x)/i)]*Log[c*(d + e*x)^n] + a*d*g*j*m*x*Log[i + j*x] - b*e*g*i*m*n*x*
Log[d + e*x]*Log[i + j*x] - b*d*g*j*m*n*x*Log[d + e*x]*Log[i + j*x] + b*e*g
*i*m*n*x*Log[(j*(d + e*x))/(-(e*i) + d*j)]*Log[i + j*x] + b*d*g*j*m*x*Log[c
*(d + e*x)^n]*Log[i + j*x] + b*d*g*j*m*n*x*Log[d + e*x]*Log[(e*(i + j*x))/(
e*i - d*j)] + a*d*g*i*Log[h*(i + j*x)^m] - b*e*g*i*n*x*Log[x]*Log[h*(i + j*
x)^m] + b*e*g*i*n*x*Log[d + e*x]*Log[h*(i + j*x)^m] + b*d*g*i*Log[c*(d + e*
x)^n]*Log[h*(i + j*x)^m] + b*e*g*i*m*n*x*Log[x]*Log[1 + (j*x)/i] + b*e*g*i*
m*n*x*PolyLog[2, -((j*x)/i)] + b*d*g*j*m*n*x*PolyLog[2, (j*(d + e*x))/(-(e*
i) + d*j)] - b*d*g*j*m*n*x*PolyLog[2, 1 + (e*x)/d] + b*e*g*i*m*n*x*PolyLog[
2, (e*(i + j*x))/(e*i - d*j)])/(d*i*x))
```

Maple [F]
time = 0.06, size = 0, normalized size = 0.00

$$\int \frac{(a+b\ln(c(ex+d)^n))(f+g\ln(h(jx+i)^m))}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))*(f+g*ln(h*(j*x+i)^m))/x^2,x)
```

```
[Out] int((a+b*ln(c*(e*x+d)^n))*(f+g*ln(h*(j*x+i)^m))/x^2,x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))*(f+g*log(h*(j*x+i)^m))/x^2,x, algorithm="m
axima")
```

```
[Out] a*g*j*m*(I*log(j*x + I) - I*log(x)) - b*f*n*(log(x*e + d)/d - log(x)/d)*e +
 b*g*integrate(((log((x*e + d)^n) + log(c))*log((j*x + I)^m) + log((x*e + d
)^n)*log(h) + log(c)*log(h))/x^2, x) - b*f*log((x*e + d)^n*c)/x - a*g*log((
j*x + I)^m*h)/x - a*f/x
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))*(f+g*log(h*(j*x+i)^m))/x^2,x, algorithm="f
ricas")
```

```
[Out] integral((b*f*log(c) + a*f + (b*g*m*log(c) + a*g*m)*log(j*x + I) + (b*g*m*n
*log(j*x + I) + b*g*n*log(h) + b*f*n)*log(x*e + d) + (b*g*log(c) + a*g)*log
(h))/x^2, x)
```

Sympy [F(-1)] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))*(f+g*ln(h*(j*x+i)**m))/x**2,x)
```

```
[Out] Timed out
```

Giac [F(-1)] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))*(f+g*log(h*(j*x+i)^m))/x^2,x, algorithm="g
iac")
```

```
[Out] Timed out
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right))\,\left(f+g\,\ln\left(h\,{\left(i+j\,x\right)}^m\right)\right)}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*log(c*(d + e*x)^n))*(f + g*log(h*(i + j*x)^m)))/x^2,x)
```

```
[Out] int(((a + b*log(c*(d + e*x)^n))*(f + g*log(h*(i + j*x)^m)))/x^2, x)
```

3.392 $\int \frac{(a+b\log(c(d+ex)^n))(f+g\log(h(i+jx)^m))}{x^3}\,dx$

Optimal. Leaf size=421

$$\frac{begjmn\log(x)}{di}-\frac{begjmn\log(d+ex)}{2di}-\frac{gjm(a+b\log\left(c(d+ex)^n\right))}{2ix}-\frac{gj^2m\log\left(-\frac{ex}{d}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{2i^2}$$

```
[Out] b*e*g*j*m*n*ln(x)/d/i-1/2*b*e*g*j*m*n*ln(e*x+d)/d/i-1/2*g*j*m*(a+b*ln(c*(e*
x+d)^n))/i/x-1/2*g*j^2*m*ln(-e*x/d)*(a+b*ln(c*(e*x+d)^n))/i^2-1/2*b*e*g*j*m
*n*ln(j*x+i)/d/i+1/2*g*j^2*m*(a+b*ln(c*(e*x+d)^n))*ln(e*(j*x+i)/(-d*j+e*i))
/i^2-1/2*b*e*n*(f+g*ln(h*(j*x+i)^m))/d/x-1/2*b*e^2*n*ln(-j*x/i)*(f+g*ln(h*(
j*x+i)^m))/d^2+1/2*b*e^2*n*ln(-j*(e*x+d)/(-d*j+e*i))*(f+g*ln(h*(j*x+i)^m))/
d^2-1/2*(a+b*ln(c*(e*x+d)^n))*(f+g*ln(h*(j*x+i)^m))/x^2+1/2*b*g*j^2*m*n*pol
ylog(2,-j*(e*x+d)/(-d*j+e*i))/i^2-1/2*b*g*j^2*m*n*polylog(2,1+e*x/d)/i^2+1/
2*b*e^2*g*m*n*polylog(2,e*(j*x+i)/(-d*j+e*i))/d^2-1/2*b*e^2*g*m*n*polylog(2
,1+j*x/i)/d^2
```

Rubi [A]
time = 0.32, antiderivative size = 421, normalized size of antiderivative = 1.00, number of steps used = 23, number of rules used = 11, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}} = 0.344$, Rules used = {2489, 46, 2463, 2442, 36, 29, 31, 2441, 2352, 2440, 2438}

$$\frac{be^2gmn\text{PolyLog}\left(2,\frac{e(i+jx)}{ei-dj}\right)}{2d^2}-\frac{be^2gmn\text{PolyLog}\left(2,\frac{jx}{i}+1\right)}{2d^2}+\frac{bgj^2mn\text{PolyLog}\left(2,-\frac{j(d+ex)}{ei-dj}\right)}{2i^2}-\frac{bgj^2mn\text{PolyLog}\left(2,\frac{ex}{d}+1\right)}{2i^2}-\frac{(a+b\log\left(c(d+ex)^n\right))\left(f+g\log\left(h(i+jx)^m\right)\right)}{2x^2}-\frac{gj^2m\log\left(-\frac{ex}{d}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{2i^2}+\frac{gj^2m\log\left(\frac{e(i+jx)}{ei-dj}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{2i^2}-\frac{gjm(a+b\log\left(c(d+ex)^n\right))}{2ix}-\frac{be^2n\log\left(-\frac{jx}{i}\right)\left(f+g\log\left(h(i+jx)^m\right)\right)}{2d^2}+\frac{be^2n\log\left(-\frac{j(d+ex)}{ei-dj}\right)\left(f+g\log\left(h(i+jx)^m\right)\right)}{2d^2}-\frac{ben(f+g\log\left(h(i+jx)^m\right))}{2dx}+\frac{begjmn\log(x)}{di}-\frac{begjmn\log(d+ex)}{2di}-\frac{begjmn\log(i+jx)}{2di}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*Log[c*(d + e*x)^n])*(f + g*Log[h*(i + j*x)^m]))/x^3,x]
```

```
[Out] (b*e*g*j*m*n*Log[x])/(d*i) - (b*e*g*j*m*n*Log[d + e*x])/(2*d*i) - (g*j*m*(a
 + b*Log[c*(d + e*x)^n]))/(2*i*x) - (g*j^2*m*Log[-((e*x)/d)]*(a + b*Log[c*(
d + e*x)^n]))/(2*i^2) - (b*e*g*j*m*n*Log[i + j*x])/(2*d*i) + (g*j^2*m*(a +
b*Log[c*(d + e*x)^n])*Log[(e*(i + j*x))/(e*i - d*j)])/(2*i^2) - (b*e*n*(f +
 g*Log[h*(i + j*x)^m]))/(2*d*x) - (b*e^2*n*Log[-((j*x)/i)]*(f + g*Log[h*(i
+ j*x)^m]))/(2*d^2) + (b*e^2*n*Log[-((j*(d + e*x))/(e*i - d*j))]*(f + g*Log
[h*(i + j*x)^m]))/(2*d^2) - ((a + b*Log[c*(d + e*x)^n])*(f + g*Log[h*(i + j
*x)^m]))/(2*x^2) + (b*g*j^2*m*n*PolyLog[2, -((j*(d + e*x))/(e*i - d*j))])/(
2*i^2) - (b*g*j^2*m*n*PolyLog[2, 1 + (e*x)/d])/(2*i^2) + (b*e^2*g*m*n*PolyL
og[2, (e*(i + j*x))/(e*i - d*j)])/(2*d^2) - (b*e^2*g*m*n*PolyLog[2, 1 + (j*
x)/i])/(2*d^2)
```

Rule 29

```
Int[(x_)^(-1), x_Symbol] :> Simp[Log[x], x]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 36

```
Int[1/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))), x_Symbol] :> Dist[b/(b*c
 - a*d), Int[1/(a + b*x), x], x] - Dist[d/(b*c - a*d), Int[1/(c + d*x), x],
 x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0]
```

Rule 46

```
Int[((a_) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[E
xpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m +
 n + 2, 0])
```

Rule 2352

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> Simp[(-e^(-1))*PolyLo
g[2, 1 - c*x], x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + c*e*(x/g)])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2441

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d + e*x
)^n])/g), x] - Dist[b*e*(n/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2442

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[(f + g*x)^(q + 1)*((a + b*Log[c*(d + e*x)^n])/(
g*(q + 1))), x] - Dist[b*e*(n/(g*(q + 1))), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
```

```
eQ[q, -1]
```

Rule 2463

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rule 2489

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*(x_)^(r_.), x_Symbol] :> Simp[x^(
r + 1)*(a + b*Log[c*(d + e*x)^n])^p*((f + g*Log[h*(i + j*x)^m])/(r + 1)), x
] + (-Dist[g*j*(m/(r + 1)), Int[x^(r + 1)*((a + b*Log[c*(d + e*x)^n])^p/(i
+ j*x)), x], x] - Dist[b*e*n*(p/(r + 1)), Int[x^(r + 1)*(a + b*Log[c*(d + e
*x)^n])^(p - 1)*((f + g*Log[h*(i + j*x)^m])/(d + e*x)), x], x]) /; FreeQ[{a
, b, c, d, e, f, g, h, i, j, m, n}, x] && IGtQ[p, 0] && IntegerQ[r] && (EqQ
[p, 1] || GtQ[r, 0]) && NeQ[r, -1]
```

Rubi steps

$$\int \frac{(a+b\log(c(d+ex)^n))(f+g\log(h(392+jx)^m))}{x^3}\,dx = -\frac{(a+b\log(c(d+ex)^n))(f+g\log(h(392+jx)}{2x^2}$$

$$= -\frac{(a+b\log(c(d+ex)^n))(f+g\log(h(392+jx)}{2x^2}$$

$$= -\frac{(a+b\log(c(d+ex)^n))(f+g\log(h(392+jx)}{2x^2}$$

$$= -\frac{gjm(a+b\log(c(d+ex)^n))}{784x} - \frac{gj^2m\log\left(-\frac{ex}{d}\right)}{}$$

$$= -\frac{gjm(a+b\log(c(d+ex)^n))}{784x} - \frac{gj^2m\log\left(-\frac{ex}{d}\right)}{}$$

$$= \frac{begjmn\log(x)}{392d} - \frac{begjmn\log(d+ex)}{784d} - \frac{gjm(a}{}$$

Mathematica [A]
time = 0.18, size = 765, normalized size = 1.82

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*Log[c*(d + e*x)^n])*(f + g*Log[h*(i + j*x)^m]))/x^3,x]
```

```
[Out] -1/2*(b*e^2*n*Log[x]*(f + g*(-(m*Log[i + j*x]) + Log[h*(i + j*x)^m])))/d^2
+ (b*e^2*n*Log[d + e*x]*(f + g*(-(m*Log[i + j*x]) + Log[h*(i + j*x)^m])))/(
2*d^2) - (b*n*Log[d + e*x]*(f + g*(-(m*Log[i + j*x]) + Log[h*(i + j*x)^m]))
)/(2*x^2) - ((a + b*(-(n*Log[d + e*x]) + Log[c*(d + e*x)^n]))*(f + g*(-(m*L
og[i + j*x]) + Log[h*(i + j*x)^m])))/(2*x^2) - (e*(b*f*n + b*g*n*(-(m*Log[i
 + j*x]) + Log[h*(i + j*x)^m])))/(2*d*x) + (a*g*m*((j^2*(i + j*x))/(i^3*(1
- (i + j*x)/i)) - ((j^2*(i + j*x)^2)/(i^4*(1 - (i + j*x)/i)^2) + (2*j^2*(i
+ j*x))/(i^3*(1 - (i + j*x)/i)))*Log[i + j*x] - (j^2*Log[1 - (i + j*x)/i])/
i^2))/2 + (b*g*m*(-(n*Log[d + e*x]) + Log[c*(d + e*x)^n])*((j^2*(i + j*x))/
(i^3*(1 - (i + j*x)/i)) - ((j^2*(i + j*x)^2)/(i^4*(1 - (i + j*x)/i)^2) + (2
*j^2*(i + j*x))/(i^3*(1 - (i + j*x)/i)))*Log[i + j*x] - (j^2*Log[1 - (i + j
*x)/i])/i^2))/2 + (b*g*m*n*(-((Log[d + e*x]*Log[i + j*x])/x^2) + j*(((e*Log
[x])/d - (e*Log[d + e*x])/d - Log[d + e*x]/x)/i - (j*(Log[-((e*x)/d)]*Log[d
 + e*x] + PolyLog[2, (d + e*x)/d]))/i^2 + (j^2*((Log[d + e*x]*Log[(e*(i + j
*x))/(e*i - d*j)])/j + PolyLog[2, (j*(d + e*x))/(-(e*i) + d*j)]/j))/i^2) +
e*(((j*Log[x])/i - (j*Log[i + j*x])/i - Log[i + j*x]/x)/d - (e*(Log[x]*(Log
[i + j*x] - Log[1 + (j*x)/i]) - PolyLog[2, -((j*x)/i)]))/d^2 + (e^2*((Log[(
j*(d + e*x))/(-(e*i) + d*j)]*Log[i + j*x])/e + PolyLog[2, (e*(i + j*x))/(e*
i - d*j)]/e))/d^2)))/2
```

Maple [F]
time = 0.06, size = 0, normalized size = 0.00

$$\int \frac{\left(a + b \ln \left(c (e x + d)^{n}\right)\right) \left(f + g \ln \left(h (j x + i)^{m}\right)\right)}{x^{3}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))*(f+g*ln(h*(j*x+i)^m))/x^3,x)
```

```
[Out] int((a+b*ln(c*(e*x+d)^n))*(f+g*ln(h*(j*x+i)^m))/x^3,x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))*(f+g*log(h*(j*x+i)^m))/x^3,x, algorithm="m
axima")
```

```
[Out] -1/2*(j*log(j*x + I) - j*log(x) - I/x)*a*g*j*m + 1/2*b*f*n*(e*log(x*e + d)/
d^2 - e*log(x)/d^2 - 1/(d*x))*e + b*g*integrate(((log((x*e + d)^n) + log(c)
```

```
)*log((j*x + I)^m) + log((x*e + d)^n)*log(h) + log(c)*log(h))/x^3, x) - 1/2
*b*f*log((x*e + d)^n*c)/x^2 - 1/2*a*g*log((j*x + I)^m*h)/x^2 - 1/2*a*f/x^2
```

Fricas [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))*(f+g*log(h*(j*x+i)^m))/x^3,x, algorithm="f
ricas")
```

```
[Out] integral((b*f*log(c) + a*f + (b*g*m*log(c) + a*g*m)*log(j*x + I) + (b*g*m*n
*log(j*x + I) + b*g*n*log(h) + b*f*n)*log(x*e + d) + (b*g*log(c) + a*g)*log
(h))/x^3, x)
```

Sympy [**F(-1)**] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))*(f+g*ln(h*(j*x+i)**m))/x**3,x)
```

```
[Out] Timed out
```

Giac [**F(-1)**] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))*(f+g*log(h*(j*x+i)^m))/x^3,x, algorithm="g
iac")
```

```
[Out] Timed out
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)\,\left(f+g\,\ln\left(h\,{\left(i+j\,x\right)}^m\right)\right)}{x^3} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*log(c*(d + e*x)^n))*(f + g*log(h*(i + j*x)^m)))/x^3,x)
```

```
[Out] int(((a + b*log(c*(d + e*x)^n))*(f + g*log(h*(i + j*x)^m)))/x^3, x)
```

3.393 $\int x(a+b\log(c(d+ex)^n))^2(f+g\log(h(i+jx)^m))$

Optimal. Leaf size=1210

$$-\frac{2abdgmnx}{e}-\frac{3abgimnx}{2j}-\frac{2b^2dfn^2x}{e}+\frac{15b^2dgmn^2x}{4e}+\frac{7b^2gimn^2x}{4j}-\frac{1}{4}b^2gmn^2x^2+\frac{b^2fn^2(d+ex)^2}{4e^2}-\frac{b^2gmn^2(c}{8e}$$

```
[Out] b*d*g*n*x*(a+b*ln(c*(e*x+d)^n))*ln(h*(j*x+i)^m)/e+b*d^2*g*m*n*(a+b*ln(c*(e*
x+d)^n))*polylog(2,-j*(e*x+d)/(-d*j+e*i))/e^2-b*g*i^2*m*n*(a+b*ln(c*(e*x+d)
^n))*polylog(2,-j*(e*x+d)/(-d*j+e*i))/j^2-2*b^2*d*g*m*n*(e*x+d)*ln(c*(e*x+d
)^n)/e^2+1/2*b*g*i^2*m*n*(a+b*ln(c*(e*x+d)^n))*ln(e*(j*x+i)/(-d*j+e*i))/j^2
-3/2*b^2*d*g*n^2*(j*x+i)*ln(h*(j*x+i)^m)/e/j+b*d*g*i*m*n*(a+b*ln(c*(e*x+d)^
n))*ln(e*(j*x+i)/(-d*j+e*i))/e/j+15/4*b^2*d*g*m*n^2*x/e+7/4*b^2*g*i*m*n^2*x
/j-1/4*g*m*(e*x+d)^2*(a+b*ln(c*(e*x+d)^n))^2/e^2+1/4*b^2*g*n^2*x^2*ln(h*(j*
x+i)^m)-1/2*d^2*g*(a+b*ln(c*(e*x+d)^n))^2*ln(h*(j*x+i)^m)/e^2-1/4*b^2*g*m*n
^2*x^2+1/4*b^2*f*n^2*(e*x+d)^2/e^2+1/2*x^2*(a+b*ln(c*(e*x+d)^n))^2*(f+g*ln(
h*(j*x+i)^m))+1/2*b^2*g*i^2*m*n^2*polylog(2,-j*(e*x+d)/(-d*j+e*i))/j^2+3/2*
b^2*d^2*g*m*n^2*polylog(2,e*(j*x+i)/(-d*j+e*i))/e^2+1/2*b^2*d^2*f*n^2*ln(e*
x+d)^2/e^2+1/4*b*g*m*n*x^2*(a+b*ln(c*(e*x+d)^n))-1/2*b*f*n*(e*x+d)^2*(a+b*l
n(c*(e*x+d)^n))/e^2+1/2*d*g*m*(e*x+d)*(a+b*ln(c*(e*x+d)^n))^2/e^2+1/2*d^2*g
*m*(a+b*ln(c*(e*x+d)^n))^2*ln(e*(j*x+i)/(-d*j+e*i))/e^2-1/2*g*i^2*m*(a+b*ln
(c*(e*x+d)^n))^2*ln(e*(j*x+i)/(-d*j+e*i))/j^2-1/2*b*g*n*x^2*(a+b*ln(c*(e*x+
d)^n))*ln(h*(j*x+i)^m)-2*b^2*d*f*n^2*x/e-1/8*b^2*g*m*n^2*(e*x+d)^2/e^2-3/2*
b^2*g*i*m*n*(e*x+d)*ln(c*(e*x+d)^n)/e/j+b^2*d*g*i*m*n^2*polylog(2,-j*(e*x+d
)/(-d*j+e*i))/e/j-1/4*b^2*d^2*g*m*n^2*ln(e*x+d)/e^2+2*b*d*f*n*(e*x+d)*(a+b*
ln(c*(e*x+d)^n))/e^2+1/4*b*g*m*n*(e*x+d)^2*(a+b*ln(c*(e*x+d)^n))/e^2+1/2*g*
i*m*(e*x+d)*(a+b*ln(c*(e*x+d)^n))^2/e/j-1/4*b^2*g*i^2*m*n^2*ln(j*x+i)/j^2-b
*d^2*f*n*ln(e*x+d)*(a+b*ln(c*(e*x+d)^n))/e^2-b^2*d^2*g*m*n^2*polylog(3,-j*(
e*x+d)/(-d*j+e*i))/e^2+b^2*g*i^2*m*n^2*polylog(3,-j*(e*x+d)/(-d*j+e*i))/j^2
+3/2*b^2*d^2*g*n^2*ln(-j*(e*x+d)/(-d*j+e*i))*ln(h*(j*x+i)^m)/e^2-2*a*b*d*g*
m*n*x/e-3/2*a*b*g*i*m*n*x/j
```

Rubi [A]
time = 1.95, antiderivative size = 1210, normalized size of antiderivative = 1.00, number of steps used = 73, number of rules used = 27, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}} = 0.844$, Rules used = {2489, 2463, 2436, 2333, 2332, 2448, 2437, 2342, 2341, 2443, 2481, 2421, 6724, 6874, 2458, 45, 2372, 12, 14, 2338, 2479, 2441, 2440, 2438, 2442, 2422, 2354}

Antiderivative was successfully verified.

```
[In] Int[x*(a + b*Log[c*(d + e*x)^n])^2*(f + g*Log[h*(i + j*x)^m]),x]
```

```
[Out] (-2*a*b*d*g*m*n*x)/e - (3*a*b*g*i*m*n*x)/(2*j) - (2*b^2*d*f*n^2*x)/e + (15*
b^2*d*g*m*n^2*x)/(4*e) + (7*b^2*g*i*m*n^2*x)/(4*j) - (b^2*g*m*n^2*x^2)/4 +
```

```
(b^2*f*n^2*(d + e*x)^2)/(4*e^2) - (b^2*g*m*n^2*(d + e*x)^2)/(8*e^2) - (b^2*
d^2*g*m*n^2*Log[d + e*x])/(4*e^2) + (b^2*d^2*f*n^2*Log[d + e*x]^2)/(2*e^2)
- (2*b^2*d*g*m*n*(d + e*x)*Log[c*(d + e*x)^n])/e^2 - (3*b^2*g*i*m*n*(d + e*
x)*Log[c*(d + e*x)^n])/(2*e*j) + (b*g*m*n*x^2*(a + b*Log[c*(d + e*x)^n]))/4
 + (2*b*d*f*n*(d + e*x)*(a + b*Log[c*(d + e*x)^n]))/e^2 - (b*f*n*(d + e*x)^
2*(a + b*Log[c*(d + e*x)^n]))/(2*e^2) + (b*g*m*n*(d + e*x)^2*(a + b*Log[c*(
d + e*x)^n]))/(4*e^2) - (b*d^2*f*n*Log[d + e*x]*(a + b*Log[c*(d + e*x)^n]))
/e^2 + (d*g*m*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^2)/(2*e^2) + (g*i*m*(d +
 e*x)*(a + b*Log[c*(d + e*x)^n])^2)/(2*e*j) - (g*m*(d + e*x)^2*(a + b*Log[c
*(d + e*x)^n])^2)/(4*e^2) - (b^2*g*i^2*m*n^2*Log[i + j*x])/(4*j^2) + (b*g*i
^2*m*n*(a + b*Log[c*(d + e*x)^n])*Log[(e*(i + j*x))/(e*i - d*j)])/(2*j^2) +
 (b*d*g*i*m*n*(a + b*Log[c*(d + e*x)^n])*Log[(e*(i + j*x))/(e*i - d*j)])/(e
*j) + (d^2*g*m*(a + b*Log[c*(d + e*x)^n])^2*Log[(e*(i + j*x))/(e*i - d*j)])
/(2*e^2) - (g*i^2*m*(a + b*Log[c*(d + e*x)^n])^2*Log[(e*(i + j*x))/(e*i - d
*j)])/(2*j^2) + (b^2*g*n^2*x^2*Log[h*(i + j*x)^m])/4 - (3*b^2*d*g*n^2*(i +
j*x)*Log[h*(i + j*x)^m])/(2*e*j) + (3*b^2*d^2*g*n^2*Log[-((j*(d + e*x))/(e*
i - d*j))]*Log[h*(i + j*x)^m])/(2*e^2) + (b*d*g*n*x*(a + b*Log[c*(d + e*x)^
n])*Log[h*(i + j*x)^m])/e - (b*g*n*x^2*(a + b*Log[c*(d + e*x)^n])*Log[h*(i
+ j*x)^m])/2 - (d^2*g*(a + b*Log[c*(d + e*x)^n])^2*Log[h*(i + j*x)^m])/(2*e
^2) + (x^2*(a + b*Log[c*(d + e*x)^n])^2*(f + g*Log[h*(i + j*x)^m]))/2 + (b^
2*g*i^2*m*n^2*PolyLog[2, -((j*(d + e*x))/(e*i - d*j))])/(2*j^2) + (b^2*d*g*
i*m*n^2*PolyLog[2, -((j*(d + e*x))/(e*i - d*j))])/(e*j) + (b*d^2*g*m*n*(a +
 b*Log[c*(d + e*x)^n])*PolyLog[2, -((j*(d + e*x))/(e*i - d*j))])/e^2 - (b*g
*i^2*m*n*(a + b*Log[c*(d + e*x)^n])*PolyLog[2, -((j*(d + e*x))/(e*i - d*j))
])/j^2 + (3*b^2*d^2*g*m*n^2*PolyLog[2, (e*(i + j*x))/(e*i - d*j)])/(2*e^2)
- (b^2*d^2*g*m*n^2*PolyLog[3, -((j*(d + e*x))/(e*i - d*j))])/e^2 + (b^2*g*i
^2*m*n^2*PolyLog[3, -((j*(d + e*x))/(e*i - d*j))])/j^2
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] &&  !LinearQ[u, x] &&  !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2332

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2333

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2338

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2341

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_.)*(x_))^(m_.), x_Symbol] :>
Simp[(d*x)^(m + 1)*((a + b*Log[c*x^n])/(d*(m + 1))), x] - Simp[b*n*((d*x)^(
m + 1)/(d*(m + 1)^2)), x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[m, -1]
```

Rule 2342

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_.)*(x_))^(m_.), x_Symbo
l] :> Simp[(d*x)^(m + 1)*((a + b*Log[c*x^n])^p/(d*(m + 1))), x] - Dist[b*n*
(p/(m + 1)), Int[(d*x)^m*(a + b*Log[c*x^n])^(p - 1), x], x] /; FreeQ[{a, b,
 c, d, m, n}, x] && NeQ[m, -1] && GtQ[p, 0]
```

Rule 2354

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[Log[1 + e*(x/d)]*((a + b*Log[c*x^n])^p/e), x] - Dist[b*n*(p/e),
 Int[Log[1 + e*(x/d)]*((a + b*Log[c*x^n])^(p - 1)/x), x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2372

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*(x_)^(m_.)*((d_) + (e_.)*(x_)^(r_
.))^(q_.), x_Symbol] :> With[{u = IntHide[x^m*(d + e*x^r)^q, x]}, Dist[a +
b*Log[c*x^n], u, x] - Dist[b*n, Int[SimplifyIntegrand[u/x, x], x], x]] /; F
reeQ[{a, b, c, d, e, n, r}, x] && IGtQ[q, 0] && IntegerQ[m] &&  !(EqQ[q, 1]
 && EqQ[m, -1])
```

Rule 2421

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> Simp[(-PolyLog[2, (-d)*f*x^m])*((a + b*Log[c
```

```
*x^n])^p/m), x] + Dist[b*n*(p/m), Int[PolyLog[2, (-d)*f*x^m]*((a + b*Log[c*
x^n])^(p - 1)/x), x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0
] && EqQ[d*e, 1]
```

Rule 2422

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))^(r_.)]*((a_.) + Log[(c_.)*(x_)^(n_
.)]*(b_.))^(p_.))/(x_), x_Symbol] :> Simp[Log[d*(e + f*x^m)^r]*((a + b*Log[
c*x^n])^(p + 1)/(b*n*(p + 1))), x] - Dist[f*m*(r/(b*n*(p + 1))), Int[x^(m -
 1)*((a + b*Log[c*x^n])^(p + 1)/(e + f*x^m)), x], x] /; FreeQ[{a, b, c, d,
e, f, r, m, n}, x] && IGtQ[p, 0] && NeQ[d*e, 1]
```

Rule 2436

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2437

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[(f*(x/d))^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + c*e*(x/g)])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2441

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d + e*x
)^n])/g), x] - Dist[b*e*(n/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2442

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[(f + g*x)^(q + 1)*((a + b*Log[c*(d + e*x)^n])/(
g*(q + 1))), x] - Dist[b*e*(n/(g*(q + 1))), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 2443

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d
+ e*x)^n])^p/g), x] - Dist[b*e*n*(p/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]*
((a + b*Log[c*(d + e*x)^n])^(p - 1)/(d + e*x)), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2448

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q*(a + b*Log[c*(d
 + e*x)^n])^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f -
 d*g, 0] && IGtQ[q, 0]
```

Rule 2458

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[(g*(x/e))^q*((e*h - d*i)/e + i*(x/e))^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2463

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rule 2479

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.)), x_Symbol] :> Simp[x*(a + b*Log[c
*(d + e*x)^n])^p*(f + g*Log[h*(i + j*x)^m]), x] + (-Dist[g*j*m, Int[x*((a +
 b*Log[c*(d + e*x)^n])^p/(i + j*x)), x], x] - Dist[b*e*n*p, Int[x*(a + b*Lo
g[c*(d + e*x)^n])^(p - 1)*((f + g*Log[h*(i + j*x)^m])/(d + e*x)), x], x]) /
; FreeQ[{a, b, c, d, e, f, g, h, i, j, m, n}, x] && IGtQ[p, 0]
```

Rule 2481

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[(k*(x/d))^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + j*(x/e))^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2489

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*(x_)^(r_.), x_Symbol] :> Simp[x^(
r + 1)*(a + b*Log[c*(d + e*x)^n])^p*((f + g*Log[h*(i + j*x)^m])/(r + 1)), x
] + (-Dist[g*j*(m/(r + 1)), Int[x^(r + 1)*((a + b*Log[c*(d + e*x)^n])^p/(i
+ j*x)), x], x] - Dist[b*e*n*(p/(r + 1)), Int[x^(r + 1)*(a + b*Log[c*(d + e
*x)^n])^(p - 1)*((f + g*Log[h*(i + j*x)^m])/(d + e*x)), x], x]) /; FreeQ[{a
, b, c, d, e, f, g, h, i, j, m, n}, x] && IGtQ[p, 0] && IntegerQ[r] && (EqQ
[p, 1] || GtQ[r, 0]) && NeQ[r, -1]
```

Rule 6724

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6874

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int x(a+b\log(c(d+ex)^n))^2(f+g\log(h(393+jx)^m))\,dx = \frac{1}{2}x^2(a+b\log(c(d+ex)^n))^2(f+g\log(h(393$$

$$= \frac{1}{2}x^2(a+b\log(c(d+ex)^n))^2(f+g\log(h(393$$

$$= \frac{1}{2}x^2(a+b\log(c(d+ex)^n))^2(f+g\log(h(393$$

$$= -\frac{154449gm(a+b\log(c(d+ex)^n))^2\log\left(\frac{e(39}{393}\right.}{2j^2}$$

$$= \frac{1}{2}bfn\left(\frac{4d(d+ex)}{e^2}-\frac{(d+ex)^2}{e^2}-\frac{2d^2\log(d+}{e^2}\right.$$

$$= -\frac{393abgmnx}{j}+\frac{1}{2}bfn\left(\frac{4d(d+ex)}{e^2}-\frac{(d+e}{e^2}\right.$$

$$= -\frac{393abgmnx}{j}+\frac{393b^2gmn^2x}{j}-\frac{393b^2gmn(d}{}$$

$$= -\frac{abdgmnx}{e}-\frac{393abgmnx}{j}-\frac{2b^2dfn^2x}{e}+\frac{39}{}$$

$$= -\frac{2abdgmnx}{e}-\frac{1179abgmnx}{2j}-\frac{2b^2dfn^2x}{e}+$$

$$= -\frac{2abdgmnx}{e}-\frac{1179abgmnx}{2j}-\frac{2b^2dfn^2x}{e}+$$

$$= -\frac{2abdgmnx}{e}-\frac{1179abgmnx}{2j}-\frac{2b^2dfn^2x}{e}+$$

Mathematica [A]
time = 0.77, size = 2067, normalized size = 1.71

Result too large to show

Antiderivative was successfully verified.

```
[In] Integrate[x*(a + b*Log[c*(d + e*x)^n])^2*(f + g*Log[h*(i + j*x)^m]),x]

[Out] (-8*a*b*d*e*g*i*j*m*n + 4*b^2*d*e*g*i*j*m*n^2 + 8*b^2*d^2*g*j^2*m*n^2 + 4*a
^2*e^2*g*i*j*m*x + 8*a*b*d*e*f*j^2*n*x - 12*a*b*e^2*g*i*j*m*n*x - 12*a*b*d*
e*g*j^2*m*n*x - 12*b^2*d*e*f*j^2*n^2*x + 14*b^2*e^2*g*i*j*m*n^2*x + 28*b^2*
d*e*g*j^2*m*n^2*x + 4*a^2*e^2*f*j^2*x^2 - 2*a^2*e^2*g*j^2*m*x^2 - 4*a*b*e^2
*f*j^2*n*x^2 + 4*a*b*e^2*g*j^2*m*n*x^2 + 2*b^2*e^2*f*j^2*n^2*x^2 - 3*b^2*e^
2*g*j^2*m*n^2*x^2 - 8*a*b*d^2*f*j^2*n*Log[d + e*x] + 8*a*b*d*e*g*i*j*m*n*Lo
g[d + e*x] + 4*a*b*d^2*g*j^2*m*n*Log[d + e*x] + 12*b^2*d^2*f*j^2*n^2*Log[d
+ e*x] - 4*b^2*d*e*g*i*j*m*n^2*Log[d + e*x] - 16*b^2*d^2*g*j^2*m*n^2*Log[d
+ e*x] + 4*b^2*d^2*f*j^2*n^2*Log[d + e*x]^2 - 4*b^2*d*e*g*i*j*m*n^2*Log[d +
 e*x]^2 - 2*b^2*d^2*g*j^2*m*n^2*Log[d + e*x]^2 - 8*b^2*d*e*g*i*j*m*n*Log[c*
(d + e*x)^n] + 8*a*b*e^2*g*i*j*m*x*Log[c*(d + e*x)^n] + 8*b^2*d*e*f*j^2*n*x
*Log[c*(d + e*x)^n] - 12*b^2*e^2*g*i*j*m*n*x*Log[c*(d + e*x)^n] - 12*b^2*d*
e*g*j^2*m*n*x*Log[c*(d + e*x)^n] + 8*a*b*e^2*f*j^2*x^2*Log[c*(d + e*x)^n] -
 4*a*b*e^2*g*j^2*m*x^2*Log[c*(d + e*x)^n] - 4*b^2*e^2*f*j^2*n*x^2*Log[c*(d
+ e*x)^n] + 4*b^2*e^2*g*j^2*m*n*x^2*Log[c*(d + e*x)^n] - 8*b^2*d^2*f*j^2*n*
Log[d + e*x]*Log[c*(d + e*x)^n] + 8*b^2*d*e*g*i*j*m*n*Log[d + e*x]*Log[c*(d
 + e*x)^n] + 4*b^2*d^2*g*j^2*m*n*Log[d + e*x]*Log[c*(d + e*x)^n] + 4*b^2*e^
2*g*i*j*m*x*Log[c*(d + e*x)^n]^2 + 4*b^2*e^2*f*j^2*x^2*Log[c*(d + e*x)^n]^2
 - 2*b^2*e^2*g*j^2*m*x^2*Log[c*(d + e*x)^n]^2 - 4*a^2*e^2*g*i^2*m*Log[i + j
*x] + 4*a*b*e^2*g*i^2*m*n*Log[i + j*x] + 8*a*b*d*e*g*i*j*m*n*Log[i + j*x] -
 2*b^2*e^2*g*i^2*m*n^2*Log[i + j*x] - 12*b^2*d*e*g*i*j*m*n^2*Log[i + j*x] +
 8*a*b*e^2*g*i^2*m*n*Log[d + e*x]*Log[i + j*x] - 4*b^2*e^2*g*i^2*m*n^2*Log[
d + e*x]*Log[i + j*x] - 8*b^2*d*e*g*i*j*m*n^2*Log[d + e*x]*Log[i + j*x] - 4
*b^2*e^2*g*i^2*m*n^2*Log[d + e*x]^2*Log[i + j*x] - 8*a*b*e^2*g*i^2*m*Log[c*
(d + e*x)^n]*Log[i + j*x] + 4*b^2*e^2*g*i^2*m*n*Log[c*(d + e*x)^n]*Log[i +
j*x] + 8*b^2*d*e*g*i*j*m*n*Log[c*(d + e*x)^n]*Log[i + j*x] + 8*b^2*e^2*g*i^
2*m*n*Log[d + e*x]*Log[c*(d + e*x)^n]*Log[i + j*x] - 4*b^2*e^2*g*i^2*m*Log[
c*(d + e*x)^n]^2*Log[i + j*x] - 8*a*b*e^2*g*i^2*m*n*Log[d + e*x]*Log[(e*(i
+ j*x))/(e*i - d*j)] + 8*a*b*d^2*g*j^2*m*n*Log[d + e*x]*Log[(e*(i + j*x))/(
e*i - d*j)] + 4*b^2*e^2*g*i^2*m*n^2*Log[d + e*x]*Log[(e*(i + j*x))/(e*i - d
*j)] + 8*b^2*d*e*g*i*j*m*n^2*Log[d + e*x]*Log[(e*(i + j*x))/(e*i - d*j)] -
12*b^2*d^2*g*j^2*m*n^2*Log[d + e*x]*Log[(e*(i + j*x))/(e*i - d*j)] + 4*b^2*
e^2*g*i^2*m*n^2*Log[d + e*x]^2*Log[(e*(i + j*x))/(e*i - d*j)] - 4*b^2*d^2*g
*j^2*m*n^2*Log[d + e*x]^2*Log[(e*(i + j*x))/(e*i - d*j)] - 8*b^2*e^2*g*i^2*
m*n*Log[d + e*x]*Log[c*(d + e*x)^n]*Log[(e*(i + j*x))/(e*i - d*j)] + 8*b^2*
d^2*g*j^2*m*n*Log[d + e*x]*Log[c*(d + e*x)^n]*Log[(e*(i + j*x))/(e*i - d*j)
] + 8*a*b*d*e*g*j^2*n*x*Log[h*(i + j*x)^m] - 12*b^2*d*e*g*j^2*n^2*x*Log[h*(
i + j*x)^m] + 4*a^2*e^2*g*j^2*x^2*Log[h*(i + j*x)^m] - 4*a*b*e^2*g*j^2*n*x^
2*Log[h*(i + j*x)^m] + 2*b^2*e^2*g*j^2*n^2*x^2*Log[h*(i + j*x)^m] - 8*a*b*d
^2*g*j^2*n*Log[d + e*x]*Log[h*(i + j*x)^m] + 12*b^2*d^2*g*j^2*n^2*Log[d + e
*x]*Log[h*(i + j*x)^m] + 4*b^2*d^2*g*j^2*n^2*Log[d + e*x]^2*Log[h*(i + j*x)
^m] + 8*b^2*d*e*g*j^2*n*x*Log[c*(d + e*x)^n]*Log[h*(i + j*x)^m] + 8*a*b*e^2
*g*j^2*x^2*Log[c*(d + e*x)^n]*Log[h*(i + j*x)^m] - 4*b^2*e^2*g*j^2*n*x^2*Lo
```

```
g[c*(d + e*x)^n]*Log[h*(i + j*x)^m] - 8*b^2*d^2*g*j^2*n*Log[d + e*x]*Log[c*
(d + e*x)^n]*Log[h*(i + j*x)^m] + 4*b^2*e^2*g*j^2*x^2*Log[c*(d + e*x)^n]^2*
Log[h*(i + j*x)^m] - 4*b*g*(e*i - d*j)*m*n*(2*a*(e*i + d*j) - b*(e*i + 3*d*
j)*n + 2*b*(e*i + d*j)*Log[c*(d + e*x)^n])*PolyLog[2, (j*(d + e*x))/(-(e*i)
 + d*j)] + 8*b^2*g*(e^2*i^2 - d^2*j^2)*m*n^2*PolyLog[3, (j*(d + e*x))/(-(e*
i) + d*j)])/(8*e^2*j^2)
```

Maple [F]
time = 0.10, size = 0, normalized size = 0.00

$$\int x(a+b\ln(c(ex+d)^n))^2(f+g\ln(h(jx+i)^m))\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(a+b*ln(c*(e*x+d)^n))^2*(f+g*ln(h*(j*x+i)^m)),x)
```

```
[Out] int(x*(a+b*ln(c*(e*x+d)^n))^2*(f+g*ln(h*(j*x+i)^m)),x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*log(c*(e*x+d)^n))^2*(f+g*log(h*(j*x+i)^m)),x, algorithm="m
axima")
```

```
[Out] 1/2*b^2*f*x^2*log((x*e + d)^n*c)^2 - 1/4*a^2*g*j*m*((j*x^2 - 2*I*x)/j^2 - 2
*log(j*x + I)/j^3) - 1/2*(2*d^2*e^(-3)*log(x*e + d) + (x^2*e - 2*d*x)*e^(-2
))*a*b*f*n*e + a*b*f*x^2*log((x*e + d)^n*c) + 1/2*a^2*g*x^2*log((j*x + I)^m
*h) + 1/2*a^2*f*x^2 + 1/4*((2*d^2*log(x*e + d)^2 + x^2*e^2 - 6*d*x*e + 6*d^
2*log(x*e + d))*n^2*e^(-2) - 2*(2*d^2*e^(-3)*log(x*e + d) + (x^2*e - 2*d*x)
*e^(-2))*n*e*log((x*e + d)^n*c))*b^2*f + 1/4*((2*I*b^2*g*j*m*x*e^2 - (j^2*m
 - 2*j^2*log(h))*b^2*g*x^2*e^2 + 2*b^2*g*m*e^2*log(j*x + I))*log((x*e + d)^
n)^2 + (2*b^2*d^2*g*j^2*n^2*log(x*e + d)^2 + 2*b^2*g*j^2*x^2*e^2*log((x*e +
 d)^n)^2 - (2*(g*j^2*n - 2*g*j^2*log(c))*a*b - (g*j^2*n^2 - 2*g*j^2*n*log(c
) + 2*g*j^2*log(c)^2)*b^2)*x^2*e^2 + 2*(2*a*b*d*g*j^2*n - (3*d*g*j^2*n^2 -
2*d*g*j^2*n*log(c))*b^2)*x*e - 2*(2*a*b*d^2*g*j^2*n - (3*d^2*g*j^2*n^2 - 2*
d^2*g*j^2*n*log(c))*b^2)*log(x*e + d) + 2*(2*b^2*d*g*j^2*n*x*e - 2*b^2*d^2*
g*j^2*n*log(x*e + d) + (2*a*b*g*j^2 - (g*j^2*n - 2*g*j^2*log(c))*b^2)*x^2*e
^2)*log((x*e + d)^n))*log((j*x + I)^m))*e^(-2)/j^2 - integrate(-1/4*((2*(g*
j^3*m*n - 2*(j^3*m - 2*j^3*log(h))*g*log(c))*a*b - (g*j^3*m*n^2 - 2*g*j^3*m
*n*log(c) + 2*(j^3*m - 2*j^3*log(h))*g*log(c)^2)*b^2)*x^3*e^3 + (4*(I*b^2*g
*j^2*log(c)^2*log(h) + 2*I*a*b*g*j^2*log(c)*log(h))*e^3 - (2*(d*g*j^3*m*n +
 2*(j^3*m - 2*j^3*log(h))*d*g*log(c))*a*b - (5*d*g*j^3*m*n^2 - 2*d*g*j^3*m*
n*log(c) - 2*(j^3*m - 2*j^3*log(h))*d*g*log(c)^2)*b^2)*e^2)*x^2 - 2*(b^2*d^
```

```
2*g*j^3*m*n^2*x*e + b^2*d^3*g*j^3*m*n^2)*log(x*e + d)^2 + 2*(2*(I*b^2*d*g*j
^2*log(c)^2*log(h) + 2*I*a*b*d*g*j^2*log(c)*log(h))*e^2 - (2*a*b*d^2*g*j^3*
m*n - (3*d^2*g*j^3*m*n^2 - 2*d^2*g*j^3*m*n*log(c))*b^2)*e)*x + 2*(2*a*b*d^3
*g*j^3*m*n - (3*d^3*g*j^3*m*n^2 - 2*d^3*g*j^3*m*n*log(c))*b^2 + (2*a*b*d^2*
g*j^3*m*n - (3*d^2*g*j^3*m*n^2 - 2*d^2*g*j^3*m*n*log(c))*b^2)*x*e)*log(x*e
+ d) - 2*(2*((j^3*m - 2*j^3*log(h))*a*b*g + ((j^3*m - 2*j^3*log(h))*g*log(c
) - (j^3*m*n - j^3*n*log(h))*g)*b^2)*x^3*e^3 - ((4*I*a*b*g*j^2*log(h) + (4*
I*g*j^2*log(c)*log(h) + (-I*j^2*m*n - 2*I*j^2*n*log(h))*g)*b^2)*e^3 - (2*(j
^3*m - 2*j^3*log(h))*a*b*d*g + (d*g*j^3*m*n + 2*(j^3*m - 2*j^3*log(h))*d*g*
log(c))*b^2)*e^2)*x^2 + 2*(b^2*d^2*g*j^3*m*n*e - b^2*g*j*m*n*e^3 - 2*(I*b^2
*d*g*j^2*log(c)*log(h) + I*a*b*d*g*j^2*log(h))*e^2)*x + 2*(b^2*g*j*m*n*x*e^
3 + I*b^2*g*m*n*e^3)*log(j*x + I) - 2*(b^2*d^2*g*j^3*m*n*x*e + b^2*d^3*g*j^
3*m*n)*log(x*e + d))*log((x*e + d)^n))/(j^3*x^2*e^3 + I*d*j^2*e^2 + (d*j^3*
e^2 + I*j^2*e^3)*x), x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*log(c*(e*x+d)^n))^2*(f+g*log(h*(j*x+i)^m)),x, algorithm="f
ricas")
```

```
[Out] 1/4*(4*j^2*integral(1/2*(2*a^2*f*j^2*x^2*e + 2*a^2*d*f*j^2*x + 2*(b^2*f*j^2
*x^2*e + b^2*d*f*j^2*x)*log(c)^2 + 2*(a^2*g*j^2*m*x^2*e + a^2*d*g*j^2*m*x +
 (b^2*g*j^2*m*x^2*e + b^2*d*g*j^2*m*x)*log(c)^2 + 2*(a*b*g*j^2*m*x^2*e + a*
b*d*g*j^2*m*x)*log(c))*log(j*x + I) + (4*a*b*d*f*j^2*n*x + (-2*I*b^2*g*j*m*
n^2*x + (4*a*b*f*j^2*n + (b^2*g*j^2*m - 2*b^2*f*j^2)*n^2)*x^2)*e + 2*(2*a*b
*d*g*j^2*m*n*x - (b^2*g*m*n^2 + (b^2*g*j^2*m*n^2 - 2*a*b*g*j^2*m*n)*x^2)*e
+ 2*(b^2*g*j^2*m*n*x^2*e + b^2*d*g*j^2*m*n*x)*log(c))*log(j*x + I) + 4*(b^2
*f*j^2*n*x^2*e + b^2*d*f*j^2*n*x)*log(c) + 2*(2*a*b*d*g*j^2*n*x - (b^2*g*j^
2*n^2 - 2*a*b*g*j^2*n)*x^2*e + 2*(b^2*g*j^2*n*x^2*e + b^2*d*g*j^2*n*x)*log(
c))*log(h))*log(x*e + d) + 4*(a*b*f*j^2*x^2*e + a*b*d*f*j^2*x)*log(c) + 2*(
a^2*g*j^2*x^2*e + a^2*d*g*j^2*x + (b^2*g*j^2*x^2*e + b^2*d*g*j^2*x)*log(c)^
2 + 2*(a*b*g*j^2*x^2*e + a*b*d*g*j^2*x)*log(c))*log(h))/(j^2*x*e + d*j^2),
x) + (2*b^2*g*j^2*n^2*x^2*log(h) + 2*I*b^2*g*j*m*n^2*x - (b^2*g*j^2*m - 2*b
^2*f*j^2)*n^2*x^2 + 2*(b^2*g*j^2*m*n^2*x^2 + b^2*g*m*n^2)*log(j*x + I))*log
(x*e + d)^2)/j^2
```

Sympy [F(-1)] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*ln(c*(e*x+d)**n))**2*(f+g*ln(h*(j*x+i)**m)),x)
```

```
[Out] Timed out
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*log(c*(e*x+d)^n))^2*(f+g*log(h*(j*x+i)^m)),x, algorithm="g
iac")
```

```
[Out] integrate((b*log((x*e + d)^n*c) + a)^2*(g*log((j*x + I)^m*h) + f)*x, x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int x\left(a+b\,\ln\left(c\left(d+e\,x\right)^n\right)\right)^2\left(f+g\,\ln\left(h\left(i+j\,x\right)^m\right)\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(a + b*log(c*(d + e*x)^n))^2*(f + g*log(h*(i + j*x)^m)),x)
```

```
[Out] int(x*(a + b*log(c*(d + e*x)^n))^2*(f + g*log(h*(i + j*x)^m)), x)
```

3.394 $\int (a+b\log (c(d+ex)^n))^2 (f+g\log (h(i+jx)^m))\,dx$

Optimal. Leaf size=649

$$-2abfnx+4abgmnx+2b^2fn^2x-6b^2gmn^2x-\frac{2b^2fn(d+ex)\log(c(d+ex)^n)}{e}+\frac{4b^2gmn(d+ex)\log(c(d+ex)^n)}{e}$$

```
[Out] -2*a*b*f*n*x+4*a*b*g*m*n*x+2*b^2*f*n^2*x-6*b^2*g*m*n^2*x-2*b^2*f*n*(e*x+d)*
ln(c*(e*x+d)^n)/e+4*b^2*g*m*n*(e*x+d)*ln(c*(e*x+d)^n)/e+d*f*(a+b*ln(c*(e*x+
d)^n))^2/e-g*m*(e*x+d)*(a+b*ln(c*(e*x+d)^n))^2/e-2*b*g*i*m*n*(a+b*ln(c*(e*x
+d)^n))*ln(e*(j*x+i)/(-d*j+e*i))/j-d*g*m*(a+b*ln(c*(e*x+d)^n))^2*ln(e*(j*x+
i)/(-d*j+e*i))/e+g*i*m*(a+b*ln(c*(e*x+d)^n))^2*ln(e*(j*x+i)/(-d*j+e*i))/j+2
*b^2*g*n^2*(j*x+i)*ln(h*(j*x+i)^m)/j-2*b^2*d*g*n^2*ln(-j*(e*x+d)/(-d*j+e*i)
)*ln(h*(j*x+i)^m)/e-2*b*g*n*x*(a+b*ln(c*(e*x+d)^n))*ln(h*(j*x+i)^m)+d*g*(a+
b*ln(c*(e*x+d)^n))^2*ln(h*(j*x+i)^m)/e+x*(a+b*ln(c*(e*x+d)^n))^2*(f+g*ln(h*
(j*x+i)^m))-2*b^2*g*i*m*n^2*polylog(2,-j*(e*x+d)/(-d*j+e*i))/j-2*b*d*g*m*n*
(a+b*ln(c*(e*x+d)^n))*polylog(2,-j*(e*x+d)/(-d*j+e*i))/e+2*b*g*i*m*n*(a+b*l
n(c*(e*x+d)^n))*polylog(2,-j*(e*x+d)/(-d*j+e*i))/j-2*b^2*d*g*m*n^2*polylog(
2,e*(j*x+i)/(-d*j+e*i))/e+2*b^2*d*g*m*n^2*polylog(3,-j*(e*x+d)/(-d*j+e*i))/
e-2*b^2*g*i*m*n^2*polylog(3,-j*(e*x+d)/(-d*j+e*i))/j
```

Rubi [A]
time = 1.04, antiderivative size = 649, normalized size of antiderivative = 1.00, number of steps used = 41, number of rules used = 19, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.613$, Rules used = {2479, 2463, 2436, 2333, 2332, 2443, 2481, 2421, 6724, 6874, 2458, 2388, 2338, 45, 2441, 2440, 2438, 2422, 2354}

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^2*(f + g*Log[h*(i + j*x)^m]),x]
```

```
[Out] -2*a*b*f*n*x + 4*a*b*g*m*n*x + 2*b^2*f*n^2*x - 6*b^2*g*m*n^2*x - (2*b^2*f*n
*(d + e*x)*Log[c*(d + e*x)^n])/e + (4*b^2*g*m*n*(d + e*x)*Log[c*(d + e*x)^n
])/e + (d*f*(a + b*Log[c*(d + e*x)^n])^2)/e - (g*m*(d + e*x)*(a + b*Log[c*(
d + e*x)^n])^2)/e - (2*b*g*i*m*n*(a + b*Log[c*(d + e*x)^n])*Log[(e*(i + j*x
))/(e*i - d*j)])/j - (d*g*m*(a + b*Log[c*(d + e*x)^n])^2*Log[(e*(i + j*x))/
(e*i - d*j)])/e + (g*i*m*(a + b*Log[c*(d + e*x)^n])^2*Log[(e*(i + j*x))/(e*
i - d*j)])/j + (2*b^2*g*n^2*(i + j*x)*Log[h*(i + j*x)^m])/j - (2*b^2*d*g*n^
2*Log[-((j*(d + e*x))/(e*i - d*j))]*Log[h*(i + j*x)^m])/e - 2*b*g*n*x*(a +
b*Log[c*(d + e*x)^n])*Log[h*(i + j*x)^m] + (d*g*(a + b*Log[c*(d + e*x)^n])^
2*Log[h*(i + j*x)^m])/e + x*(a + b*Log[c*(d + e*x)^n])^2*(f + g*Log[h*(i +
j*x)^m]) - (2*b^2*g*i*m*n^2*PolyLog[2, -((j*(d + e*x))/(e*i - d*j))])/j - (
2*b*d*g*m*n*(a + b*Log[c*(d + e*x)^n])*PolyLog[2, -((j*(d + e*x))/(e*i - d*
```

```
j))])/e + (2*b*g*i*m*n*(a + b*Log[c*(d + e*x)^n])*PolyLog[2, -((j*(d + e*x)
)/(e*i - d*j))])/j - (2*b^2*d*g*m*n^2*PolyLog[2, (e*(i + j*x))/(e*i - d*j)]
)/e + (2*b^2*d*g*m*n^2*PolyLog[3, -((j*(d + e*x))/(e*i - d*j))])/e - (2*b^2
*g*i*m*n^2*PolyLog[3, -((j*(d + e*x))/(e*i - d*j))])/j
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2332

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2333

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2338

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2354

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[Log[1 + e*(x/d)]*((a + b*Log[c*x^n])^p/e), x] - Dist[b*n*(p/e),
 Int[Log[1 + e*(x/d)]*((a + b*Log[c*x^n])^(p - 1)/x), x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2388

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.))
/(x_), x_Symbol] :> Dist[d, Int[(d + e*x)^(q - 1)*((a + b*Log[c*x^n])^p/x),
 x], x] + Dist[e, Int[(d + e*x)^(q - 1)*(a + b*Log[c*x^n])^p, x], x] /; Fre
eQ[{a, b, c, d, e, n}, x] && IGtQ[p, 0] && GtQ[q, 0] && IntegerQ[2*q]
```

Rule 2421

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> Simp[(-PolyLog[2, (-d)*f*x^m])*((a + b*Log[c
*x^n])^p/m), x] + Dist[b*n*(p/m), Int[PolyLog[2, (-d)*f*x^m]*((a + b*Log[c*
```

```
x^n])^(p - 1)/x), x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0
] && EqQ[d*e, 1]
```

Rule 2422

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))^(r_.)]*((a_.) + Log[(c_.)*(x_)^(n_
.)]*(b_.))^(p_.))/(x_), x_Symbol] :> Simp[Log[d*(e + f*x^m)^r]*((a + b*Log[
c*x^n])^(p + 1)/(b*n*(p + 1))), x] - Dist[f*m*(r/(b*n*(p + 1))), Int[x^(m -
 1)*((a + b*Log[c*x^n])^(p + 1)/(e + f*x^m)), x], x] /; FreeQ[{a, b, c, d,
e, f, r, m, n}, x] && IGtQ[p, 0] && NeQ[d*e, 1]
```

Rule 2436

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + c*e*(x/g)])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2441

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d + e*x
)^n])/g), x] - Dist[b*e*(n/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2443

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d
+ e*x)^n])^p/g), x] - Dist[b*e*n*(p/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]*
((a + b*Log[c*(d + e*x)^n])^(p - 1)/(d + e*x)), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2458

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[(g*(x/e))^q*((e*h - d*i)/e + i*(x/e))^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2463

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rule 2479

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.)), x_Symbol] :> Simp[x*(a + b*Log[c
*(d + e*x)^n])^p*(f + g*Log[h*(i + j*x)^m]), x] + (-Dist[g*j*m, Int[x*((a +
 b*Log[c*(d + e*x)^n])^p/(i + j*x)), x], x] - Dist[b*e*n*p, Int[x*(a + b*Lo
g[c*(d + e*x)^n])^(p - 1)*((f + g*Log[h*(i + j*x)^m])/(d + e*x)), x], x]) /
; FreeQ[{a, b, c, d, e, f, g, h, i, j, m, n}, x] && IGtQ[p, 0]
```

Rule 2481

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[(k*(x/d))^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + j*(x/e))^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 6724

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6874

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int (a+b\log(c(d+ex)^n))^2 (f+g\log(h(394+jx)^m))\,dx = x(a+b\log(c(d+ex)^n))^2 (f+g\log(h(394+jx$$

$$= x(a+b\log(c(d+ex)^n))^2 (f+g\log(h(394+jx$$

$$= x(a+b\log(c(d+ex)^n))^2 (f+g\log(h(394+jx$$

$$= \frac{394gm(a+b\log(c(d+ex)^n))^2 \log\left(\frac{e(394+jx)}{394e-dj}\right)}{j} +$$

$$= -\frac{gm(d+ex)(a+b\log(c(d+ex)^n))^2}{e} + \frac{394gm}{}$$

$$= -2abfnx + 2abgmnx + \frac{df(a+b\log(c(d+ex)^n}{e}$$

$$= -2abfnx + 2abgmnx + 2b^2fn^2x - 2b^2gmn^2x -$$

$$= -2abfnx + 2abgmnx + 2b^2fn^2x - 2b^2gmn^2x -$$

$$= -2abfnx + 4abgmnx + 2b^2fn^2x - 2b^2gmn^2x -$$

$$= -2abfnx + 4abgmnx + 2b^2fn^2x - 4b^2gmn^2x -$$

$$= -2abfnx + 4abgmnx + 2b^2fn^2x - 6b^2gmn^2x -$$

Mathematica [B] Leaf count is larger than twice the leaf count of optimal. 1355 vs. 2(649) = 1298.
time = 0.31, size = 1355, normalized size = 2.09

Antiderivative was successfully verified.

[In] Integrate[(a + b*Log[c*(d + e*x)^n])^2*(f + g*Log[h*(i + j*x)^m]),x]

[Out] (-2*a*b*d*f*j*n + 2*a*b*d*g*j*m*n - 2*b^2*d*g*j*m*n^2 + a^2*e*f*j*x - a^2*e*g*j*m*x - 2*a*b*e*f*j*n*x + 4*a*b*e*g*j*m*n*x + 2*b^2*e*f*j*n^2*x - 6*b^2*e*g*j*m*n^2*x + 2*a*b*d*f*j*n*Log[d + e*x] - 2*a*b*d*g*j*m*n*Log[d + e*x] + 2*b^2*d*g*j*m*n^2*Log[d + e*x] - b^2*d*f*j*n^2*Log[d + e*x]^2 + b^2*d*g*j*m*n^2*Log[d + e*x]^2 - 2*b^2*d*f*j*n*Log[c*(d + e*x)^n] + 2*b^2*d*g*j*m*n*Log[c*(d + e*x)^n] + 2*a*b*e*f*j*x*Log[c*(d + e*x)^n] - 2*a*b*e*g*j*m*x*Log[c*(d + e*x)^n] - 2*b^2*e*f*j*n*x*Log[c*(d + e*x)^n] + 4*b^2*e*g*j*m*n*x*Log[c*(d + e*x)^n] + 2*b^2*d*f*j*n*Log[d + e*x]*Log[c*(d + e*x)^n] - 2*b^2*d*g*j*m*n*Log[d + e*x]*Log[c*(d + e*x)^n] + b^2*e*f*j*x*Log[c*(d + e*x)^n]^2 - b^2*e*g*j*m*x*Log[c*(d + e*x)^n]^2 + a^2*e*g*i*m*Log[i + j*x] - 2*a*b*e*g*i*m*n*Log[i + j*x] + 2*a*b*d*g*j*m*n*Log[i + j*x] + 2*b^2*e*g*i*m*n^2*Log[i + j*x] - 2*a*b*e*g*i*m*n*Log[d + e*x]*Log[i + j*x] + 2*b^2*e*g*i*m*n^2*Log[d + e*x]*Log[i + j*x] - 2*b^2*d*g*j*m*n^2*Log[d + e*x]*Log[i + j*x] + b^2*e*g*i*m*n^2*Log[d + e*x]^2*Log[i + j*x] + 2*a*b*e*g*i*m*Log[c*(d + e*x)^n]*Log[i + j*x] - 2*b^2*e*g*i*m*n*Log[c*(d + e*x)^n]*Log[i + j*x] + 2*b^2*d*g*j*m*n*Log[c*(d + e*x)^n]*Log[i + j*x] - 2*b^2*e*g*i*m*n*Log[d + e*x]*Log[c*(d + e*x)^n]*Log[i + j*x] + b^2*e*g*i*m*Log[c*(d + e*x)^n]^2*Log[i + j*x] + 2*a*b*e*g*i*m*n*Log[d + e*x]*Log[(e*(i + j*x))/(e*i - d*j)] - 2*a*b*d*g*j*m*n*Log[d + e*x]*Log[(e*(i + j*x))/(e*i - d*j)] - 2*b^2*e*g*i*m*n^2*Log[d + e*x]*Log[(e*(i + j*x))/(e*i - d*j)] + 2*b^2*d*g*j*m*n^2*Log[d + e*x]*Log[(e*(i + j*x))/(e*i - d*j)] - b^2*e*g*i*m*n^2*Log[d + e*x]^2*Log[(e*(i + j*x))/(e*i - d*j)] + b^2*d*g*j*m*n^2*Log[d + e*x]^2*Log[(e*(i + j*x))/(e*i - d*j)] + 2*b^2*e*g*i*m*n*Log[d + e*x]*Log[c*(d + e*x)^n]*Log[(e*(i + j*x))/(e*i - d*j)] - 2*b^2*d*g*j*m*n*Log[d + e*x]*Log[c*(d + e*x)^n]*Log[(e*(i + j*x))/(e*i - d*j)] - 2*a*b*d*g*j*n*Log[h*(i + j*x)^m] + a^2*e*g*j*x*Log[h*(i + j*x)^m] - 2*a*b*e*g*j*n*x*Log[h*(i + j*x)^m] + 2*b^2*e*g*j*n^2*x*Log[h*(i + j*x)^m] + 2*a*b*d*g*j*n*Log[d + e*x]*Log[h*(i + j*x)^m] - b^2*d*g*j*n^2*Log[d + e*x]^2*Log[h*(i + j*x)^m] - 2*b^2*d*g*j*n*Log[c*(d + e*x)^n]*Log[h*(i + j*x)^m] + 2*a*b*e*g*j*x*Log[c*(d + e*x)^n]*Log[h*(i + j*x)^m] - 2*b^2*e*g*j*n*x*Log[c*(d + e*x)^n]*Log[h*(i + j*x)^m] + 2*b^2*d*g*j*n*Log[d + e*x]*Log[c*(d + e*x)^n]*Log[h*(i + j*x)^m] + b^2*e*g*j*x*Log[c*(d + e*x)^n]^2*Log[h*(i + j*x)^m] + 2*b*g*(e*i - d*j)*m*n*(a - b*n + b*Log[c*(d + e*x)^n])*PolyLog[2, (j*(d + e*x))/(-(e*i) + d*j)] + 2*b^2*g*(-(e*i) + d*j)*m*n^2*PolyLog[3, (j*(d + e*x))/(-(e*i) + d*j)])/(e*j)

Maple [F]
time = 0.06, size = 0, normalized size = 0.00

$$\int \left(a + b\ln\left(c(ex+d)^{n}\right)\right)^{2} \left(f + g\ln\left(h(jx+i)^{m}\right)\right) dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((a+b*ln(c*(e*x+d)^n))^2*(f+g*ln(h*(j*x+i)^m)),x)

[Out] int((a+b*ln(c*(e*x+d)^n))^2*(f+g*ln(h*(j*x+i)^m)),x)

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2*(f+g*log(h*(j*x+i)^m)),x, algorithm="max
ima")
```

```
[Out] -a^2*g*j*m*(x/j - I*log(j*x + I)/j^2) + 2*(d*e^(-2)*log(x*e + d) - x*e^(-1)
)*a*b*f*n*e + b^2*f*x*log((x*e + d)^n*c)^2 + 2*a*b*f*x*log((x*e + d)^n*c) +
 a^2*g*x*log((j*x + I)^m*h) - ((d*log(x*e + d)^2 - 2*x*e + 2*d*log(x*e + d)
)*n^2*e^(-1) - 2*(d*e^(-2)*log(x*e + d) - x*e^(-1))*n*e*log((x*e + d)^n*c))
*b^2*f + a^2*f*x - (((j*m - j*log(h))*b^2*g*x*e - I*b^2*g*m*e*log(j*x + I))
*log((x*e + d)^n)^2 + (b^2*d*g*j*n^2*log(x*e + d)^2 - b^2*g*j*x*e*log((x*e
+ d)^n)^2 + (2*(g*j*n - g*j*log(c))*a*b - (2*g*j*n^2 - 2*g*j*n*log(c) + g*j
*log(c)^2)*b^2)*x*e - 2*(a*b*d*g*j*n - (d*g*j*n^2 - d*g*j*n*log(c))*b^2)*lo
g(x*e + d) - 2*(b^2*d*g*j*n*log(x*e + d) + (a*b*g*j - (g*j*n - g*j*log(c))*
b^2)*x*e)*log((x*e + d)^n))*log((j*x + I)^m))*e^(-1)/j - integrate(-((2*(g*
j^2*m*n - (j^2*m - j^2*log(h))*g*log(c))*a*b - (2*g*j^2*m*n^2 - 2*g*j^2*m*n
*log(c) + (j^2*m - j^2*log(h))*g*log(c)^2)*b^2)*x^2*e^2 + (b^2*d*g*j^2*m*n^
2*x*e + b^2*d^2*g*j^2*m*n^2)*log(x*e + d)^2 - ((-I*b^2*g*j*log(c)^2*log(h)
- 2*I*a*b*g*j*log(c)*log(h))*e^2 - (2*(d*g*j^2*m*n - (j^2*m - j^2*log(h))*d
*g*log(c))*a*b - (2*d*g*j^2*m*n^2 - 2*d*g*j^2*m*n*log(c) + (j^2*m - j^2*log
(h))*d*g*log(c)^2)*b^2)*e)*x - (-I*b^2*d*g*j*log(c)^2*log(h) - 2*I*a*b*d*g*
j*log(c)*log(h))*e - 2*(a*b*d^2*g*j^2*m*n - (d^2*g*j^2*m*n^2 - d^2*g*j^2*m*
n*log(c))*b^2 + (a*b*d*g*j^2*m*n - (d*g*j^2*m*n^2 - d*g*j^2*m*n*log(c))*b^2
)*x*e)*log(x*e + d) - 2*(((j^2*m - j^2*log(h))*a*b*g + ((j^2*m - j^2*log(h)
)*g*log(c) - (2*j^2*m*n - j^2*n*log(h))*g)*b^2)*x^2*e^2 - ((I*a*b*g*j*log(h
) + (I*g*j*log(c)*log(h) + (I*j*m*n - I*j*n*log(h))*g)*b^2)*e^2 - ((j^2*m -
 j^2*log(h))*a*b*d*g - (d*g*j^2*m*n - (j^2*m - j^2*log(h))*d*g*log(c))*b^2)
*e)*x - (I*b^2*d*g*j*log(c)*log(h) + I*a*b*d*g*j*log(h))*e - (-I*b^2*g*j*m*
n*x*e^2 + b^2*g*m*n*e^2)*log(j*x + I) + (b^2*d*g*j^2*m*n*x*e + b^2*d^2*g*j^
2*m*n)*log(x*e + d))*log((x*e + d)^n))/(j^2*x^2*e^2 + I*d*j*e + (d*j^2*e +
I*j*e^2)*x), x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2*(f+g*log(h*(j*x+i)^m)),x, algorithm="fri
cas")
```

```
[Out] ((b^2*g*j*n^2*x*log(h) - (b^2*g*j*m - b^2*f*j)*n^2*x + (b^2*g*j*m*n^2*x + I
*b^2*g*m*n^2)*log(j*x + I))*log(x*e + d)^2 + j*integral((a^2*f*j*x*e + a^2*
d*f*j + (b^2*f*j*x*e + b^2*d*f*j)*log(c)^2 + (a^2*g*j*m*x*e + a^2*d*g*j*m +
 (b^2*g*j*m*x*e + b^2*d*g*j*m)*log(c)^2 + 2*(a*b*g*j*m*x*e + a*b*d*g*j*m)*l
og(c))*log(j*x + I) + 2*(a*b*d*f*j*n + (a*b*f*j*n + (b^2*g*j*m - b^2*f*j)*n
^2)*x*e + (a*b*d*g*j*m*n - (I*b^2*g*m*n^2 + (b^2*g*j*m*n^2 - a*b*g*j*m*n)*x
)*e + (b^2*g*j*m*n*x*e + b^2*d*g*j*m*n)*log(c))*log(j*x + I) + (b^2*f*j*n*x
*e + b^2*d*f*j*n)*log(c) + (a*b*d*g*j*n - (b^2*g*j*n^2 - a*b*g*j*n)*x*e + (
b^2*g*j*n*x*e + b^2*d*g*j*n)*log(c))*log(h))*log(x*e + d) + 2*(a*b*f*j*x*e
+ a*b*d*f*j)*log(c) + (a^2*g*j*x*e + a^2*d*g*j + (b^2*g*j*x*e + b^2*d*g*j)*
log(c)^2 + 2*(a*b*g*j*x*e + a*b*d*g*j)*log(c))*log(h))/(j*x*e + d*j), x))/j
```

Sympy [**F(-1)**] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**2*(f+g*ln(h*(j*x+i)**m)),x)
```

```
[Out] Timed out
```

Giac [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2*(f+g*log(h*(j*x+i)^m)),x, algorithm="gia
c")
```

```
[Out] integrate((b*log((x*e + d)^n*c) + a)^2*(g*log((j*x + I)^m*h) + f), x)
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.00

$$\int (a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right))^2\,\left(f+g\,\ln\left(h\,{\left(i+j\,x\right)}^m\right)\right) \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))^2*(f + g*log(h*(i + j*x)^m)),x)
```

```
[Out] int((a + b*log(c*(d + e*x)^n))^2*(f + g*log(h*(i + j*x)^m)), x)
```

3.395 $\int \frac{(a+b\log(c(d+ex)^n))^2(f+g\log(h(i+jx)^m))}{x} dx$

Optimal. Leaf size=37

$$\text{Int}\left(\frac{(a+b\log(c(d+ex)^n))^2(f+g\log(h(i+jx)^m))}{x},x\right)$$

```
[Out] Unintegrable((a+b*ln(c*(e*x+d)^n))^2*(f+g*ln(h*(j*x+i)^m))/x,x)
```

Rubi [A]
time = 0.03, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int \frac{(a+b\log(c(d+ex)^n))^2(f+g\log(h(i+jx)^m))}{x}\,dx$$

Verification is not applicable to the result.

```
[In] Int[((a + b*Log[c*(d + e*x)^n])^2*(f + g*Log[h*(i + j*x)^m]))/x,x]
[Out] Defer[Int][((a + b*Log[c*(d + e*x)^n])^2*(f + g*Log[h*(i + j*x)^m]))/x, x]
```

Rubi steps

$$\int \frac{(a+b\log(c(d+ex)^n))^2(f+g\log(h(395+jx)^m))}{x}\,dx = \int \frac{(a+b\log(c(d+ex)^n))^2(f+g\log(h(395+$$

Mathematica [A]
time = 0.46, size = 0, normalized size = 0.00

$$\int \frac{(a+b\log(c(d+ex)^n))^2(f+g\log(h(i+jx)^m))}{x}\,dx$$

Verification is not applicable to the result.

```
[In] Integrate[((a + b*Log[c*(d + e*x)^n])^2*(f + g*Log[h*(i + j*x)^m]))/x,x]
[Out] Integrate[((a + b*Log[c*(d + e*x)^n])^2*(f + g*Log[h*(i + j*x)^m]))/x, x]
```

Maple [A]
time = 0.08, size = 0, normalized size = 0.00

$$\int \frac{(a+b\ln(c(ex+d)^n))^2(f+g\ln(h(jx+i)^m))}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))^2*(f+g*ln(h*(j*x+i)^m))/x,x)
```

```
[Out] int((a+b*ln(c*(e*x+d)^n))^2*(f+g*ln(h*(j*x+i)^m))/x,x)
```

Maxima [A]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2*(f+g*log(h*(j*x+i)^m))/x,x, algorithm="m
axima")
```

```
[Out] a^2*f*log(x) + integrate(((g*log(h) + f)*b^2*log((x*e + d)^n)^2 + (g*log(h)
 + f)*b^2*log(c)^2 + 2*(g*log(h) + f)*a*b*log(c) + a^2*g*log(h) + (b^2*g*lo
g((x*e + d)^n)^2 + b^2*g*log(c)^2 + 2*a*b*g*log(c) + a^2*g + 2*(b^2*g*log(c
) + a*b*g)*log((x*e + d)^n))*log((j*x + I)^m) + 2*((g*log(h) + f)*b^2*log(c
) + (g*log(h) + f)*a*b)*log((x*e + d)^n))/x, x)
```

Fricas [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2*(f+g*log(h*(j*x+i)^m))/x,x, algorithm="f
ricas")
```

```
[Out] integral((b^2*f*log(c)^2 + 2*a*b*f*log(c) + a^2*f + (b^2*g*m*n^2*log(j*x +
I) + b^2*g*n^2*log(h) + b^2*f*n^2)*log(x*e + d)^2 + (b^2*g*m*log(c)^2 + 2*a
*b*g*m*log(c) + a^2*g*m)*log(j*x + I) + 2*(b^2*f*n*log(c) + a*b*f*n + (b^2*
g*m*n*log(c) + a*b*g*m*n)*log(j*x + I) + (b^2*g*n*log(c) + a*b*g*n)*log(h))
*log(x*e + d) + (b^2*g*log(c)^2 + 2*a*b*g*log(c) + a^2*g)*log(h))/x, x)
```

Sympy [F(-1)] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**2*(f+g*ln(h*(j*x+i)**m))/x,x)
```

```
[Out] Timed out
```

Giac [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2*(f+g*log(h*(j*x+i)^m))/x,x, algorithm="g
iac")
```

```
[Out] integrate((b*log((x*e + d)^n*c) + a)^2*(g*log((j*x + I)^m*h) + f)/x, x)
```

Mupad [A]
time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)}^2\,\left(f+g\,\ln\left(h\,{\left(i+j\,x\right)}^m\right)\right)}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*log(c*(d + e*x)^n))^2*(f + g*log(h*(i + j*x)^m)))/x,x)
```

```
[Out] int(((a + b*log(c*(d + e*x)^n))^2*(f + g*log(h*(i + j*x)^m)))/x, x)
```

3.396 $\int \frac{(a+b\log(c(d+ex)^n))^2(f+g\log(h(i+jx)^m))}{x^2}\,dx$

Optimal. Leaf size=37

$$\mathrm{Int}\left(\frac{(a+b\log(c(d+ex)^n))^2(f+g\log(h(i+jx)^m))}{x^2},x\right)$$

[Out] Unintegrable((a+b*ln(c*(e*x+d)^n))^2*(f+g*ln(h*(j*x+i)^m))/x^2,x)

Rubi [A]
time = 0.03, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int \frac{(a+b\log(c(d+ex)^n))^2(f+g\log(h(i+jx)^m))}{x^2}\,dx$$

Verification is not applicable to the result.

[In] Int[((a + b*Log[c*(d + e*x)^n])^2*(f + g*Log[h*(i + j*x)^m]))/x^2,x]

[Out] Defer[Int][((a + b*Log[c*(d + e*x)^n])^2*(f + g*Log[h*(i + j*x)^m]))/x^2, x
]

Rubi steps

$$\int \frac{(a+b\log(c(d+ex)^n))^2(f+g\log(h(396+jx)^m))}{x^2}\,dx = \int \frac{(a+b\log(c(d+ex)^n))^2(f+g\log(h(396+}{x^2}$$

Mathematica [A]
time = 0.54, size = 0, normalized size = 0.00

$$\int \frac{(a+b\log(c(d+ex)^n))^2(f+g\log(h(i+jx)^m))}{x^2}\,dx$$

Verification is not applicable to the result.

[In] Integrate[((a + b*Log[c*(d + e*x)^n])^2*(f + g*Log[h*(i + j*x)^m]))/x^2,x]

[Out] Integrate[((a + b*Log[c*(d + e*x)^n])^2*(f + g*Log[h*(i + j*x)^m]))/x^2, x]

Maple [A]
time = 0.07, size = 0, normalized size = 0.00

$$\int \frac{(a+b\ln(c(ex+d)^n))^2(f+g\ln(h(jx+i)^m))}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))^2*(f+g*ln(h*(j*x+i)^m))/x^2,x)
```

```
[Out] int((a+b*ln(c*(e*x+d)^n))^2*(f+g*ln(h*(j*x+i)^m))/x^2,x)
```

Maxima [A]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2*(f+g*log(h*(j*x+i)^m))/x^2,x, algorithm=
"maxima")
```

```
[Out] -2*a*b*f*n*(log(x*e + d)/d - log(x)/d)*e - 2*a*b*f*log((x*e + d)^n*c)/x - a
^2*f/x + integrate(((g*log(h) + f)*b^2*log((x*e + d)^n)^2 + (g*log(h) + f)*
b^2*log(c)^2 + 2*a*b*g*log(c)*log(h) + a^2*g*log(h) + (b^2*g*log((x*e + d)^
n)^2 + b^2*g*log(c)^2 + 2*a*b*g*log(c) + a^2*g + 2*(b^2*g*log(c) + a*b*g)*l
og((x*e + d)^n))*log((j*x + I)^m) + 2*((g*log(h) + f)*b^2*log(c) + a*b*g*lo
g(h))*log((x*e + d)^n))/x^2, x)
```

Fricas [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2*(f+g*log(h*(j*x+i)^m))/x^2,x, algorithm=
"fricas")
```

```
[Out] integral((b^2*f*log(c)^2 + 2*a*b*f*log(c) + a^2*f + (b^2*g*m*n^2*log(j*x +
I) + b^2*g*n^2*log(h) + b^2*f*n^2)*log(x*e + d)^2 + (b^2*g*m*log(c)^2 + 2*a
*b*g*m*log(c) + a^2*g*m)*log(j*x + I) + 2*(b^2*f*n*log(c) + a*b*f*n + (b^2*
g*m*n*log(c) + a*b*g*m*n)*log(j*x + I) + (b^2*g*n*log(c) + a*b*g*n)*log(h))
*log(x*e + d) + (b^2*g*log(c)^2 + 2*a*b*g*log(c) + a^2*g)*log(h))/x^2, x)
```

Sympy [F(-1)] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**2*(f+g*ln(h*(j*x+i)**m))/x**2,x)
```

```
[Out] Timed out
```

Giac [**F(-1)**] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2*(f+g*log(h*(j*x+i)^m))/x^2,x, algorithm=
"giac")
```

```
[Out] Timed out
```

Mupad [**A**]
time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)}^2\,\left(f+g\,\ln\left(h\,{\left(i+j\,x\right)}^m\right)\right)}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*log(c*(d + e*x)^n))^2*(f + g*log(h*(i + j*x)^m)))/x^2,x)
```

```
[Out] int(((a + b*log(c*(d + e*x)^n))^2*(f + g*log(h*(i + j*x)^m)))/x^2, x)
```

3.397 $\int x(a+b\log(c(d+ex)^n))^3(f+g\log(h(i+jx)^m))\,d$

Optimal. Leaf size=2050

result too large to display

```
[Out] 12*b^3*d*g*m*n^2*(e*x+d)*ln(c*(e*x+d)^n)/e^2-15/4*b*d*g*m*n*(e*x+d)*(a+b*ln
(c*(e*x+d)^n))^2/e^2-3/4*b^2*g*i^2*m*n^2*(a+b*ln(c*(e*x+d)^n))*ln(e*(j*x+i)
/(-d*j+e*i))/j^2-9/4*b*d^2*g*m*n*(a+b*ln(c*(e*x+d)^n))^2*ln(e*(j*x+i)/(-d*j
+e*i))/e^2-9/2*b^2*d*g*i*m*n^2*(a+b*ln(c*(e*x+d)^n))*ln(e*(j*x+i)/(-d*j+e*i
))/e/j+3/2*b*d*g*i*m*n*(a+b*ln(c*(e*x+d)^n))^2*ln(e*(j*x+i)/(-d*j+e*i))/e/j
+3*b^2*d*g*i*m*n^2*(a+b*ln(c*(e*x+d)^n))*polylog(2,-j*(e*x+d)/(-d*j+e*i))/e
/j-1/4*g*m*(e*x+d)^2*(a+b*ln(c*(e*x+d)^n))^3/e^2-3/8*b^3*g*n^3*x^2*ln(h*(j*
x+i)^m)-1/2*d^2*g*(a+b*ln(c*(e*x+d)^n))^3*ln(h*(j*x+i)^m)/e^2-1/2*d^2*f*(a+
b*ln(c*(e*x+d)^n))^3/e^2+3/8*b^3*g*m*n^3*x^2-3/8*b^3*f*n^3*(e*x+d)^2/e^2+3/
4*b*g*i^2*m*n*(a+b*ln(c*(e*x+d)^n))^2*ln(e*(j*x+i)/(-d*j+e*i))/j^2+21/4*b^3
*d*g*n^3*(j*x+i)*ln(h*(j*x+i)^m)/e/j-9/2*b^2*d*g*n^2*x*(a+b*ln(c*(e*x+d)^n)
)*ln(h*(j*x+i)^m)/e+3/2*b*d*g*n*x*(a+b*ln(c*(e*x+d)^n))^2*ln(h*(j*x+i)^m)/e
-9/2*b^2*d^2*g*m*n^2*(a+b*ln(c*(e*x+d)^n))*polylog(2,-j*(e*x+d)/(-d*j+e*i))
/e^2+3/2*b^2*g*i^2*m*n^2*(a+b*ln(c*(e*x+d)^n))*polylog(2,-j*(e*x+d)/(-d*j+e
*i))/j^2+3/2*b*d^2*g*m*n*(a+b*ln(c*(e*x+d)^n))^2*polylog(2,-j*(e*x+d)/(-d*j
+e*i))/e^2-3/2*b*g*i^2*m*n*(a+b*ln(c*(e*x+d)^n))^2*polylog(2,-j*(e*x+d)/(-d
*j+e*i))/j^2-3*b^2*d^2*g*m*n^2*(a+b*ln(c*(e*x+d)^n))*polylog(3,-j*(e*x+d)/(
-d*j+e*i))/e^2+3*b^2*g*i^2*m*n^2*(a+b*ln(c*(e*x+d)^n))*polylog(3,-j*(e*x+d)
/(-d*j+e*i))/j^2+1/2*x^2*(a+b*ln(c*(e*x+d)^n))^3*(f+g*ln(h*(j*x+i)^m))-3/4*
b^3*g*i^2*m*n^3*polylog(2,-j*(e*x+d)/(-d*j+e*i))/j^2-21/4*b^3*d^2*g*m*n^3*p
olylog(2,e*(j*x+i)/(-d*j+e*i))/e^2+9/2*b^3*d^2*g*m*n^3*polylog(3,-j*(e*x+d)
/(-d*j+e*i))/e^2-3/2*b^3*g*i^2*m*n^3*polylog(3,-j*(e*x+d)/(-d*j+e*i))/j^2+3
*b^3*d^2*g*m*n^3*polylog(4,-j*(e*x+d)/(-d*j+e*i))/e^2-3*b^3*g*i^2*m*n^3*pol
ylog(4,-j*(e*x+d)/(-d*j+e*i))/j^2-6*a*b^2*d*f*n^2*x/e-141/8*b^3*d*g*m*n^3*x
/e-45/8*b^3*g*i*m*n^3*x/j-3/8*b^2*g*m*n^2*x^2*(a+b*ln(c*(e*x+d)^n))+3/4*b^2
*f*n^2*(e*x+d)^2*(a+b*ln(c*(e*x+d)^n))/e^2-3/4*b*f*n*(e*x+d)^2*(a+b*ln(c*(e
*x+d)^n))^2/e^2+1/2*d*g*m*(e*x+d)*(a+b*ln(c*(e*x+d)^n))^3/e^2-3*b^3*d*g*i*m
*n^3*polylog(3,-j*(e*x+d)/(-d*j+e*i))/e/j-9/2*b^3*d*g*i*m*n^3*polylog(2,-j*
(e*x+d)/(-d*j+e*i))/e/j+6*b^3*d*f*n^3*x/e+3/8*b^3*g*m*n^3*(e*x+d)^2/e^2+21/
4*b^3*g*i*m*n^2*(e*x+d)*ln(c*(e*x+d)^n)/e/j-9/4*b*g*i*m*n*(e*x+d)*(a+b*ln(c
*(e*x+d)^n))^2/e/j+1/2*d^2*g*m*(a+b*ln(c*(e*x+d)^n))^3*ln(e*(j*x+i)/(-d*j+e
*i))/e^2-1/2*g*i^2*m*(a+b*ln(c*(e*x+d)^n))^3*ln(e*(j*x+i)/(-d*j+e*i))/j^2+3
/4*b^2*g*n^2*x^2*(a+b*ln(c*(e*x+d)^n))*ln(h*(j*x+i)^m)-3/4*b*g*n*x^2*(a+b*l
n(c*(e*x+d)^n))^2*ln(h*(j*x+i)^m)+9/4*b*d^2*g*n*(a+b*ln(c*(e*x+d)^n))^2*ln(
h*(j*x+i)^m)/e^2+3/8*b^3*d^2*g*m*n^3*ln(e*x+d)/e^2-6*b^3*d*f*n^2*(e*x+d)*ln
(c*(e*x+d)^n)/e^2-3/4*b^2*g*m*n^2*(e*x+d)^2*(a+b*ln(c*(e*x+d)^n))/e^2+3*b*d
*f*n*(e*x+d)*(a+b*ln(c*(e*x+d)^n))^2/e^2+3/4*b*g*m*n*(e*x+d)^2*(a+b*ln(c*(e
*x+d)^n))^2/e^2+1/2*g*i*m*(e*x+d)*(a+b*ln(c*(e*x+d)^n))^3/e/j+3/8*b^3*g*i^2
*m*n^3*ln(j*x+i)/j^2-21/4*b^3*d^2*g*n^3*ln(-j*(e*x+d)/(-d*j+e*i))*ln(h*(j*x
+i)^m)/e^2+21/4*a*b^2*g*i*m*n^2*x/j+12*a*b^2*d*g*m*n^2*x/e
```

Rubi [A]
time = 4.81, antiderivative size = 2050, normalized size of antiderivative = 1.00, number of steps used = 148, number of rules used = 32, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}} = 1.000$, Rules used = {2489, 2463, 2436, 2333, 2332, 2448, 2437, 2342, 2341, 2443, 2481, 2421, 2430, 6724, 6874, 2458, 2388, 2339, 30, 2367, 2479, 2338, 45, 2441, 2440, 2438, 2422, 2354, 2372, 12, 14, 2442}

Antiderivative was successfully verified.

```
[In] Int[x*(a + b*Log[c*(d + e*x)^n])^3*(f + g*Log[h*(i + j*x)^m]),x]

[Out] (-6*a*b^2*d*f*n^2*x)/e + (12*a*b^2*d*g*m*n^2*x)/e + (21*a*b^2*g*i*m*n^2*x)/
(4*j) + (6*b^3*d*f*n^3*x)/e - (141*b^3*d*g*m*n^3*x)/(8*e) - (45*b^3*g*i*m*n
^3*x)/(8*j) + (3*b^3*g*m*n^3*x^2)/8 - (3*b^3*f*n^3*(d + e*x)^2)/(8*e^2) + (
3*b^3*g*m*n^3*(d + e*x)^2)/(8*e^2) + (3*b^3*d^2*g*m*n^3*Log[d + e*x])/(8*e^
2) - (6*b^3*d*f*n^2*(d + e*x)*Log[c*(d + e*x)^n])/e^2 + (12*b^3*d*g*m*n^2*(
d + e*x)*Log[c*(d + e*x)^n])/e^2 + (21*b^3*g*i*m*n^2*(d + e*x)*Log[c*(d + e
*x)^n])/(4*e*j) - (3*b^2*g*m*n^2*x^2*(a + b*Log[c*(d + e*x)^n]))/8 + (3*b^2
*f*n^2*(d + e*x)^2*(a + b*Log[c*(d + e*x)^n]))/(4*e^2) - (3*b^2*g*m*n^2*(d
 + e*x)^2*(a + b*Log[c*(d + e*x)^n]))/(4*e^2) + (3*b*d*f*n*(d + e*x)*(a + b*
Log[c*(d + e*x)^n])^2)/e^2 - (15*b*d*g*m*n*(d + e*x)*(a + b*Log[c*(d + e*x)
^n])^2)/(4*e^2) - (9*b*g*i*m*n*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^2)/(4*e
*j) - (3*b*f*n*(d + e*x)^2*(a + b*Log[c*(d + e*x)^n])^2)/(4*e^2) + (3*b*g*m
*n*(d + e*x)^2*(a + b*Log[c*(d + e*x)^n])^2)/(4*e^2) - (d^2*f*(a + b*Log[c*
(d + e*x)^n])^3)/(2*e^2) + (d*g*m*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^3)/(
2*e^2) + (g*i*m*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^3)/(2*e*j) - (g*m*(d +
 e*x)^2*(a + b*Log[c*(d + e*x)^n])^3)/(4*e^2) + (3*b^3*g*i^2*m*n^3*Log[i +
j*x])/(8*j^2) - (3*b^2*g*i^2*m*n^2*(a + b*Log[c*(d + e*x)^n])*Log[(e*(i + j
*x))/(e*i - d*j)])/(4*j^2) - (9*b^2*d*g*i*m*n^2*(a + b*Log[c*(d + e*x)^n])*
Log[(e*(i + j*x))/(e*i - d*j)])/(2*e*j) - (9*b*d^2*g*m*n*(a + b*Log[c*(d +
e*x)^n])^2*Log[(e*(i + j*x))/(e*i - d*j)])/(4*e^2) + (3*b*g*i^2*m*n*(a + b*
Log[c*(d + e*x)^n])^2*Log[(e*(i + j*x))/(e*i - d*j)])/(4*j^2) + (3*b*d*g*i*
m*n*(a + b*Log[c*(d + e*x)^n])^2*Log[(e*(i + j*x))/(e*i - d*j)])/(2*e*j) +
(d^2*g*m*(a + b*Log[c*(d + e*x)^n])^3*Log[(e*(i + j*x))/(e*i - d*j)])/(2*e^
2) - (g*i^2*m*(a + b*Log[c*(d + e*x)^n])^3*Log[(e*(i + j*x))/(e*i - d*j)])/
(2*j^2) - (3*b^3*g*n^3*x^2*Log[h*(i + j*x)^m])/8 + (21*b^3*d*g*n^3*(i + j*x
)*Log[h*(i + j*x)^m])/(4*e*j) - (21*b^3*d^2*g*n^3*Log[-((j*(d + e*x))/(e*i
- d*j))]*Log[h*(i + j*x)^m])/(4*e^2) - (9*b^2*d*g*n^2*x*(a + b*Log[c*(d + e
*x)^n])*Log[h*(i + j*x)^m])/(2*e) + (3*b^2*g*n^2*x^2*(a + b*Log[c*(d + e*x)
^n])*Log[h*(i + j*x)^m])/4 + (9*b*d^2*g*n*(a + b*Log[c*(d + e*x)^n])^2*Log[
h*(i + j*x)^m])/(4*e^2) + (3*b*d*g*n*x*(a + b*Log[c*(d + e*x)^n])^2*Log[h*(
i + j*x)^m])/(2*e) - (3*b*g*n*x^2*(a + b*Log[c*(d + e*x)^n])^2*Log[h*(i + j
*x)^m])/4 - (d^2*g*(a + b*Log[c*(d + e*x)^n])^3*Log[h*(i + j*x)^m])/(2*e^2)
 + (x^2*(a + b*Log[c*(d + e*x)^n])^3*(f + g*Log[h*(i + j*x)^m]))/2 - (3*b^3
```

```
*g*i^2*m*n^3*PolyLog[2, -((j*(d + e*x))/(e*i - d*j))])/(4*j^2) - (9*b^3*d*g
*i*m*n^3*PolyLog[2, -((j*(d + e*x))/(e*i - d*j))])/(2*e*j) - (9*b^2*d^2*g*m
*n^2*(a + b*Log[c*(d + e*x)^n])*PolyLog[2, -((j*(d + e*x))/(e*i - d*j))])/(
2*e^2) + (3*b^2*g*i^2*m*n^2*(a + b*Log[c*(d + e*x)^n])*PolyLog[2, -((j*(d +
 e*x))/(e*i - d*j))])/(2*j^2) + (3*b^2*d*g*i*m*n^2*(a + b*Log[c*(d + e*x)^n
])*PolyLog[2, -((j*(d + e*x))/(e*i - d*j))])/(e*j) + (3*b*d^2*g*m*n*(a + b*
Log[c*(d + e*x)^n])^2*PolyLog[2, -((j*(d + e*x))/(e*i - d*j))])/(2*e^2) - (
3*b*g*i^2*m*n*(a + b*Log[c*(d + e*x)^n])^2*PolyLog[2, -((j*(d + e*x))/(e*i
- d*j))])/(2*j^2) - (21*b^3*d^2*g*m*n^3*PolyLog[2, (e*(i + j*x))/(e*i - d*j
)])/(4*e^2) + (9*b^3*d^2*g*m*n^3*PolyLog[3, -((j*(d + e*x))/(e*i - d*j))])/
(2*e^2) - (3*b^3*g*i^2*m*n^3*PolyLog[3, -((j*(d + e*x))/(e*i - d*j))])/(2*j
^2) - (3*b^3*d*g*i*m*n^3*PolyLog[3, -((j*(d + e*x))/(e*i - d*j))])/(e*j) -
(3*b^2*d^2*g*m*n^2*(a + b*Log[c*(d + e*x)^n])*PolyLog[3, -((j*(d + e*x))/(e
*i - d*j))])/e^2 + (3*b^2*g*i^2*m*n^2*(a + b*Log[c*(d + e*x)^n])*PolyLog[3,
 -((j*(d + e*x))/(e*i - d*j))])/j^2 + (3*b^3*d^2*g*m*n^3*PolyLog[4, -((j*(d
 + e*x))/(e*i - d*j))])/e^2 - (3*b^3*g*i^2*m*n^3*PolyLog[4, -((j*(d + e*x))
/(e*i - d*j))])/j^2
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] &&  !LinearQ[u, x] &&  !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2332

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2333

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2338

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2339

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] :> Dist[1/(
b*n), Subst[Int[x^p, x], x, a + b*Log[c*x^n]], x] /; FreeQ[{a, b, c, n, p},
 x]
```

Rule 2341

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_.)*(x_))^(m_.), x_Symbol] :>
Simp[(d*x)^(m + 1)*((a + b*Log[c*x^n])/(d*(m + 1))), x] - Simp[b*n*((d*x)^(
m + 1)/(d*(m + 1)^2)), x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[m, -1]
```

Rule 2342

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_.)*(x_))^(m_.), x_Symbo
l] :> Simp[(d*x)^(m + 1)*((a + b*Log[c*x^n])^p/(d*(m + 1))), x] - Dist[b*n*
(p/(m + 1)), Int[(d*x)^m*(a + b*Log[c*x^n])^(p - 1), x], x] /; FreeQ[{a, b,
 c, d, m, n}, x] && NeQ[m, -1] && GtQ[p, 0]
```

Rule 2354

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[Log[1 + e*(x/d)]*((a + b*Log[c*x^n])^p/e), x] - Dist[b*n*(p/e),
 Int[Log[1 + e*(x/d)]*((a + b*Log[c*x^n])^(p - 1)/x), x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2367

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_)^(r_.))^(
q_.), x_Symbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*x^n])^p, (d + e*x
^r)^q, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n, p, q, r}, x]
&& IntegerQ[q] && (GtQ[q, 0] || (IGtQ[p, 0] && IntegerQ[r]))
```

Rule 2372

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*(x_)^(m_.)*((d_) + (e_.)*(x_)^(r_
.))^(q_.), x_Symbol] :> With[{u = IntHide[x^m*(d + e*x^r)^q, x]}, Dist[a +
```

```
b*Log[c*x^n], u, x] - Dist[b*n, Int[SimplifyIntegrand[u/x, x], x], x]] /; F
reeQ[{a, b, c, d, e, n, r}, x] && IGtQ[q, 0] && IntegerQ[m] &&  !(EqQ[q, 1]
 && EqQ[m, -1])
```

Rule 2388

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.))
/(x_), x_Symbol] :> Dist[d, Int[(d + e*x)^(q - 1)*((a + b*Log[c*x^n])^p/x),
 x], x] + Dist[e, Int[(d + e*x)^(q - 1)*(a + b*Log[c*x^n])^p, x], x] /; Fre
eQ[{a, b, c, d, e, n}, x] && IGtQ[p, 0] && GtQ[q, 0] && IntegerQ[2*q]
```

Rule 2421

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> Simp[(-PolyLog[2, (-d)*f*x^m])*((a + b*Log[c
*x^n])^p/m), x] + Dist[b*n*(p/m), Int[PolyLog[2, (-d)*f*x^m]*((a + b*Log[c*
x^n])^(p - 1)/x), x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0
] && EqQ[d*e, 1]
```

Rule 2422

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))^(r_.)]*((a_.) + Log[(c_.)*(x_)^(n_
.)]*(b_.))^(p_.))/(x_), x_Symbol] :> Simp[Log[d*(e + f*x^m)^r]*((a + b*Log[
c*x^n])^(p + 1)/(b*n*(p + 1))), x] - Dist[f*m*(r/(b*n*(p + 1))), Int[x^(m -
 1)*((a + b*Log[c*x^n])^(p + 1)/(e + f*x^m)), x], x] /; FreeQ[{a, b, c, d,
e, f, r, m, n}, x] && IGtQ[p, 0] && NeQ[d*e, 1]
```

Rule 2430

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*PolyLog[k_, (e_.)*(x_)^(q_
.)])/(x_), x_Symbol] :> Simp[PolyLog[k + 1, e*x^q]*((a + b*Log[c*x^n])^p/q)
, x] - Dist[b*n*(p/q), Int[PolyLog[k + 1, e*x^q]*((a + b*Log[c*x^n])^(p - 1
)/x), x], x] /; FreeQ[{a, b, c, e, k, n, q}, x] && GtQ[p, 0]
```

Rule 2436

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2437

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[(f*(x/d))^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + c*e*(x/g)])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2441

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d + e*x
)^n])/g), x] - Dist[b*e*(n/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2442

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[(f + g*x)^(q + 1)*((a + b*Log[c*(d + e*x)^n])/(
g*(q + 1))), x] - Dist[b*e*(n/(g*(q + 1))), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 2443

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d
+ e*x)^n])^p/g), x] - Dist[b*e*n*(p/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]*
((a + b*Log[c*(d + e*x)^n])^(p - 1)/(d + e*x)), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2448

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q*(a + b*Log[c*(d
 + e*x)^n])^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f -
 d*g, 0] && IGtQ[q, 0]
```

Rule 2458

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[(g*(x/e))^q*((e*h - d*i)/e + i*(x/e))^r*(a + b*Log[c*x^n])^p, x], x, d + e
```

```
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2463

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rule 2479

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.)), x_Symbol] :> Simp[x*(a + b*Log[c
*(d + e*x)^n])^p*(f + g*Log[h*(i + j*x)^m]), x] + (-Dist[g*j*m, Int[x*((a +
 b*Log[c*(d + e*x)^n])^p/(i + j*x)), x], x] - Dist[b*e*n*p, Int[x*(a + b*Lo
g[c*(d + e*x)^n])^(p - 1)*((f + g*Log[h*(i + j*x)^m])/(d + e*x)), x], x]) /
; FreeQ[{a, b, c, d, e, f, g, h, i, j, m, n}, x] && IGtQ[p, 0]
```

Rule 2481

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[(k*(x/d))^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + j*(x/e))^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2489

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*(x_)^(r_.), x_Symbol] :> Simp[x^(
r + 1)*(a + b*Log[c*(d + e*x)^n])^p*((f + g*Log[h*(i + j*x)^m])/(r + 1)), x
] + (-Dist[g*j*(m/(r + 1)), Int[x^(r + 1)*((a + b*Log[c*(d + e*x)^n])^p/(i
+ j*x)), x], x] - Dist[b*e*n*(p/(r + 1)), Int[x^(r + 1)*(a + b*Log[c*(d + e
*x)^n])^(p - 1)*((f + g*Log[h*(i + j*x)^m])/(d + e*x)), x], x]) /; FreeQ[{a
, b, c, d, e, f, g, h, i, j, m, n}, x] && IGtQ[p, 0] && IntegerQ[r] && (EqQ
[p, 1] || GtQ[r, 0]) && NeQ[r, -1]
```

Rule 6724

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6874

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int x(a+b\log(c(d+ex)^n))^3(f+g\log(h(397+jx)^m))\,dx = \frac{1}{2}x^2(a+b\log(c(d+ex)^n))^3(f+g\log(h(397\ \cdots$$

$$= \frac{1}{2}x^2(a+b\log(c(d+ex)^n))^3(f+g\log(h(397\ \cdots$$

$$= \frac{1}{2}x^2(a+b\log(c(d+ex)^n))^3(f+g\log(h(397\ \cdots$$

$$= -\frac{157609gm(a+b\log(c(d+ex)^n))^3\log\left(\frac{e(397\cdots}{397e\cdots}\right.}{2j^2}\cdots$$

$$= \frac{397gm(d+ex)(a+b\log(c(d+ex)^n))^3}{2ej} - \frac{157\cdots}{\cdots}$$

$$= -\frac{1191bgmn(d+ex)(a+b\log(c(d+ex)^n))^2}{2ej}\cdots$$

$$= \frac{1191ab^2gmn^2x}{j} + \frac{3bdfn(d+ex)(a+b\log(c(\cdots}{2e^2}$$

$$= -\frac{3ab^2dfn^2x}{e} + \frac{1191ab^2gmn^2x}{j} - \frac{1191b^3gmn^3\cdots}{j}$$

$$= -\frac{6ab^2dfn^2x}{e} + \frac{3ab^2dgmn^2x}{e} + \frac{1191ab^2gmn^2x}{j}\cdots$$

$$= -\frac{6ab^2dfn^2x}{e} + \frac{3ab^2dgmn^2x}{e} + \frac{1191ab^2gmn^2x}{j}\cdots$$

$$= -\frac{6ab^2dfn^2x}{e} + \frac{6ab^2dgmn^2x}{e} + \frac{3573ab^2gmn^2x}{2j}\cdots$$

$$= -\frac{6ab^2dfn^2x}{e} + \frac{21ab^2dgmn^2x}{2e} + \frac{8337ab^2gmn^2\cdots}{4j}$$

$$= -\frac{6ab^2dfn^2x}{e} + \frac{12ab^2dgmn^2x}{e} + \frac{8337ab^2gmn^2\cdots}{4j}$$

$$= -\frac{6ab^2dfn^2x}{e} + \frac{12ab^2dgmn^2x}{e} + \frac{8337ab^2gmn^2\cdots}{4j}$$

Mathematica [B] Leaf count is larger than twice the leaf count of optimal. 4971 vs. $2(2050) = 4100$.
time = 2.07, size = 4971, normalized size = 2.42

Result too large to show

Antiderivative was successfully verified.

```
[In] Integrate[x*(a + b*Log[c*(d + e*x)^n])^3*(f + g*Log[h*(i + j*x)^m]),x]
```

```
[Out] (-12*a^2*b*d*e*g*i*j*m*n + 12*a*b^2*d*e*g*i*j*m*n^2 + 24*a*b^2*d^2*g*j^2*m*
n^2 - 6*b^3*d*e*g*i*j*m*n^3 - 36*b^3*d^2*g*j^2*m*n^3 + 4*a^3*e^2*g*i*j*m*x
+ 12*a^2*b*d*e*f*j^2*n*x - 18*a^2*b*e^2*g*i*j*m*n*x - 18*a^2*b*d*e*g*j^2*m*
n*x - 36*a*b^2*d*e*f*j^2*n^2*x + 42*a*b^2*e^2*g*i*j*m*n^2*x + 84*a*b^2*d*e*
g*j^2*m*n^2*x + 42*b^3*d*e*f*j^2*n^3*x - 45*b^3*e^2*g*i*j*m*n^3*x - 135*b^3
*d*e*g*j^2*m*n^3*x + 4*a^3*e^2*f*j^2*x^2 - 2*a^3*e^2*g*j^2*m*x^2 - 6*a^2*b*
e^2*f*j^2*n*x^2 + 6*a^2*b*e^2*g*j^2*m*n*x^2 + 6*a*b^2*e^2*f*j^2*n^2*x^2 - 9
*a*b^2*e^2*g*j^2*m*n^2*x^2 - 3*b^3*e^2*f*j^2*n^3*x^2 + 6*b^3*e^2*g*j^2*m*n^
3*x^2 - 12*a^2*b*d^2*f*j^2*n*Log[d + e*x] + 12*a^2*b*d*e*g*i*j*m*n*Log[d +
e*x] + 6*a^2*b*d^2*g*j^2*m*n*Log[d + e*x] + 36*a*b^2*d^2*f*j^2*n^2*Log[d +
e*x] - 12*a*b^2*d*e*g*i*j*m*n^2*Log[d + e*x] - 48*a*b^2*d^2*g*j^2*m*n^2*Log
[d + e*x] - 42*b^3*d^2*f*j^2*n^3*Log[d + e*x] + 30*b^3*d*e*g*i*j*m*n^3*Log[
d + e*x] + 69*b^3*d^2*g*j^2*m*n^3*Log[d + e*x] + 12*a*b^2*d^2*f*j^2*n^2*Log
[d + e*x]^2 - 12*a*b^2*d*e*g*i*j*m*n^2*Log[d + e*x]^2 - 6*a*b^2*d^2*g*j^2*m
*n^2*Log[d + e*x]^2 - 18*b^3*d^2*f*j^2*n^3*Log[d + e*x]^2 + 6*b^3*d*e*g*i*j
*m*n^3*Log[d + e*x]^2 + 24*b^3*d^2*g*j^2*m*n^3*Log[d + e*x]^2 - 4*b^3*d^2*f
*j^2*n^3*Log[d + e*x]^3 + 4*b^3*d*e*g*i*j*m*n^3*Log[d + e*x]^3 + 2*b^3*d^2*
g*j^2*m*n^3*Log[d + e*x]^3 - 24*a*b^2*d*e*g*i*j*m*n*Log[c*(d + e*x)^n] + 12
*b^3*d*e*g*i*j*m*n^2*Log[c*(d + e*x)^n] + 24*b^3*d^2*g*j^2*m*n^2*Log[c*(d +
 e*x)^n] + 12*a^2*b*e^2*g*i*j*m*x*Log[c*(d + e*x)^n] + 24*a*b^2*d*e*f*j^2*n
*x*Log[c*(d + e*x)^n] - 36*a*b^2*e^2*g*i*j*m*n*x*Log[c*(d + e*x)^n] - 36*a*
b^2*d*e*g*j^2*m*n*x*Log[c*(d + e*x)^n] - 36*b^3*d*e*f*j^2*n^2*x*Log[c*(d +
e*x)^n] + 42*b^3*e^2*g*i*j*m*n^2*x*Log[c*(d + e*x)^n] + 84*b^3*d*e*g*j^2*m*
n^2*x*Log[c*(d + e*x)^n] + 12*a^2*b*e^2*f*j^2*x^2*Log[c*(d + e*x)^n] - 6*a^
2*b*e^2*g*j^2*m*x^2*Log[c*(d + e*x)^n] - 12*a*b^2*e^2*f*j^2*n*x^2*Log[c*(d
+ e*x)^n] + 12*a*b^2*e^2*g*j^2*m*n*x^2*Log[c*(d + e*x)^n] + 6*b^3*e^2*f*j^2
*n^2*x^2*Log[c*(d + e*x)^n] - 9*b^3*e^2*g*j^2*m*n^2*x^2*Log[c*(d + e*x)^n]
- 24*a*b^2*d^2*f*j^2*n*Log[d + e*x]*Log[c*(d + e*x)^n] + 24*a*b^2*d*e*g*i*j
*m*n*Log[d + e*x]*Log[c*(d + e*x)^n] + 12*a*b^2*d^2*g*j^2*m*n*Log[d + e*x]*
Log[c*(d + e*x)^n] + 36*b^3*d^2*f*j^2*n^2*Log[d + e*x]*Log[c*(d + e*x)^n] -
 12*b^3*d*e*g*i*j*m*n^2*Log[d + e*x]*Log[c*(d + e*x)^n] - 48*b^3*d^2*g*j^2*
m*n^2*Log[d + e*x]*Log[c*(d + e*x)^n] + 12*b^3*d^2*f*j^2*n^2*Log[d + e*x]^2
*Log[c*(d + e*x)^n] - 12*b^3*d*e*g*i*j*m*n^2*Log[d + e*x]^2*Log[c*(d + e*x)
^n] - 6*b^3*d^2*g*j^2*m*n^2*Log[d + e*x]^2*Log[c*(d + e*x)^n] - 12*b^3*d*e*
g*i*j*m*n*Log[c*(d + e*x)^n]^2 + 12*a*b^2*e^2*g*i*j*m*x*Log[c*(d + e*x)^n]^
2 + 12*b^3*d*e*f*j^2*n*x*Log[c*(d + e*x)^n]^2 - 18*b^3*e^2*g*i*j*m*n*x*Log[
```

```
c*(d + e*x)^n]^2 - 18*b^3*d*e*g*j^2*m*n*x*Log[c*(d + e*x)^n]^2 + 12*a*b^2*e
^2*f*j^2*x^2*Log[c*(d + e*x)^n]^2 - 6*a*b^2*e^2*g*j^2*m*x^2*Log[c*(d + e*x)
^n]^2 - 6*b^3*e^2*f*j^2*n*x^2*Log[c*(d + e*x)^n]^2 + 6*b^3*e^2*g*j^2*m*n*x^
2*Log[c*(d + e*x)^n]^2 - 12*b^3*d^2*f*j^2*n*Log[d + e*x]*Log[c*(d + e*x)^n]
^2 + 12*b^3*d*e*g*i*j*m*n*Log[d + e*x]*Log[c*(d + e*x)^n]^2 + 6*b^3*d^2*g*j
^2*m*n*Log[d + e*x]*Log[c*(d + e*x)^n]^2 + 4*b^3*e^2*g*i*j*m*x*Log[c*(d + e
*x)^n]^3 + 4*b^3*e^2*f*j^2*x^2*Log[c*(d + e*x)^n]^3 - 2*b^3*e^2*g*j^2*m*x^2
*Log[c*(d + e*x)^n]^3 - 4*a^3*e^2*g*i^2*m*Log[i + j*x] + 6*a^2*b*e^2*g*i^2*
m*n*Log[i + j*x] + 12*a^2*b*d*e*g*i*j*m*n*Log[i + j*x] - 6*a*b^2*e^2*g*i^2*
m*n^2*Log[i + j*x] - 36*a*b^2*d*e*g*i*j*m*n^2*Log[i + j*x] + 3*b^3*e^2*g*i^
2*m*n^3*Log[i + j*x] + 42*b^3*d*e*g*i*j*m*n^3*Log[i + j*x] + 12*a^2*b*e^2*g
*i^2*m*n*Log[d + e*x]*Log[i + j*x] - 12*a*b^2*e^2*g*i^2*m*n^2*Log[d + e*x]*
Log[i + j*x] - 24*a*b^2*d*e*g*i*j*m*n^2*Log[d + e*x]*Log[i + j*x] + 6*b^3*e
^2*g*i^2*m*n^3*Log[d + e*x]*Log[i + j*x] + 36*b^3*d*e*g*i*j*m*n^3*Log[d + e
*x]*Log[i + j*x] - 12*a*b^2*e^2*g*i^2*m*n^2*Log[d + e*x]^2*Log[i + j*x] + 6
*b^3*e^2*g*i^2*m*n^3*Log[d + e*x]^2*Log[i + j*x] + 12*b^3*d*e*g*i*j*m*n^3*L
og[d + e*x]^2*Log[i + j*x] + 4*b^3*e^2*g*i^2*m*n^3*Log[d + e*x]^3*Log[i + j
*x] - 12*a^2*b*e^2*g*i^2*m*Log[c*(d + e*x)^n]*Log[i + j*x] + 12*a*b^2*e^2*g
*i^2*m*n*Log[c*(d + e*x)^n]*Log[i + j*x] + 24*a*b^2*d*e*g*i*j*m*n*Log[c*(d
+ e*x)^n]*Log[i + j*x] - 6*b^3*e^2*g*i^2*m*n^2*Log[c*(d + e*x)^n]*Log[i + j
*x] - 36*b^3*d*e*g*i*j*m*n^2*Log[c*(d + e*x)^n]*Log[i + j*x] + 24*a*b^2*e^2
*g*i^2*m*n*Log[d + e*x]*Log[c*(d + e*x)^n]*Log[i + j*x] - 12*b^3*e^2*g*i^2*
m*n^2*Log[d + e*x]*Log[c*(d + e*x)^n]*Log[i + j*x] - 24*b^3*d*e*g*i*j*m*n^2
*Log[d + e*x]*Log[c*(d + e*x)^n]*Log[i + j*x] - 12*b^3*e^2*g*i^2*m*n^2*Log[
d + e*x]^2*Log[c*(d + e*x)^n]*Log[i + j*x] - 12*a*b^2*e^2*g*i^2*m*Log[c*(d
+ e*x)^n]^2*Log[i + j*x] + 6*b^3*e^2*g*i^2*m*n*Log[c*(d + e*x)^n]^2*Log[i +
 j*x] + 12*b^3*d*e*g*i*j*m*n*Log[c*(d + e*x)^n]^2*Log[i + j*x] + 12*b^3*e^2
*g*i^2*m*n*Log[d + e*x]*Log[c*(d + e*x)^n]^2*Log[i + j*x] - 4*b^3*e^2*g*i^2
*m*Log[c*(d + e*x)^n]^3*Log[i + j*x] - 12*a^2*b*e^2*g*i^2*m*n*Log[d + e*x]*
Log[(e*(i + j*x))/(e*i - d*j)] + 12*a^2*b*d^2*g*j^2*m*n*Log[d + e*x]*Log[(e
*(i + j*x))/(e*i - d*j)] + 12*a*b^2*e^2*g*i^2*m...
```

Maple [F]
time = 0.15, size = 0, normalized size = 0.00

$$\int x(a+b\ln(c(ex+d)^n))^3(f+g\ln(h(jx+i)^m))\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(a+b*ln(c*(e*x+d)^n))^3*(f+g*ln(h*(j*x+i)^m)),x)
[Out] int(x*(a+b*ln(c*(e*x+d)^n))^3*(f+g*ln(h*(j*x+i)^m)),x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*log(c*(e*x+d)^n))^3*(f+g*log(h*(j*x+i)^m)),x, algorithm="m
axima")
```

```
[Out] 1/2*b^3*f*x^2*log((x*e + d)^n*c)^3 + 3/2*a*b^2*f*x^2*log((x*e + d)^n*c)^2 -
 1/4*a^3*g*j*m*((j*x^2 - 2*I*x)/j^2 - 2*log(j*x + I)/j^3) - 3/4*(2*d^2*e^(-
3)*log(x*e + d) + (x^2*e - 2*d*x)*e^(-2))*a^2*b*f*n*e + 3/2*a^2*b*f*x^2*log
((x*e + d)^n*c) + 1/2*a^3*g*x^2*log((j*x + I)^m*h) + 1/2*a^3*f*x^2 + 3/4*((
2*d^2*log(x*e + d)^2 + x^2*e^2 - 6*d*x*e + 6*d^2*log(x*e + d))*n^2*e^(-2) -
 2*(2*d^2*e^(-3)*log(x*e + d) + (x^2*e - 2*d*x)*e^(-2))*n*e*log((x*e + d)^n
*c))*a*b^2*f - 1/8*(6*(2*d^2*e^(-3)*log(x*e + d) + (x^2*e - 2*d*x)*e^(-2))*
n*e*log((x*e + d)^n*c)^2 + ((4*d^2*log(x*e + d)^3 + 18*d^2*log(x*e + d)^2 +
 3*x^2*e^2 - 42*d*x*e + 42*d^2*log(x*e + d))*n^2*e^(-3) - 6*(2*d^2*log(x*e
+ d)^2 + x^2*e^2 - 6*d*x*e + 6*d^2*log(x*e + d))*n*e^(-3)*log((x*e + d)^n*c
))*n*e)*b^3*f - 1/8*(2*(-2*I*b^3*g*j*m*x*e^2 + (j^2*m - 2*j^2*log(h))*b^3*g
*x^2*e^2 - 2*b^3*g*m*e^2*log(j*x + I))*log((x*e + d)^n)^3 + (4*b^3*d^2*g*j^
2*n^3*log(x*e + d)^3 - 4*b^3*g*j^2*x^2*e^2*log((x*e + d)^n)^3 + (6*(g*j^2*n
 - 2*g*j^2*log(c))*a^2*b - 6*(g*j^2*n^2 - 2*g*j^2*n*log(c) + 2*g*j^2*log(c)
^2)*a*b^2 + (3*g*j^2*n^3 - 6*g*j^2*n^2*log(c) + 6*g*j^2*n*log(c)^2 - 4*g*j^
2*log(c)^3)*b^3)*x^2*e^2 - 6*(2*a^2*b*d*g*j^2*n - 2*(3*d*g*j^2*n^2 - 2*d*g*
j^2*n*log(c))*a*b^2 + (7*d*g*j^2*n^3 - 6*d*g*j^2*n^2*log(c) + 2*d*g*j^2*n*l
og(c)^2)*b^3)*x*e - 6*(2*a*b^2*d^2*g*j^2*n^2 - (3*d^2*g*j^2*n^3 - 2*d^2*g*j
^2*n^2*log(c))*b^3)*log(x*e + d)^2 - 6*(2*b^3*d*g*j^2*n*x*e - 2*b^3*d^2*g*j
^2*n*log(x*e + d) + (2*a*b^2*g*j^2 - (g*j^2*n - 2*g*j^2*log(c))*b^3)*x^2*e^
2)*log((x*e + d)^n)^2 + 6*(2*a^2*b*d^2*g*j^2*n - 2*(3*d^2*g*j^2*n^2 - 2*d^2
*g*j^2*n*log(c))*a*b^2 + (7*d^2*g*j^2*n^3 - 6*d^2*g*j^2*n^2*log(c) + 2*d^2*
g*j^2*n*log(c)^2)*b^3)*log(x*e + d) - 6*(2*b^3*d^2*g*j^2*n^2*log(x*e + d)^2
 + (2*a^2*b*g*j^2 - 2*(g*j^2*n - 2*g*j^2*log(c))*a*b^2 + (g*j^2*n^2 - 2*g*j
^2*n*log(c) + 2*g*j^2*log(c)^2)*b^3)*x^2*e^2 + 2*(2*a*b^2*d*g*j^2*n - (3*d*
g*j^2*n^2 - 2*d*g*j^2*n*log(c))*b^3)*x*e - 2*(2*a*b^2*d^2*g*j^2*n - (3*d^2*
g*j^2*n^2 - 2*d^2*g*j^2*n*log(c))*b^3)*log(x*e + d))*log((x*e + d)^n))*log(
(j*x + I)^m))*e^(-2)/j^2 - integrate(-1/8*((6*(g*j^3*m*n - 2*(j^3*m - 2*j^3
*log(h))*g*log(c))*a^2*b - 6*(g*j^3*m*n^2 - 2*g*j^3*m*n*log(c) + 2*(j^3*m -
 2*j^3*log(h))*g*log(c)^2)*a*b^2 + (3*g*j^3*m*n^3 - 6*g*j^3*m*n^2*log(c) +
6*g*j^3*m*n*log(c)^2 - 4*(j^3*m - 2*j^3*log(h))*g*log(c)^3)*b^3)*x^3*e^3 +
4*(b^3*d^2*g*j^3*m*n^3*x*e + b^3*d^3*g*j^3*m*n^3)*log(x*e + d)^3 + (8*(I*b^
3*g*j^2*log(c)^3*log(h) + 3*I*a*b^2*g*j^2*log(c)^2*log(h) + 3*I*a^2*b*g*j^2
*log(c)*log(h))*e^3 - (6*(d*g*j^3*m*n + 2*(j^3*m - 2*j^3*log(h))*d*g*log(c)
)*a^2*b - 6*(5*d*g*j^3*m*n^2 - 2*d*g*j^3*m*n*log(c) - 2*(j^3*m - 2*j^3*log(
h))*d*g*log(c)^2)*a*b^2 + (39*d*g*j^3*m*n^3 - 30*d*g*j^3*m*n^2*log(c) + 6*d
*g*j^3*m*n*log(c)^2 + 4*(j^3*m - 2*j^3*log(h))*d*g*log(c)^3)*b^3)*e^2)*x^2
- 6*(2*a*b^2*d^3*g*j^3*m*n^2 - (3*d^3*g*j^3*m*n^3 - 2*d^3*g*j^3*m*n^2*log(c
))*b^3 + (2*a*b^2*d^2*g*j^3*m*n^2 - (3*d^2*g*j^3*m*n^3 - 2*d^2*g*j^3*m*n^2*
log(c))*b^3)*x*e)*log(x*e + d)^2 - 6*(2*((j^3*m - 2*j^3*log(h))*a*b^2*g + (
```

```
(j^3*m - 2*j^3*log(h))*g*log(c) - (j^3*m*n - j^3*n*log(h))*g)*b^3)*x^3*e^3
- ((4*I*a*b^2*g*j^2*log(h) + (4*I*g*j^2*log(c)*log(h) + (-I*j^2*m*n - 2*I*j
^2*n*log(h))*g)*b^3)*e^3 - (2*(j^3*m - 2*j^3*log(h))*a*b^2*d*g + (d*g*j^3*m
*n + 2*(j^3*m - 2*j^3*log(h))*d*g*log(c))*b^3)*e^2)*x^2 + 2*(b^3*d^2*g*j^3*
m*n*e - b^3*g*j*m*n*e^3 - 2*(I*b^3*d*g*j^2*log(c)*log(h) + I*a*b^2*d*g*j^2*
log(h))*e^2)*x + 2*(b^3*g*j*m*n*x*e^3 + I*b^3*g*m*n*e^3)*log(j*x + I) - 2*(
b^3*d^2*g*j^3*m*n*x*e + b^3*d^3*g*j^3*m*n)*log(x*e + d))*log((x*e + d)^n)^2
 + 2*(4*(I*b^3*d*g*j^2*log(c)^3*log(h) + 3*I*a*b^2*d*g*j^2*log(c)^2*log(h)
+ 3*I*a^2*b*d*g*j^2*log(c)*log(h))*e^2 - 3*(2*a^2*b*d^2*g*j^3*m*n - 2*(3*d^
2*g*j^3*m*n^2 - 2*d^2*g*j^3*m*n*log(c))*a*b^2 + (7*d^2*g*j^3*m*n^3 - 6*d^2*
g*j^3*m*n^2*log(c) + 2*d^2*g*j^3*m*n*log(c)^2)*b^3)*e)*x + 6*(2*a^2*b*d^3*g
*j^3*m*n - 2*(3*d^3*g*j^3*m*n^2 - 2*d^3*g*j^3*m*n*log(c))*a*b^2 + (7*d^3*g*
j^3*m*n^3 - 6*d^3*g*j^3*m*n^2*log(c) + 2*d^3*g*j^3*m*n*log(c)^2)*b^3 + (2*a
^2*b*d^2*g*j^3*m*n - 2*(3*d^2*g*j^3*m*n^2 - 2*d^2*g*j^3*m*n*log(c))*a*b^2 +
 (7*d^2*g*j^3*m*n^3 - 6*d^2*g*j^3*m*n^2*log(c) + 2*d^2*g*j^3*m*n*log(c)^2)*
b^3)*x*e)*log(x*e + d) - 6*((2*(j^3*m - 2*j^3*log(h))*a^2*b*g - 2*(g*j^3*m*
n - 2*(j^3*m - 2*j^3*log(h))*g*log(c))*a*b^2 + (g*j^3*m*n^2 - 2*g*j^3*m*n*l
og(c) + 2*(j^3*m - 2*j^3*log(h))*g*log(c)^2)*b^3)*x^3*e^3 - (4*(I*b^3*g*j^2
*log(c)^2*log(h) + 2*I*a*b^2*g*j^2*log(c)*log(h) + I*a^2*b*g*j^2*log(h))*e^
3 - (2*(j^3*m - 2*j^3*log(h))*a^2*b*d*g + 2*(d*g*j^3*m*n + 2*(j^3*m - 2*j^3
*log(h))*d*g*log(c))*a*b^2 - (5*d*g*j^3*m*n^2 - 2*d*g*j^3*m*n*log(c) - 2*(j
^3*m - 2*j^3*log(h))*d*g*log(c)^2)*b^3)*e^2)*x^2 + 2*(b^3*d^2*g*j^3*m*n^2*x
*e + b^3*d^3*g*j^3*m*n^2)*log(x*e + d)^2 - 2*(2*(I*b^3*d*g*j^2*log(c)^2*log
(h) + 2*I*a*b^2*d*g*j^2*log(c)*log(h) + I*a^2*b*d*g*j^2*log(h))*e^2 - (2*a*
b^2*d^2*g*j^3*m*n - (3*d^2*g*j^3*m*n^2 - 2*d^2*g*j^3*m*n*log(c))*b^3)*e)*x
- 2*(2*a*b^2*d^3*g*j^3*m*n - (3*d^3*g*j^3*m*n^2 - 2*d^3*g*j^3*m*n*log(c))*b
^3 + (2*a*b^2*d^2*g*j^3*m*n - (3*d^2*g*j^3*m*n^...
```

Fricas [F]

time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*log(c*(e*x+d)^n))^3*(f+g*log(h*(j*x+i)^m)),x, algorithm="f
ricas")
```

```
[Out] 1/4*((2*b^3*g*j^2*n^3*x^2*log(h) + 2*I*b^3*g*j*m*n^3*x - (b^3*g*j^2*m - 2*b
^3*f*j^2)*n^3*x^2 + 2*(b^3*g*j^2*m*n^3*x^2 + b^3*g*m*n^3)*log(j*x + I))*log
(x*e + d)^3 + 4*j^2*integral(1/4*(4*a^3*f*j^2*x^2*e + 4*a^3*d*f*j^2*x + 4*(
b^3*f*j^2*x^2*e + b^3*d*f*j^2*x)*log(c)^3 + 3*(4*a*b^2*d*f*j^2*n^2*x - (2*I
*b^3*g*j*m*n^3*x - (4*a*b^2*f*j^2*n^2 + (b^3*g*j^2*m - 2*b^3*f*j^2)*n^3)*x^
2)*e + 2*(2*a*b^2*d*g*j^2*m*n^2*x - (b^3*g*m*n^3 + (b^3*g*j^2*m*n^3 - 2*a*b
^2*g*j^2*m*n^2)*x^2)*e + 2*(b^3*g*j^2*m*n^2*x^2*e + b^3*d*g*j^2*m*n^2*x)*lo
g(c))*log(j*x + I) + 4*(b^3*f*j^2*n^2*x^2*e + b^3*d*f*j^2*n^2*x)*log(c) + 2
```

```
*(2*a*b^2*d*g*j^2*n^2*x - (b^3*g*j^2*n^3 - 2*a*b^2*g*j^2*n^2)*x^2*e + 2*(b^
3*g*j^2*n^2*x^2*e + b^3*d*g*j^2*n^2*x)*log(c))*log(h))*log(x*e + d)^2 + 12*
(a*b^2*f*j^2*x^2*e + a*b^2*d*f*j^2*x)*log(c)^2 + 4*(a^3*g*j^2*m*x^2*e + a^3
*d*g*j^2*m*x + (b^3*g*j^2*m*x^2*e + b^3*d*g*j^2*m*x)*log(c)^3 + 3*(a*b^2*g*
j^2*m*x^2*e + a*b^2*d*g*j^2*m*x)*log(c)^2 + 3*(a^2*b*g*j^2*m*x^2*e + a^2*b*
d*g*j^2*m*x)*log(c))*log(j*x + I) + 12*(a^2*b*f*j^2*n*x^2*e + a^2*b*d*f*j^2
*n*x + (b^3*f*j^2*n*x^2*e + b^3*d*f*j^2*n*x)*log(c)^2 + (a^2*b*g*j^2*m*n*x^
2*e + a^2*b*d*g*j^2*m*n*x + (b^3*g*j^2*m*n*x^2*e + b^3*d*g*j^2*m*n*x)*log(c
)^2 + 2*(a*b^2*g*j^2*m*n*x^2*e + a*b^2*d*g*j^2*m*n*x)*log(c))*log(j*x + I)
+ 2*(a*b^2*f*j^2*n*x^2*e + a*b^2*d*f*j^2*n*x)*log(c) + (a^2*b*g*j^2*n*x^2*e
 + a^2*b*d*g*j^2*n*x + (b^3*g*j^2*n*x^2*e + b^3*d*g*j^2*n*x)*log(c)^2 + 2*(
a*b^2*g*j^2*n*x^2*e + a*b^2*d*g*j^2*n*x)*log(c))*log(h))*log(x*e + d) + 12*
(a^2*b*f*j^2*x^2*e + a^2*b*d*f*j^2*x)*log(c) + 4*(a^3*g*j^2*x^2*e + a^3*d*g
*j^2*x + (b^3*g*j^2*x^2*e + b^3*d*g*j^2*x)*log(c)^3 + 3*(a*b^2*g*j^2*x^2*e
+ a*b^2*d*g*j^2*x)*log(c)^2 + 3*(a^2*b*g*j^2*x^2*e + a^2*b*d*g*j^2*x)*log(c
))*log(h))/(j^2*x*e + d*j^2), x))/j^2
```

Sympy [F(-1)] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*ln(c*(e*x+d)**n))**3*(f+g*ln(h*(j*x+i)**m)),x)
[Out] Timed out
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*log(c*(e*x+d)^n))^3*(f+g*log(h*(j*x+i)^m)),x, algorithm="g
iac")
[Out] integrate((b*log((x*e + d)^n*c) + a)^3*(g*log((j*x + I)^m*h) + f)*x, x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int x\,{\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)}^3\,\left(f+g\,\ln\left(h\,{\left(i+j\,x\right)}^m\right)\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(a + b*log(c*(d + e*x)^n))^3*(f + g*log(h*(i + j*x)^m)),x)
[Out] int(x*(a + b*log(c*(d + e*x)^n))^3*(f + g*log(h*(i + j*x)^m)), x)
```

3.398 $\int (a+b\log(c(d+ex)^n))^3 (f+g\log(h(i+jx)^m))\,dx$

Optimal. Leaf size=1147

$$6ab^2fn^2x - 18ab^2gmn^2x - 6b^3fn^3x + 24b^3gmn^3x + \frac{6b^3fn^2(d+ex)\log(c(d+ex)^n)}{e} - \frac{18b^3gmn^2(d+ex)\log(c(d+ex)^n)}{e}$$

```
[Out] -g*m*(e*x+d)*(a+b*ln(c*(e*x+d)^n))^3/e+d*g*(a+b*ln(c*(e*x+d)^n))^3*ln(h*(j*
x+i)^m)/e+d*f*(a+b*ln(c*(e*x+d)^n))^3/e+6*a*b^2*f*n^2*x+24*b^3*g*m*n^3*x+6*
b^2*g*i*m*n^2*(a+b*ln(c*(e*x+d)^n))*ln(e*(j*x+i)/(-d*j+e*i))/j+3*b*d*g*m*n*
(a+b*ln(c*(e*x+d)^n))^2*ln(e*(j*x+i)/(-d*j+e*i))/e-3*b*g*i*m*n*(a+b*ln(c*(e
*x+d)^n))^2*ln(e*(j*x+i)/(-d*j+e*i))/j+6*b^2*d*g*m*n^2*(a+b*ln(c*(e*x+d)^n)
)*polylog(2,-j*(e*x+d)/(-d*j+e*i))/e-6*b^2*g*i*m*n^2*(a+b*ln(c*(e*x+d)^n))*
polylog(2,-j*(e*x+d)/(-d*j+e*i))/j-3*b*d*g*m*n*(a+b*ln(c*(e*x+d)^n))^2*poly
log(2,-j*(e*x+d)/(-d*j+e*i))/e+3*b*g*i*m*n*(a+b*ln(c*(e*x+d)^n))^2*polylog(
2,-j*(e*x+d)/(-d*j+e*i))/j+6*b^2*d*g*m*n^2*(a+b*ln(c*(e*x+d)^n))*polylog(3,
-j*(e*x+d)/(-d*j+e*i))/e-6*b^2*g*i*m*n^2*(a+b*ln(c*(e*x+d)^n))*polylog(3,-j
*(e*x+d)/(-d*j+e*i))/j+x*(a+b*ln(c*(e*x+d)^n))^3*(f+g*ln(h*(j*x+i)^m))-6*b^
3*f*n^3*x+6*b^3*g*i*m*n^3*polylog(2,-j*(e*x+d)/(-d*j+e*i))/j+6*b^3*d*g*m*n^
3*polylog(2,e*(j*x+i)/(-d*j+e*i))/e-6*b^3*d*g*m*n^3*polylog(3,-j*(e*x+d)/(-
d*j+e*i))/e+6*b^3*g*i*m*n^3*polylog(3,-j*(e*x+d)/(-d*j+e*i))/j-6*b^3*d*g*m*
n^3*polylog(4,-j*(e*x+d)/(-d*j+e*i))/e+6*b^3*g*i*m*n^3*polylog(4,-j*(e*x+d)
/(-d*j+e*i))/j-18*a*b^2*g*m*n^2*x-d*g*m*(a+b*ln(c*(e*x+d)^n))^3*ln(e*(j*x+i
)/(-d*j+e*i))/e+g*i*m*(a+b*ln(c*(e*x+d)^n))^3*ln(e*(j*x+i)/(-d*j+e*i))/j+6*
b^3*f*n^2*(e*x+d)*ln(c*(e*x+d)^n)/e-3*b*f*n*(e*x+d)*(a+b*ln(c*(e*x+d)^n))^2
/e-6*b^3*g*n^3*(j*x+i)*ln(h*(j*x+i)^m)/j+6*b^2*g*n^2*x*(a+b*ln(c*(e*x+d)^n)
)*ln(h*(j*x+i)^m)-3*b*g*n*x*(a+b*ln(c*(e*x+d)^n))^2*ln(h*(j*x+i)^m)-18*b^3*
g*m*n^2*(e*x+d)*ln(c*(e*x+d)^n)/e+6*b*g*m*n*(e*x+d)*(a+b*ln(c*(e*x+d)^n))^2
/e+6*b^3*d*g*n^3*ln(-j*(e*x+d)/(-d*j+e*i))*ln(h*(j*x+i)^m)/e-3*b*d*g*n*(a+b
*ln(c*(e*x+d)^n))^2*ln(h*(j*x+i)^m)/e
```

Rubi [A]

time = 2.17, antiderivative size = 1147, normalized size of antiderivative = 1.00, number of steps used = 64, number of rules used = 22, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.710$, Rules used = {2479, 2463, 2436, 2333, 2332, 2443, 2481, 2421, 2430, 6724, 6874, 2458, 2388, 2339, 30, 2338, 45, 2441, 2440, 2438, 2422, 2354}

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^3*(f + g*Log[h*(i + j*x)^m]),x]
```

```
[Out] 6*a*b^2*f*n^2*x - 18*a*b^2*g*m*n^2*x - 6*b^3*f*n^3*x + 24*b^3*g*m*n^3*x + (
6*b^3*f*n^2*(d + e*x)*Log[c*(d + e*x)^n])/e - (18*b^3*g*m*n^2*(d + e*x)*Log
```

```
[c*(d + e*x)^n])/e - (3*b*f*n*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^2)/e + (
6*b*g*m*n*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^2)/e + (d*f*(a + b*Log[c*(d
+ e*x)^n])^3)/e - (g*m*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^3)/e + (6*b^2*g
*i*m*n^2*(a + b*Log[c*(d + e*x)^n])*Log[(e*(i + j*x))/(e*i - d*j)])/j + (3*
b*d*g*m*n*(a + b*Log[c*(d + e*x)^n])^2*Log[(e*(i + j*x))/(e*i - d*j)])/e -
(3*b*g*i*m*n*(a + b*Log[c*(d + e*x)^n])^2*Log[(e*(i + j*x))/(e*i - d*j)])/j
 - (d*g*m*(a + b*Log[c*(d + e*x)^n])^3*Log[(e*(i + j*x))/(e*i - d*j)])/e +
(g*i*m*(a + b*Log[c*(d + e*x)^n])^3*Log[(e*(i + j*x))/(e*i - d*j)])/j - (6*
b^3*g*n^3*(i + j*x)*Log[h*(i + j*x)^m])/j + (6*b^3*d*g*n^3*Log[-((j*(d + e*
x))/(e*i - d*j))]*Log[h*(i + j*x)^m])/e + 6*b^2*g*n^2*x*(a + b*Log[c*(d + e
*x)^n])*Log[h*(i + j*x)^m] - (3*b*d*g*n*(a + b*Log[c*(d + e*x)^n])^2*Log[h*
(i + j*x)^m])/e - 3*b*g*n*x*(a + b*Log[c*(d + e*x)^n])^2*Log[h*(i + j*x)^m]
 + (d*g*(a + b*Log[c*(d + e*x)^n])^3*Log[h*(i + j*x)^m])/e + x*(a + b*Log[c
*(d + e*x)^n])^3*(f + g*Log[h*(i + j*x)^m]) + (6*b^3*g*i*m*n^3*PolyLog[2, -
((j*(d + e*x))/(e*i - d*j))])/j + (6*b^2*d*g*m*n^2*(a + b*Log[c*(d + e*x)^n
])*PolyLog[2, -((j*(d + e*x))/(e*i - d*j))])/e - (6*b^2*g*i*m*n^2*(a + b*Lo
g[c*(d + e*x)^n])*PolyLog[2, -((j*(d + e*x))/(e*i - d*j))])/j - (3*b*d*g*m*
n*(a + b*Log[c*(d + e*x)^n])^2*PolyLog[2, -((j*(d + e*x))/(e*i - d*j))])/e
+ (3*b*g*i*m*n*(a + b*Log[c*(d + e*x)^n])^2*PolyLog[2, -((j*(d + e*x))/(e*i
 - d*j))])/j + (6*b^3*d*g*m*n^3*PolyLog[2, (e*(i + j*x))/(e*i - d*j)])/e -
(6*b^3*d*g*m*n^3*PolyLog[3, -((j*(d + e*x))/(e*i - d*j))])/e + (6*b^3*g*i*m
*n^3*PolyLog[3, -((j*(d + e*x))/(e*i - d*j))])/j + (6*b^2*d*g*m*n^2*(a + b*
Log[c*(d + e*x)^n])*PolyLog[3, -((j*(d + e*x))/(e*i - d*j))])/e - (6*b^2*g*
i*m*n^2*(a + b*Log[c*(d + e*x)^n])*PolyLog[3, -((j*(d + e*x))/(e*i - d*j))]
)/j - (6*b^3*d*g*m*n^3*PolyLog[4, -((j*(d + e*x))/(e*i - d*j))])/e + (6*b^3
*g*i*m*n^3*PolyLog[4, -((j*(d + e*x))/(e*i - d*j))])/j
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2332

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2333

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
```

```
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2338

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2339

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] :> Dist[1/(
b*n), Subst[Int[x^p, x], x, a + b*Log[c*x^n]], x] /; FreeQ[{a, b, c, n, p},
 x]
```

Rule 2354

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[Log[1 + e*(x/d)]*((a + b*Log[c*x^n])^p/e), x] - Dist[b*n*(p/e),
 Int[Log[1 + e*(x/d)]*((a + b*Log[c*x^n])^(p - 1)/x), x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2388

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.))
/(x_), x_Symbol] :> Dist[d, Int[(d + e*x)^(q - 1)*((a + b*Log[c*x^n])^p/x),
 x], x] + Dist[e, Int[(d + e*x)^(q - 1)*(a + b*Log[c*x^n])^p, x], x] /; Fre
eQ[{a, b, c, d, e, n}, x] && IGtQ[p, 0] && GtQ[q, 0] && IntegerQ[2*q]
```

Rule 2421

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> Simp[(-PolyLog[2, (-d)*f*x^m])*((a + b*Log[c
*x^n])^p/m), x] + Dist[b*n*(p/m), Int[PolyLog[2, (-d)*f*x^m]*((a + b*Log[c*
x^n])^(p - 1)/x), x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0
] && EqQ[d*e, 1]
```

Rule 2422

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))^(r_.)]*((a_.) + Log[(c_.)*(x_)^(n_
.)]*(b_.))^(p_.))/(x_), x_Symbol] :> Simp[Log[d*(e + f*x^m)^r]*((a + b*Log[
c*x^n])^(p + 1)/(b*n*(p + 1))), x] - Dist[f*m*(r/(b*n*(p + 1))), Int[x^(m -
 1)*((a + b*Log[c*x^n])^(p + 1)/(e + f*x^m)), x], x] /; FreeQ[{a, b, c, d,
e, f, r, m, n}, x] && IGtQ[p, 0] && NeQ[d*e, 1]
```

Rule 2430

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*PolyLog[k_, (e_.)*(x_)^(q_
.)])/(x_), x_Symbol] :> Simp[PolyLog[k + 1, e*x^q]*((a + b*Log[c*x^n])^p/q)
, x] - Dist[b*n*(p/q), Int[PolyLog[k + 1, e*x^q]*((a + b*Log[c*x^n])^(p - 1
)/x), x], x] /; FreeQ[{a, b, c, e, k, n, q}, x] && GtQ[p, 0]
```

Rule 2436

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + c*e*(x/g)])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2441

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d + e*x
)^n])/g), x] - Dist[b*e*(n/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2443

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d
+ e*x)^n])^p/g), x] - Dist[b*e*n*(p/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]*
((a + b*Log[c*(d + e*x)^n])^(p - 1)/(d + e*x)), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2458

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[(g*(x/e))^q*((e*h - d*i)/e + i*(x/e))^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2463

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rule 2479

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.)), x_Symbol] :> Simp[x*(a + b*Log[c
*(d + e*x)^n])^p*(f + g*Log[h*(i + j*x)^m]), x] + (-Dist[g*j*m, Int[x*((a +
 b*Log[c*(d + e*x)^n])^p/(i + j*x)), x], x] - Dist[b*e*n*p, Int[x*(a + b*Lo
g[c*(d + e*x)^n])^(p - 1)*((f + g*Log[h*(i + j*x)^m])/(d + e*x)), x], x]) /
; FreeQ[{a, b, c, d, e, f, g, h, i, j, m, n}, x] && IGtQ[p, 0]
```

Rule 2481

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[(k*(x/d))^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + j*(x/e))^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 6724

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6874

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int (a+b\log(c(d+ex)^n))^3 (f+g\log(h(398+jx)^m))\,dx = x(a+b\log(c(d+ex)^n))^3 (f+g\log(h(398+j$$

$$= x(a+b\log(c(d+ex)^n))^3 (f+g\log(h(398+j$$

$$= x(a+b\log(c(d+ex)^n))^3 (f+g\log(h(398+j$$

$$= \frac{398gm(a+b\log(c(d+ex)^n))^3 \log\left(\frac{e(398+jx)}{398e-dj}\right)}{j}$$

$$= -\frac{gm(d+ex)(a+b\log(c(d+ex)^n))^3}{e} + \frac{398g$$

$$= -\frac{3bfn(d+ex)(a+b\log(c(d+ex)^n))^2}{e} + \frac{3bg$$

$$= 6ab^2fn^2x - 6ab^2gmn^2x - \frac{3bfn(d+ex)(a+b}{e}$$

$$= 6ab^2fn^2x - 6ab^2gmn^2x - 6b^3fn^3x + 6b^3gmn^3$$

$$= 6ab^2fn^2x - 6ab^2gmn^2x - 6b^3fn^3x + 6b^3gmn^3$$

$$= 6ab^2fn^2x - 6ab^2gmn^2x - 6b^3fn^3x + 6b^3gmn^3$$

$$= 6ab^2fn^2x - 12ab^2gmn^2x - 6b^3fn^3x + 6b^3gmn$$

$$= 6ab^2fn^2x - 18ab^2gmn^2x - 6b^3fn^3x + 12b^3gm$$

$$= 6ab^2fn^2x - 18ab^2gmn^2x - 6b^3fn^3x + 18b^3gm$$

$$= 6ab^2fn^2x - 18ab^2gmn^2x - 6b^3fn^3x + 24b^3gm$$

Mathematica [B] Leaf count is larger than twice the leaf count of optimal. 3163 vs. 2(1147) = 2294.
time = 0.63, size = 3163, normalized size = 2.76

Result too large to show

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^3*(f + g*Log[h*(i + j*x)^m]),x]
```

```
[Out] (-3*a^2*b*d*f*j*n + 3*a^2*b*d*g*j*m*n - 6*a*b^2*d*g*j*m*n^2 + 6*b^3*d*g*j*m
*n^3 + a^3*e*f*j*x - a^3*e*g*j*m*x - 3*a^2*b*e*f*j*n*x + 6*a^2*b*e*g*j*m*n*
x + 6*a*b^2*e*f*j*n^2*x - 18*a*b^2*e*g*j*m*n^2*x - 6*b^3*e*f*j*n^3*x + 24*b
^3*e*g*j*m*n^3*x + 3*a^2*b*d*f*j*n*Log[d + e*x] - 3*a^2*b*d*g*j*m*n*Log[d +
 e*x] + 6*a*b^2*d*g*j*m*n^2*Log[d + e*x] + 6*b^3*d*f*j*n^3*Log[d + e*x] - 1
2*b^3*d*g*j*m*n^3*Log[d + e*x] - 3*a*b^2*d*f*j*n^2*Log[d + e*x]^2 + 3*a*b^2
*d*g*j*m*n^2*Log[d + e*x]^2 - 3*b^3*d*g*j*m*n^3*Log[d + e*x]^2 + b^3*d*f*j*
n^3*Log[d + e*x]^3 - b^3*d*g*j*m*n^3*Log[d + e*x]^3 - 6*a*b^2*d*f*j*n*Log[c
*(d + e*x)^n] + 6*a*b^2*d*g*j*m*n*Log[c*(d + e*x)^n] - 6*b^3*d*g*j*m*n^2*Lo
g[c*(d + e*x)^n] + 3*a^2*b*e*f*j*x*Log[c*(d + e*x)^n] - 3*a^2*b*e*g*j*m*x*L
og[c*(d + e*x)^n] - 6*a*b^2*e*f*j*n*x*Log[c*(d + e*x)^n] + 12*a*b^2*e*g*j*m
*n*x*Log[c*(d + e*x)^n] + 6*b^3*e*f*j*n^2*x*Log[c*(d + e*x)^n] - 18*b^3*e*g
*j*m*n^2*x*Log[c*(d + e*x)^n] + 6*a*b^2*d*f*j*n*Log[d + e*x]*Log[c*(d + e*x
)^n] - 6*a*b^2*d*g*j*m*n*Log[d + e*x]*Log[c*(d + e*x)^n] + 6*b^3*d*g*j*m*n^
2*Log[d + e*x]*Log[c*(d + e*x)^n] - 3*b^3*d*f*j*n^2*Log[d + e*x]^2*Log[c*(d
 + e*x)^n] + 3*b^3*d*g*j*m*n^2*Log[d + e*x]^2*Log[c*(d + e*x)^n] - 3*b^3*d*
f*j*n*Log[c*(d + e*x)^n]^2 + 3*b^3*d*g*j*m*n*Log[c*(d + e*x)^n]^2 + 3*a*b^2
*e*f*j*x*Log[c*(d + e*x)^n]^2 - 3*a*b^2*e*g*j*m*x*Log[c*(d + e*x)^n]^2 - 3*
b^3*e*f*j*n*x*Log[c*(d + e*x)^n]^2 + 6*b^3*e*g*j*m*n*x*Log[c*(d + e*x)^n]^2
 + 3*b^3*d*f*j*n*Log[d + e*x]*Log[c*(d + e*x)^n]^2 - 3*b^3*d*g*j*m*n*Log[d
+ e*x]*Log[c*(d + e*x)^n]^2 + b^3*e*f*j*x*Log[c*(d + e*x)^n]^3 - b^3*e*g*j*
m*x*Log[c*(d + e*x)^n]^3 + a^3*e*g*i*m*Log[i + j*x] - 3*a^2*b*e*g*i*m*n*Log
[i + j*x] + 3*a^2*b*d*g*j*m*n*Log[i + j*x] + 6*a*b^2*e*g*i*m*n^2*Log[i + j*
x] - 6*b^3*e*g*i*m*n^3*Log[i + j*x] - 3*a^2*b*e*g*i*m*n*Log[d + e*x]*Log[i
+ j*x] + 6*a*b^2*e*g*i*m*n^2*Log[d + e*x]*Log[i + j*x] - 6*a*b^2*d*g*j*m*n^
2*Log[d + e*x]*Log[i + j*x] - 6*b^3*e*g*i*m*n^3*Log[d + e*x]*Log[i + j*x] +
 3*a*b^2*e*g*i*m*n^2*Log[d + e*x]^2*Log[i + j*x] - 3*b^3*e*g*i*m*n^3*Log[d
+ e*x]^2*Log[i + j*x] + 3*b^3*d*g*j*m*n^3*Log[d + e*x]^2*Log[i + j*x] - b^3
*e*g*i*m*n^3*Log[d + e*x]^3*Log[i + j*x] + 3*a^2*b*e*g*i*m*Log[c*(d + e*x)^
n]*Log[i + j*x] - 6*a*b^2*e*g*i*m*n*Log[c*(d + e*x)^n]*Log[i + j*x] + 6*a*b
^2*d*g*j*m*n*Log[c*(d + e*x)^n]*Log[i + j*x] + 6*b^3*e*g*i*m*n^2*Log[c*(d +
 e*x)^n]*Log[i + j*x] - 6*a*b^2*e*g*i*m*n*Log[d + e*x]*Log[c*(d + e*x)^n]*L
og[i + j*x] + 6*b^3*e*g*i*m*n^2*Log[d + e*x]*Log[c*(d + e*x)^n]*Log[i + j*x
] - 6*b^3*d*g*j*m*n^2*Log[d + e*x]*Log[c*(d + e*x)^n]*Log[i + j*x] + 3*b^3*
e*g*i*m*n^2*Log[d + e*x]^2*Log[c*(d + e*x)^n]*Log[i + j*x] + 3*a*b^2*e*g*i*
m*Log[c*(d + e*x)^n]^2*Log[i + j*x] - 3*b^3*e*g*i*m*n*Log[c*(d + e*x)^n]^2*
```

```
Log[i + j*x] + 3*b^3*d*g*j*m*n*Log[c*(d + e*x)^n]^2*Log[i + j*x] - 3*b^3*e*
g*i*m*n*Log[d + e*x]*Log[c*(d + e*x)^n]^2*Log[i + j*x] + b^3*e*g*i*m*Log[c*
(d + e*x)^n]^3*Log[i + j*x] + 3*a^2*b*e*g*i*m*n*Log[d + e*x]*Log[(e*(i + j*
x))/(e*i - d*j)] - 3*a^2*b*d*g*j*m*n*Log[d + e*x]*Log[(e*(i + j*x))/(e*i -
d*j)] - 6*a*b^2*e*g*i*m*n^2*Log[d + e*x]*Log[(e*(i + j*x))/(e*i - d*j)] + 6
*a*b^2*d*g*j*m*n^2*Log[d + e*x]*Log[(e*(i + j*x))/(e*i - d*j)] + 6*b^3*e*g*
i*m*n^3*Log[d + e*x]*Log[(e*(i + j*x))/(e*i - d*j)] - 6*b^3*d*g*j*m*n^3*Log
[d + e*x]*Log[(e*(i + j*x))/(e*i - d*j)] - 3*a*b^2*e*g*i*m*n^2*Log[d + e*x]
^2*Log[(e*(i + j*x))/(e*i - d*j)] + 3*a*b^2*d*g*j*m*n^2*Log[d + e*x]^2*Log[
(e*(i + j*x))/(e*i - d*j)] + 3*b^3*e*g*i*m*n^3*Log[d + e*x]^2*Log[(e*(i + j
*x))/(e*i - d*j)] - 3*b^3*d*g*j*m*n^3*Log[d + e*x]^2*Log[(e*(i + j*x))/(e*i
 - d*j)] + b^3*e*g*i*m*n^3*Log[d + e*x]^3*Log[(e*(i + j*x))/(e*i - d*j)] -
b^3*d*g*j*m*n^3*Log[d + e*x]^3*Log[(e*(i + j*x))/(e*i - d*j)] + 6*a*b^2*e*g
*i*m*n*Log[d + e*x]*Log[c*(d + e*x)^n]*Log[(e*(i + j*x))/(e*i - d*j)] - 6*a
*b^2*d*g*j*m*n*Log[d + e*x]*Log[c*(d + e*x)^n]*Log[(e*(i + j*x))/(e*i - d*j
)] - 6*b^3*e*g*i*m*n^2*Log[d + e*x]*Log[c*(d + e*x)^n]*Log[(e*(i + j*x))/(e
*i - d*j)] + 6*b^3*d*g*j*m*n^2*Log[d + e*x]*Log[c*(d + e*x)^n]*Log[(e*(i +
j*x))/(e*i - d*j)] - 3*b^3*e*g*i*m*n^2*Log[d + e*x]^2*Log[c*(d + e*x)^n]*Lo
g[(e*(i + j*x))/(e*i - d*j)] + 3*b^3*d*g*j*m*n^2*Log[d + e*x]^2*Log[c*(d +
e*x)^n]*Log[(e*(i + j*x))/(e*i - d*j)] + 3*b^3*e*g*i*m*n*Log[d + e*x]*Log[c
*(d + e*x)^n]^2*Log[(e*(i + j*x))/(e*i - d*j)] - 3*b^3*d*g*j*m*n*Log[d + e*
x]*Log[c*(d + e*x)^n]^2*Log[(e*(i + j*x))/(e*i - d*j)] - 3*a^2*b*d*g*j*n*Lo
g[h*(i + j*x)^m] + a^3*e*g*j*x*Log[h*(i + j*x)^m] - 3*a^2*b*e*g*j*n*x*Log[h
*(i + j*x)^m] + 6*a*b^2*e*g*j*n^2*x*Log[h*(i + j*x)^m] - 6*b^3*e*g*j*n^3*x*
Log[h*(i + j*x)^m] + 3*a^2*b*d*g*j*n*Log[d + e*x]*Log[h*(i + j*x)^m] + 6*b^
3*d*g*j*n^3*Log[d + e*x]*Log[h*(i + j*x)^m] - 3*a*b^2*d*g*j*n^2*Log[d + e*x
]^2*Log[h*(i + j*x)^m] + b^3*d*g*j*n^3*Log[d + e*x]^3*Log[h*(i + j*x)^m] -
6*a*b^2*d*g*j*n*Log[c*(d + e*x)^n]*Log[h*(i + j*x)^m] + 3*a^2*b*e*g*j*x*Log
[c*(d + e*x)^n]*Log[h*(i + j*x)^m] - 6*a*b^2*e*g*j*n*x*Log[c*(d + e*x)^n]*L
og[h*(i + j*x)^m] + 6*b^3*e*g*j*n^2*x*Log[c*(d + e*x)^n]*Log[h*(i + j*x)^m]
 + 6*a*b^2*d*g*j*n*Log[d + e*x]*Log[c*(d + e*x)...
```

Maple [F]
time = 0.05, size = 0, normalized size = 0.00

$$\int \left(a+b\ln\left(c(ex+d)^{n}\right)\right)^{3}\left(f+g\ln\left(h(jx+i)^{m}\right)\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))^3*(f+g*ln(h*(j*x+i)^m)),x)
[Out] int((a+b*ln(c*(e*x+d)^n))^3*(f+g*ln(h*(j*x+i)^m)),x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((a+b*log(c*(e*x+d)^n))^3*(f+g*log(h*(j*x+i)^m)),x, algorithm="max ima")

[Out] b^3*f*x*log((x*e + d)^n*c)^3 - a^3*g*j*m*(x/j - I*log(j*x + I)/j^2) + 3*(d*e^(-2)*log(x*e + d) - x*e^(-1))*a^2*b*f*n*e + 3*a*b^2*f*x*log((x*e + d)^n*c)^2 + 3*a^2*b*f*x*log((x*e + d)^n*c) + a^3*g*x*log((j*x + I)^m*h) - 3*((d*log(x*e + d)^2 - 2*x*e + 2*d*log(x*e + d))*n^2*e^(-1) - 2*(d*e^(-2)*log(x*e + d) - x*e^(-1))*n*e*log((x*e + d)^n*c))*a*b^2*f + (3*(d*e^(-2)*log(x*e + d) - x*e^(-1))*n*e*log((x*e + d)^n*c)^2 + ((d*log(x*e + d)^3 + 3*d*log(x*e + d)^2 - 6*x*e + 6*d*log(x*e + d))*n^2*e^(-2) - 3*(d*log(x*e + d)^2 - 2*x*e + 2*d*log(x*e + d))*n*e^(-2)*log((x*e + d)^n*c))*n*e)*b^3*f + a^3*f*x - (((j*m - j*log(h))*b^3*g*x*e - I*b^3*g*m*e*log(j*x + I))*log((x*e + d)^n)^3 - (b^3*d*g*j*n^3*log(x*e + d)^3 + b^3*g*j*x*e*log((x*e + d)^n)^3 - (3*(g*j*n - g*j*log(c))*a^2*b - 3*(2*g*j*n^2 - 2*g*j*n*log(c) + g*j*log(c)^2)*a*b^2 + (6*g*j*n^3 - 6*g*j*n^2*log(c) + 3*g*j*n*log(c)^2 - g*j*log(c)^3)*b^3)*x*e - 3*(a*b^2*d*g*j*n^2 - (d*g*j*n^3 - d*g*j*n^2*log(c))*b^3)*log(x*e + d)^2 + 3*(b^3*d*g*j*n*log(x*e + d) + (a*b^2*g*j - (g*j*n - g*j*log(c))*b^3)*x*e)*log((x*e + d)^n)^2 + 3*(a^2*b*d*g*j*n - 2*(d*g*j*n^2 - d*g*j*n*log(c))*a*b^2 + (2*d*g*j*n^3 - 2*d*g*j*n^2*log(c) + d*g*j*n*log(c)^2)*b^3)*log(x*e + d) - 3*(b^3*d*g*j*n^2*log(x*e + d)^2 - (a^2*b*g*j - 2*(g*j*n - g*j*log(c))*a*b^2 + (2*g*j*n^2 - 2*g*j*n*log(c) + g*j*log(c)^2)*b^3)*x*e - 2*(a*b^2*d*g*j*n - (d*g*j*n^2 - d*g*j*n*log(c))*b^3)*log(x*e + d))*log((x*e + d)^n))*log((j*x + I)^m))*e^(-1)/j - integrate(-((3*(g*j^2*m*n - (j^2*m - j^2*log(h))*g*log(c))*a^2*b - 3*(2*g*j^2*m*n^2 - 2*g*j^2*m*n*log(c) + (j^2*m - j^2*log(h))*g*log(c)^2)*a*b^2 + (6*g*j^2*m*n^3 - 6*g*j^2*m*n^2*log(c) + 3*g*j^2*m*n*log(c)^2 - (j^2*m - j^2*log(h))*g*log(c)^3)*b^3)*x^2*e^2 - (b^3*d*g*j^2*m*n^3*x*e + b^3*d^2*g*j^2*m*n^3)*log(x*e + d)^3 + 3*(a*b^2*d^2*g*j^2*m*n^2 - (d^2*g*j^2*m*n^3 - d^2*g*j^2*m*n^2*log(c))*b^3 + (a*b^2*d*g*j^2*m*n^2 - (d*g*j^2*m*n^3 - d*g*j^2*m*n^2*log(c))*b^3)*x*e)*log(x*e + d)^2 - 3*(((j^2*m - j^2*log(h))*a*b^2*g + ((j^2*m - j^2*log(h))*g*log(c) - (2*j^2*m*n - j^2*n*log(h))*g)*b^3)*x^2*e^2 - ((I*a*b^2*g*j*log(h) + (I*g*j*log(c)*log(h) + (I*j*m*n - I*j*n*log(h))*g)*b^3)*e^2 - ((j^2*m - j^2*log(h))*a*b^2*d*g - (d*g*j^2*m*n - (j^2*m - j^2*log(h))*d*g*log(c))*b^3)*e)*x - (I*b^3*d*g*j*log(c)*log(h) + I*a*b^2*d*g*j*log(h))*e - (-I*b^3*g*j*m*n*x*e^2 + b^3*g*m*n*e^2)*log(j*x + I) + (b^3*d*g*j^2*m*n*x*e + b^3*d^2*g*j^2*m*n)*log(x*e + d))*log((x*e + d)^n)^2 - ((-I*b^3*g*j*log(c)^3*log(h) - 3*I*a*b^2*g*j*log(c)^2*log(h) - 3*I*a^2*b*g*j*log(c)*log(h))*e^2 - (3*(d*g*j^2*m*n - (j^2*m - j^2*log(h))*d*g*log(c))*a^2*b - 3*(2*d*g*j^2*m*n^2 - 2*d*g*j^2*m*n*log(c) + (j^2*m - j^2*log(h))*d*g*log(c)^2)*a*b^2 + (6*d*g*j^2*m*n^3 - 6*d*g*j^2*m*n^2*log(c) + 3*d*g*j^2*m*n*log(c)^2 - (j^2*m - j^2*log(h))*d*g*log(c)^3)*b^3)*e)*x - (-I*b^3*d*g*j*log(c)^3*log(h) - 3*I*a*b^2*d*g*j*log(c)^2*log(h) - 3*I*a^2*b*d*g*j*log(c)*log(h))*e - 3*(a^2*b*d^2*g*j^2*m*n - 2*(d^2*g*j^2*m*n^2 - d^2*g*j^2*m*n*log(c))*a*b^2 + (2*d^2*g*j^2*m*n^3 - 2*d^2*g*j^2*m*n^2*log(c) +

```
d^2*g*j^2*m*n*log(c)^2)*b^3 + (a^2*b*d*g*j^2*m*n - 2*(d*g*j^2*m*n^2 - d*g*j
^2*m*n*log(c))*a*b^2 + (2*d*g*j^2*m*n^3 - 2*d*g*j^2*m*n^2*log(c) + d*g*j^2*
m*n*log(c)^2)*b^3)*x*e)*log(x*e + d) - 3*(((j^2*m - j^2*log(h))*a^2*b*g - 2
*(g*j^2*m*n - (j^2*m - j^2*log(h))*g*log(c))*a*b^2 + (2*g*j^2*m*n^2 - 2*g*j
^2*m*n*log(c) + (j^2*m - j^2*log(h))*g*log(c)^2)*b^3)*x^2*e^2 - (b^3*d*g*j^
2*m*n^2*x*e + b^3*d^2*g*j^2*m*n^2)*log(x*e + d)^2 - ((I*b^3*g*j*log(c)^2*lo
g(h) + 2*I*a*b^2*g*j*log(c)*log(h) + I*a^2*b*g*j*log(h))*e^2 - ((j^2*m - j^
2*log(h))*a^2*b*d*g - 2*(d*g*j^2*m*n - (j^2*m - j^2*log(h))*d*g*log(c))*a*b
^2 + (2*d*g*j^2*m*n^2 - 2*d*g*j^2*m*n*log(c) + (j^2*m - j^2*log(h))*d*g*log
(c)^2)*b^3)*e)*x - (I*b^3*d*g*j*log(c)^2*log(h) + 2*I*a*b^2*d*g*j*log(c)*lo
g(h) + I*a^2*b*d*g*j*log(h))*e + 2*(a*b^2*d^2*g*j^2*m*n - (d^2*g*j^2*m*n^2
- d^2*g*j^2*m*n*log(c))*b^3 + (a*b^2*d*g*j^2*m*n - (d*g*j^2*m*n^2 - d*g*j^2
*m*n*log(c))*b^3)*x*e)*log(x*e + d))*log((x*e + d)^n))/(j^2*x^2*e^2 + I*d*j
*e + (d*j^2*e + I*j*e^2)*x), x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^3*(f+g*log(h*(j*x+i)^m)),x, algorithm="fri
cas")
```

```
[Out] ((b^3*g*j*n^3*x*log(h) - (b^3*g*j*m - b^3*f*j)*n^3*x + (b^3*g*j*m*n^3*x + I
*b^3*g*m*n^3)*log(j*x + I))*log(x*e + d)^3 + j*integral((a^3*f*j*x*e + a^3*
d*f*j + (b^3*f*j*x*e + b^3*d*f*j)*log(c)^3 + 3*(a*b^2*d*f*j*n^2 + (a*b^2*f*
j*n^2 + (b^3*g*j*m - b^3*f*j)*n^3)*x*e + (a*b^2*d*g*j*m*n^2 - (I*b^3*g*m*n^
3 + (b^3*g*j*m*n^3 - a*b^2*g*j*m*n^2)*x)*e + (b^3*g*j*m*n^2*x*e + b^3*d*g*j
*m*n^2)*log(c))*log(j*x + I) + (b^3*f*j*n^2*x*e + b^3*d*f*j*n^2)*log(c) + (
a*b^2*d*g*j*n^2 - (b^3*g*j*n^3 - a*b^2*g*j*n^2)*x*e + (b^3*g*j*n^2*x*e + b^
3*d*g*j*n^2)*log(c))*log(h))*log(x*e + d)^2 + 3*(a*b^2*f*j*x*e + a*b^2*d*f*
j)*log(c)^2 + (a^3*g*j*m*x*e + a^3*d*g*j*m + (b^3*g*j*m*x*e + b^3*d*g*j*m)*
log(c)^3 + 3*(a*b^2*g*j*m*x*e + a*b^2*d*g*j*m)*log(c)^2 + 3*(a^2*b*g*j*m*x*
e + a^2*b*d*g*j*m)*log(c))*log(j*x + I) + 3*(a^2*b*f*j*n*x*e + a^2*b*d*f*j*
n + (b^3*f*j*n*x*e + b^3*d*f*j*n)*log(c)^2 + (a^2*b*g*j*m*n*x*e + a^2*b*d*g
*j*m*n + (b^3*g*j*m*n*x*e + b^3*d*g*j*m*n)*log(c)^2 + 2*(a*b^2*g*j*m*n*x*e
+ a*b^2*d*g*j*m*n)*log(c))*log(j*x + I) + 2*(a*b^2*f*j*n*x*e + a*b^2*d*f*j*
n)*log(c) + (a^2*b*g*j*n*x*e + a^2*b*d*g*j*n + (b^3*g*j*n*x*e + b^3*d*g*j*n
)*log(c)^2 + 2*(a*b^2*g*j*n*x*e + a*b^2*d*g*j*n)*log(c))*log(h))*log(x*e +
d) + 3*(a^2*b*f*j*x*e + a^2*b*d*f*j)*log(c) + (a^3*g*j*x*e + a^3*d*g*j + (b
^3*g*j*x*e + b^3*d*g*j)*log(c)^3 + 3*(a*b^2*g*j*x*e + a*b^2*d*g*j)*log(c)^2
 + 3*(a^2*b*g*j*x*e + a^2*b*d*g*j)*log(c))*log(h))/(j*x*e + d*j), x))/j
```

Sympy [F(-1)] Timed out

time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**3*(f+g*ln(h*(j*x+i)**m)),x)
```

```
[Out] Timed out
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^3*(f+g*log(h*(j*x+i)^m)),x, algorithm="gia
c")
```

```
[Out] integrate((b*log((x*e + d)^n*c) + a)^3*(g*log((j*x + I)^m*h) + f), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int (a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right))^3\,\left(f+g\,\ln\left(h\,{\left(i+j\,x\right)}^m\right)\right) \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))^3*(f + g*log(h*(i + j*x)^m)),x)
```

```
[Out] int((a + b*log(c*(d + e*x)^n))^3*(f + g*log(h*(i + j*x)^m)), x)
```

3.399 $\int \frac{(a+b\log(c(d+ex)^n))^3(f+g\log(h(i+jx)^m))}{x}\,dx$

Optimal. Leaf size=37

$$\operatorname{Int}\left(\frac{(a+b\log(c(d+ex)^n))^3(f+g\log(h(i+jx)^m))}{x},x\right)$$

```
[Out] Unintegrable((a+b*ln(c*(e*x+d)^n))^3*(f+g*ln(h*(j*x+i)^m))/x,x)
```

Rubi [A]
time = 0.03, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int \frac{(a+b\log(c(d+ex)^n))^3(f+g\log(h(i+jx)^m))}{x}\,dx$$

Verification is not applicable to the result.

```
[In] Int[((a + b*Log[c*(d + e*x)^n])^3*(f + g*Log[h*(i + j*x)^m]))/x,x]
[Out] Defer[Int][((a + b*Log[c*(d + e*x)^n])^3*(f + g*Log[h*(i + j*x)^m]))/x, x]
```

Rubi steps

$$\int \frac{(a+b\log(c(d+ex)^n))^3(f+g\log(h(399+jx)^m))}{x}\,dx = \int \frac{(a+b\log(c(d+ex)^n))^3(f+g\log(h(399+$$

Mathematica [A]
time = 0.65, size = 0, normalized size = 0.00

$$\int \frac{(a+b\log(c(d+ex)^n))^3(f+g\log(h(i+jx)^m))}{x}\,dx$$

Verification is not applicable to the result.

```
[In] Integrate[((a + b*Log[c*(d + e*x)^n])^3*(f + g*Log[h*(i + j*x)^m]))/x,x]
[Out] Integrate[((a + b*Log[c*(d + e*x)^n])^3*(f + g*Log[h*(i + j*x)^m]))/x, x]
```

Maple [A]
time = 0.13, size = 0, normalized size = 0.00

$$\int \frac{(a+b\ln(c(ex+d)^n))^3(f+g\ln(h(jx+i)^m))}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))^3*(f+g*ln(h*(j*x+i)^m))/x,x)
```

```
[Out] int((a+b*ln(c*(e*x+d)^n))^3*(f+g*ln(h*(j*x+i)^m))/x,x)
```

Maxima [A]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^3*(f+g*log(h*(j*x+i)^m))/x,x, algorithm="m
axima")
```

```
[Out] a^3*f*log(x) + integrate(((g*log(h) + f)*b^3*log((x*e + d)^n)^3 + (g*log(h)
 + f)*b^3*log(c)^3 + 3*(g*log(h) + f)*a*b^2*log(c)^2 + 3*(g*log(h) + f)*a^2
*b*log(c) + a^3*g*log(h) + 3*((g*log(h) + f)*b^3*log(c) + (g*log(h) + f)*a*
b^2)*log((x*e + d)^n)^2 + (b^3*g*log((x*e + d)^n)^3 + b^3*g*log(c)^3 + 3*a*
b^2*g*log(c)^2 + 3*a^2*b*g*log(c) + a^3*g + 3*(b^3*g*log(c) + a*b^2*g)*log(
(x*e + d)^n)^2 + 3*(b^3*g*log(c)^2 + 2*a*b^2*g*log(c) + a^2*b*g)*log((x*e +
 d)^n))*log((j*x + I)^m) + 3*((g*log(h) + f)*b^3*log(c)^2 + 2*(g*log(h) + f
)*a*b^2*log(c) + (g*log(h) + f)*a^2*b)*log((x*e + d)^n))/x, x)
```

Fricas [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^3*(f+g*log(h*(j*x+i)^m))/x,x, algorithm="f
ricas")
```

```
[Out] integral((b^3*f*log(c)^3 + 3*a*b^2*f*log(c)^2 + 3*a^2*b*f*log(c) + a^3*f +
(b^3*g*m*n^3*log(j*x + I) + b^3*g*n^3*log(h) + b^3*f*n^3)*log(x*e + d)^3 +
3*(b^3*f*n^2*log(c) + a*b^2*f*n^2 + (b^3*g*m*n^2*log(c) + a*b^2*g*m*n^2)*lo
g(j*x + I) + (b^3*g*n^2*log(c) + a*b^2*g*n^2)*log(h))*log(x*e + d)^2 + (b^3
*g*m*log(c)^3 + 3*a*b^2*g*m*log(c)^2 + 3*a^2*b*g*m*log(c) + a^3*g*m)*log(j*
x + I) + 3*(b^3*f*n*log(c)^2 + 2*a*b^2*f*n*log(c) + a^2*b*f*n + (b^3*g*m*n*
log(c)^2 + 2*a*b^2*g*m*n*log(c) + a^2*b*g*m*n)*log(j*x + I) + (b^3*g*n*log(
c)^2 + 2*a*b^2*g*n*log(c) + a^2*b*g*n)*log(h))*log(x*e + d) + (b^3*g*log(c)
^3 + 3*a*b^2*g*log(c)^2 + 3*a^2*b*g*log(c) + a^3*g)*log(h))/x, x)
```

Sympy [F(-1)] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**3*(f+g*ln(h*(j*x+i)**m))/x,x)
```

```
[Out] Timed out
```

Giac [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^3*(f+g*log(h*(j*x+i)^m))/x,x, algorithm="g
iac")
```

```
[Out] integrate((b*log((x*e + d)^n*c) + a)^3*(g*log((j*x + I)^m*h) + f)/x, x)
```

Mupad [A]
time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)}^3\,\left(f+g\,\ln\left(h\,{\left(i+j\,x\right)}^m\right)\right)}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*log(c*(d + e*x)^n))^3*(f + g*log(h*(i + j*x)^m)))/x,x)
```

```
[Out] int(((a + b*log(c*(d + e*x)^n))^3*(f + g*log(h*(i + j*x)^m)))/x, x)
```

3.400 $\int \frac{(a+b\log(c(d+ex)^n))^3(f+g\log(h(i+jx)^m))}{x^2}\,dx$

Optimal. Leaf size=37

$$\operatorname{Int}\left(\frac{(a+b\log(c(d+ex)^n))^3(f+g\log(h(i+jx)^m))}{x^2},x\right)$$

```
[Out] Unintegrable((a+b*ln(c*(e*x+d)^n))^3*(f+g*ln(h*(j*x+i)^m))/x^2,x)
```

Rubi [A]
time = 0.03, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int \frac{(a+b\log(c(d+ex)^n))^3(f+g\log(h(i+jx)^m))}{x^2}\,dx$$

Verification is not applicable to the result.

```
[In] Int[((a + b*Log[c*(d + e*x)^n])^3*(f + g*Log[h*(i + j*x)^m]))/x^2,x]
[Out] Defer[Int][((a + b*Log[c*(d + e*x)^n])^3*(f + g*Log[h*(i + j*x)^m]))/x^2, x
]
```

Rubi steps

$$\int \frac{(a+b\log(c(d+ex)^n))^3(f+g\log(h(400+jx)^m))}{x^2}\,dx = \int \frac{(a+b\log(c(d+ex)^n))^3(f+g\log(h(400+j$$

Mathematica [A]
time = 0.99, size = 0, normalized size = 0.00

$$\int \frac{(a+b\log(c(d+ex)^n))^3(f+g\log(h(i+jx)^m))}{x^2}\,dx$$

Verification is not applicable to the result.

```
[In] Integrate[((a + b*Log[c*(d + e*x)^n])^3*(f + g*Log[h*(i + j*x)^m]))/x^2,x]
[Out] Integrate[((a + b*Log[c*(d + e*x)^n])^3*(f + g*Log[h*(i + j*x)^m]))/x^2, x]
```

Maple [A]
time = 0.11, size = 0, normalized size = 0.00

$$\int \frac{(a+b\ln(c(ex+d)^n))^3(f+g\ln(h(jx+i)^m))}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))^3*(f+g*ln(h*(j*x+i)^m))/x^2,x)
```

```
[Out] int((a+b*ln(c*(e*x+d)^n))^3*(f+g*ln(h*(j*x+i)^m))/x^2,x)
```

Maxima [A]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^3*(f+g*log(h*(j*x+i)^m))/x^2,x, algorithm=
"maxima")
```

```
[Out] -3*a^2*b*f*n*(log(x*e + d)/d - log(x)/d)*e - 3*a^2*b*f*log((x*e + d)^n*c)/x
 - a^3*f/x + integrate(((g*log(h) + f)*b^3*log((x*e + d)^n)^3 + (g*log(h) +
 f)*b^3*log(c)^3 + 3*(g*log(h) + f)*a*b^2*log(c)^2 + 3*a^2*b*g*log(c)*log(h
) + a^3*g*log(h) + 3*((g*log(h) + f)*b^3*log(c) + (g*log(h) + f)*a*b^2)*log
((x*e + d)^n)^2 + (b^3*g*log((x*e + d)^n)^3 + b^3*g*log(c)^3 + 3*a*b^2*g*lo
g(c)^2 + 3*a^2*b*g*log(c) + a^3*g + 3*(b^3*g*log(c) + a*b^2*g)*log((x*e + d
)^n)^2 + 3*(b^3*g*log(c)^2 + 2*a*b^2*g*log(c) + a^2*b*g)*log((x*e + d)^n))*
log((j*x + I)^m) + 3*((g*log(h) + f)*b^3*log(c)^2 + 2*(g*log(h) + f)*a*b^2*
log(c) + a^2*b*g*log(h))*log((x*e + d)^n))/x^2, x)
```

Fricas [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^3*(f+g*log(h*(j*x+i)^m))/x^2,x, algorithm=
"fricas")
```

```
[Out] integral((b^3*f*log(c)^3 + 3*a*b^2*f*log(c)^2 + 3*a^2*b*f*log(c) + a^3*f +
(b^3*g*m*n^3*log(j*x + I) + b^3*g*n^3*log(h) + b^3*f*n^3)*log(x*e + d)^3 +
3*(b^3*f*n^2*log(c) + a*b^2*f*n^2 + (b^3*g*m*n^2*log(c) + a*b^2*g*m*n^2)*lo
g(j*x + I) + (b^3*g*n^2*log(c) + a*b^2*g*n^2)*log(h))*log(x*e + d)^2 + (b^3
*g*m*log(c)^3 + 3*a*b^2*g*m*log(c)^2 + 3*a^2*b*g*m*log(c) + a^3*g*m)*log(j*
x + I) + 3*(b^3*f*n*log(c)^2 + 2*a*b^2*f*n*log(c) + a^2*b*f*n + (b^3*g*m*n*
log(c)^2 + 2*a*b^2*g*m*n*log(c) + a^2*b*g*m*n)*log(j*x + I) + (b^3*g*n*log(
c)^2 + 2*a*b^2*g*n*log(c) + a^2*b*g*n)*log(h))*log(x*e + d) + (b^3*g*log(c)
^3 + 3*a*b^2*g*log(c)^2 + 3*a^2*b*g*log(c) + a^3*g)*log(h))/x^2, x)
```

Sympy [F(-1)] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**3*(f+g*ln(h*(j*x+i)**m))/x**2,x)
```

```
[Out] Timed out
```

Giac [**F(-1)**] Timed out
time = 0.00, size = 0, normalized size = 0.00

$$\text{Timed out}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^3*(f+g*log(h*(j*x+i)^m))/x^2,x, algorithm=
"giac")
```

```
[Out] Timed out
```

Mupad [**A**]
time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)}^3\,\left(f+g\,\ln\left(h\,{\left(i+j\,x\right)}^m\right)\right)}{x^2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*log(c*(d + e*x)^n))^3*(f + g*log(h*(i + j*x)^m)))/x^2,x)
```

```
[Out] int(((a + b*log(c*(d + e*x)^n))^3*(f + g*log(h*(i + j*x)^m)))/x^2, x)
```

3.401 $\int \frac{(a+b\log(c(d+ex)^n))\log\left(\frac{e(f+gx)}{ef-dg}\right)}{d+ex}\,dx$

Optimal. Leaf size=66

$$-\frac{(a+b\log\left(c(d+ex)^n\right))\,\mathrm{Li}_2\left(-\frac{g(d+ex)}{ef-dg}\right)}{e}+\frac{bn\mathrm{Li}_3\left(-\frac{g(d+ex)}{ef-dg}\right)}{e}$$

```
[Out] -(a+b*ln(c*(e*x+d)^n))*polylog(2,-g*(e*x+d)/(-d*g+e*f))/e+b*n*polylog(3,-g*
(e*x+d)/(-d*g+e*f))/e
```

Rubi [A]
time = 0.06, antiderivative size = 66, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 40, $\frac{\text{number of rules}}{\text{integrand size}} = 0.075$, Rules used = {2481, 2421, 6724}

$$\frac{bn\text{PolyLog}\left(3,-\frac{g(d+ex)}{ef-dg}\right)}{e}-\frac{\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)(a+b\log\left(c(d+ex)^n\right))}{e}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*Log[c*(d + e*x)^n])*Log[(e*(f + g*x))/(e*f - d*g)])/(d + e*x),x
]
```

```
[Out] -(((a + b*Log[c*(d + e*x)^n])*PolyLog[2, -((g*(d + e*x))/(e*f - d*g))])/e)
+ (b*n*PolyLog[3, -((g*(d + e*x))/(e*f - d*g))])/e
```

Rule 2421

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> Simp[(-PolyLog[2, (-d)*f*x^m])*((a + b*Log[c
*x^n])^p/m), x] + Dist[b*n*(p/m), Int[PolyLog[2, (-d)*f*x^m]*((a + b*Log[c*
x^n])^(p - 1)/x), x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0
] && EqQ[d*e, 1]
```

Rule 2481

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[(k*(x/d))^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + j*(x/e))^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 6724

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
```

```
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(a+b\log(c(d+ex)^n))\log\left(\frac{e(f+gx)}{ef-dg}\right)}{d+ex}\,dx=\frac{\text{Subst}\left(\int\frac{(a+b\log(cx^n))\log\left(\frac{e\left(\frac{ef-dg}{e}+\frac{gx}{e}\right)}{ef-dg}\right)}{x}\,dx,x,d+ex\right)}{e}$$
$$=-\frac{(a+b\log(c(d+ex)^n))\,\text{Li}_2\left(-\frac{g(d+ex)}{ef-dg}\right)}{e}+\frac{(bn)\text{Subst}\left(\int\frac{\text{Li}_2(-\dots}{\dots}\right)}{\dots}$$
$$=-\frac{(a+b\log(c(d+ex)^n))\,\text{Li}_2\left(-\frac{g(d+ex)}{ef-dg}\right)}{e}+\frac{bn\text{Li}_3\left(-\frac{g(d+ex)}{ef-dg}\right)}{e}$$

Mathematica [A]
time = 0.05, size = 62, normalized size = 0.94

$$\frac{-\left((a+b\log(c(d+ex)^n))\,\text{Li}_2\left(\frac{g(d+ex)}{-ef+dg}\right)\right)+bn\text{Li}_3\left(\frac{g(d+ex)}{-ef+dg}\right)}{e}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*Log[c*(d + e*x)^n])*Log[(e*(f + g*x))/(e*f - d*g)])/(d +
e*x),x]
```

```
[Out] (-((a + b*Log[c*(d + e*x)^n])*PolyLog[2, (g*(d + e*x))/(-(e*f) + d*g)]) + b
*n*PolyLog[3, (g*(d + e*x))/(-(e*f) + d*g)])/e
```

Maple [F]
time = 0.22, size = 0, normalized size = 0.00

$$\int\frac{(a+b\ln(c(ex+d)^n))\ln\left(\frac{e(gx+f)}{-dg+ef}\right)}{ex+d}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))*ln(e*(g*x+f)/(-d*g+e*f))/(e*x+d),x)
```

```
[Out] int((a+b*ln(c*(e*x+d)^n))*ln(e*(g*x+f)/(-d*g+e*f))/(e*x+d),x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))*log(e*(g*x+f)/(-d*g+e*f))/(e*x+d),x, algor
ithm="maxima")
```

```
[Out] integrate((b*log((x*e + d)^n*c) + a)*log(-(g*x + f)*e/(d*g - f*e))/(x*e + d
), x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))*log(e*(g*x+f)/(-d*g+e*f))/(e*x+d),x, algor
ithm="fricas")
```

```
[Out] integral((b*log((x*e + d)^n*c)*log(-(g*x + f)*e/(d*g - f*e)) + a*log(-(g*x
+ f)*e/(d*g - f*e)))/(x*e + d), x)
```

Sympy [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))*ln(e*(g*x+f)/(-d*g+e*f))/(e*x+d),x)
```

```
[Out] Exception raised: TypeError >> Invalid comparison of non-real zoo
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))*log(e*(g*x+f)/(-d*g+e*f))/(e*x+d),x, algor
ithm="giac")
```

```
[Out] integrate((b*log((x*e + d)^n*c) + a)*log(-(g*x + f)*e/(d*g - f*e))/(x*e + d
), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{\ln\left(-\frac{e\,(f+g\,x)}{d\,g-e\,f}\right)\,\left(a+b\,\ln\left(c\,{(d+e\,x)}^n\right)\right)}{d+e\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((log(-(e*(f + g*x))/(d*g - e*f))*(a + b*log(c*(d + e*x)^n)))/(d + e*x),
x)
```

```
[Out] int((log(-(e*(f + g*x))/(d*g - e*f))*(a + b*log(c*(d + e*x)^n)))/(d + e*x),
 x)
```

3.402 $\int \frac{\log(c(d+ex))(a+b\log(c(d+ex)))}{(d+ex)^2}\,dx$

Optimal. Leaf size=92

$$-\frac{b}{e(d+ex)}-\frac{b\log(c(d+ex))}{e(d+ex)}-\frac{\log(c(d+ex))(a+b\log(c(d+ex)))}{e(d+ex)}-\frac{a+b+b\log(c(d+ex))}{e(d+ex)}$$

```
[Out] -b/e/(e*x+d)-b*ln(c*(e*x+d))/e/(e*x+d)-ln(c*(e*x+d))*(a+b*ln(c*(e*x+d)))/e/
(e*x+d)+(-a-b-b*ln(c*(e*x+d)))/e/(e*x+d)
```

Rubi [A]
time = 0.06, antiderivative size = 92, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}} = 0.143$, Rules used = {2416, 12, 2341, 2413}

$$-\frac{\log(c(d+ex))(a+b\log(c(d+ex)))}{e(d+ex)}-\frac{a+b\log(c(d+ex))+b}{e(d+ex)}-\frac{b\log(c(d+ex))}{e(d+ex)}-\frac{b}{e(d+ex)}$$

Antiderivative was successfully verified.

```
[In] Int[(Log[c*(d + e*x)]*(a + b*Log[c*(d + e*x)]))/(d + e*x)^2,x]
```

```
[Out] -(b/(e*(d + e*x))) - (b*Log[c*(d + e*x)])/(e*(d + e*x)) - (Log[c*(d + e*x)]
*(a + b*Log[c*(d + e*x)]))/(e*(d + e*x)) - (a + b + b*Log[c*(d + e*x)])/(e*
(d + e*x))
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 2341

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_.)*(x_))^(m_.), x_Symbol] :>
Simp[(d*x)^(m + 1)*((a + b*Log[c*x^n])/(d*(m + 1))), x] - Simp[b*n*((d*x)^(
m + 1)/(d*(m + 1)^2)), x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[m, -1]
```

Rule 2413

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_.) + Log[(f_.)*(x_)^(r_
.)]*(e_.))*((g_.)*(x_))^(m_.), x_Symbol] :> With[{u = IntHide[(g*x)^m*(a +
b*Log[c*x^n])^p, x]}, Dist[d + e*Log[f*x^r], u, x] - Dist[e*r, Int[Simplify
Integrand[u/x, x], x], x]] /; FreeQ[{a, b, c, d, e, f, g, m, n, p, r}, x] &
&  !(EqQ[p, 1] && EqQ[a, 0] && NeQ[d, 0])
```

Rule 2416

```
Int[((a_.) + Log[v_]*(b_.))^(p_.)*((c_.) + Log[v_]*(d_.))^(q_.)*(u_)^(m_.),
 x_Symbol] :> With[{e = Coeff[u, x, 0], f = Coeff[u, x, 1], g = Coeff[v, x,
 0], h = Coeff[v, x, 1]}, Dist[1/h, Subst[Int[(f*(x/h))^m*(a + b*Log[x])^p*
(c + d*Log[x])^q, x], x, v], x] /; EqQ[f*g - e*h, 0] && NeQ[g, 0]] /; FreeQ
[{a, b, c, d, m, p, q}, x] && LinearQ[{u, v}, x]
```

Rubi steps

$$\int \frac{\log(c(d+ex))(a+b\log(c(d+ex)))}{(d+ex)^2}\,dx = \frac{\text{Subst}\left(\int \frac{c^2\log(x)(a+b\log(x))}{x^2}\,dx, x, c(d+ex)\right)}{ce}$$

$$= \frac{c\text{Subst}\left(\int \frac{\log(x)(a+b\log(x))}{x^2}\,dx, x, c(d+ex)\right)}{e}$$

$$= -\frac{b\log(c(d+ex))}{e(d+ex)} - \frac{\log(c(d+ex))(a+b\log(c(d+ex)))}{e(d+ex)} - \frac{c\text{Su}}{}$$

$$= -\frac{b}{e(d+ex)} - \frac{b\log(c(d+ex))}{e(d+ex)} - \frac{\log(c(d+ex))(a+b\log(c(d-}{e(d+ex)}$$

Mathematica [A]
time = 0.03, size = 43, normalized size = 0.47

$$-\frac{a+2b+(a+2b)\log(c(d+ex))+b\log^2(c(d+ex))}{e(d+ex)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Log[c*(d + e*x)]*(a + b*Log[c*(d + e*x)]))/(d + e*x)^2,x]
[Out] -((a + 2*b + (a + 2*b)*Log[c*(d + e*x)] + b*Log[c*(d + e*x)]^2)/(e*(d + e*x
)))
```

Maple [A]
time = 0.34, size = 110, normalized size = 1.20

method	result	size
norman	$\frac{-\frac{a+2b}{e}-\frac{b\ln(c(ex+d))^2}{e}-\frac{(a+2b)\ln(c(ex+d))}{e}}{ex+d}$	54
risch	$-\frac{b\ln(c(ex+d))^2}{e(ex+d)}-\frac{(a+2b)\ln(c(ex+d))}{e(ex+d)}-\frac{a}{e(ex+d)}-\frac{2b}{e(ex+d)}$	76
derivativedivides	$\frac{c^2a\left(-\frac{\ln(cex+cd)}{cex+cd}-\frac{1}{cex+cd}\right)+c^2b\left(-\frac{\ln(cex+cd)^2}{cex+cd}-\frac{2\ln(cex+cd)}{cex+cd}-\frac{2}{cex+cd}\right)}{ce}$	110

default	$\frac{c^2 a\left(-\frac{\ln(cex+cd)}{cex+cd}-\frac{1}{cex+cd}\right)+c^2 b\left(-\frac{\ln(cex+cd)^2}{cex+cd}-\frac{2\ln(cex+cd)}{cex+cd}-\frac{2}{cex+cd}\right)}{ce}$	110

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(c*(e*x+d))*(a+b*ln(c*(e*x+d)))/(e*x+d)^2,x,method=_RETURNVERBOSE)
```

```
[Out] 1/c/e*(c^2*a*(-1/(c*e*x+c*d)*ln(c*e*x+c*d)-1/(c*e*x+c*d))+c^2*b*(-1/(c*e*x+
c*d)*ln(c*e*x+c*d)^2-2/(c*e*x+c*d)*ln(c*e*x+c*d)-2/(c*e*x+c*d)))
```

Maxima [A]
time = 0.30, size = 100, normalized size = 1.09

$$-\left(b\left(\frac{ce}{cxe^3+cde^2}+\frac{\log(cxe+cd)}{xe^2+de}\right)+\frac{a}{xe^2+de}\right)\log((xe+d)c)-\frac{(b(\log(c)+2)+b\log(xe+d)+a)e}{xe^3+de^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(e*x+d))*(a+b*log(c*(e*x+d)))/(e*x+d)^2,x, algorithm="maxim
a")
```

```
[Out] -(b*(c*e/(c*x*e^3 + c*d*e^2) + log(c*x*e + c*d)/(x*e^2 + d*e)) + a/(x*e^2 +
 d*e))*log((x*e + d)*c) - (b*(log(c) + 2) + b*log(x*e + d) + a)*e/(x*e^3 +
d*e^2)
```

Fricas [A]
time = 0.35, size = 48, normalized size = 0.52

$$-\frac{b\log(cxe+cd)^2+(a+2b)\log(cxe+cd)+a+2b}{xe^2+de}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(e*x+d))*(a+b*log(c*(e*x+d)))/(e*x+d)^2,x, algorithm="frica
s")
```

```
[Out] -(b*log(c*x*e + c*d)^2 + (a + 2*b)*log(c*x*e + c*d) + a + 2*b)/(x*e^2 + d*e
)
```

Sympy [A]
time = 0.14, size = 56, normalized size = 0.61

$$-\frac{b\log(c(d+ex))^2}{de+e^2x}+\frac{(-a-2b)\log(c(d+ex))}{de+e^2x}-\frac{a+2b}{de+e^2x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(c*(e*x+d))*(a+b*ln(c*(e*x+d)))/(e*x+d)**2,x)
```

```
[Out] -b*log(c*(d + e*x))**2/(d*e + e**2*x) + (-a - 2*b)*log(c*(d + e*x))/(d*e +
e**2*x) - (a + 2*b)/(d*e + e**2*x)
```

Giac [A]
time = 4.45, size = 72, normalized size = 0.78

$$-\frac{\left(bc^2\log\left((xe+d)c\right)^2+ac^2\log\left((xe+d)c\right)+2\,bc^2\log\left((xe+d)c\right)+ac^2+2\,bc^2\right)e^{(-1)}}{(xe+d)c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(e*x+d))*(a+b*log(c*(e*x+d)))/(e*x+d)^2,x, algorithm="giac"
)
```

```
[Out] -(b*c^2*log((x*e + d)*c)^2 + a*c^2*log((x*e + d)*c) + 2*b*c^2*log((x*e + d)
*c) + a*c^2 + 2*b*c^2)*e^(-1)/((x*e + d)*c^2)
```

Mupad [B]
time = 0.47, size = 63, normalized size = 0.68

$$-\frac{d\left(b\ln\left(c\left(d+e\,x\right)\right)^2+a\,\ln\left(c\left(d+e\,x\right)\right)+2\,b\,\ln\left(c\left(d+e\,x\right)\right)\right)-e\left(a\,x+2\,b\,x\right)}{d\,e\,\left(d+e\,x\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((log(c*(d + e*x))*(a + b*log(c*(d + e*x))))/(d + e*x)^2,x)
```

```
[Out] -(d*(b*log(c*(d + e*x))^2 + a*log(c*(d + e*x)) + 2*b*log(c*(d + e*x))) - e*
(a*x + 2*b*x))/(d*e*(d + e*x))
```

3.403 $\int \frac{(a+b\log(c(d+ex)))(f+g\log(c(d+ex)))}{(d+ex)^2}\,dx$

Optimal. Leaf size=102

$$-\frac{bg}{e(d+ex)}-\frac{g(a+b+b\log(c(d+ex)))}{e(d+ex)}-\frac{b(f+g\log(c(d+ex)))}{e(d+ex)}-\frac{(a+b\log(c(d+ex)))(f+g\log(c(d+ex)))}{e(d+ex)}$$

```
[Out] -b*g/e/(e*x+d)-g*(a+b+b*ln(c*(e*x+d)))/e/(e*x+d)-b*(f+g*ln(c*(e*x+d)))/e/(e
*x+d)-(a+b*ln(c*(e*x+d)))*(f+g*ln(c*(e*x+d)))/e/(e*x+d)
```

Rubi [A]
time = 0.07, antiderivative size = 102, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}} = 0.125$, Rules used = {2416, 12, 2341, 2413}

$$-\frac{(a+b\log(c(d+ex)))(g\log(c(d+ex))+f)}{e(d+ex)}-\frac{g(a+b\log(c(d+ex))+b)}{e(d+ex)}-\frac{b(g\log(c(d+ex))+f)}{e(d+ex)}-\frac{bg}{e(d+ex)}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*Log[c*(d + e*x)])*(f + g*Log[c*(d + e*x)]))/(d + e*x)^2,x]
```

```
[Out] -((b*g)/(e*(d + e*x))) - (g*(a + b + b*Log[c*(d + e*x)]))/(e*(d + e*x)) - (
b*(f + g*Log[c*(d + e*x)]))/(e*(d + e*x)) - ((a + b*Log[c*(d + e*x)])*(f +
g*Log[c*(d + e*x)]))/(e*(d + e*x))
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 2341

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_.)*(x_))^(m_.), x_Symbol] :>
Simp[(d*x)^(m + 1)*((a + b*Log[c*x^n])/(d*(m + 1))), x] - Simp[b*n*((d*x)^(
m + 1)/(d*(m + 1)^2)), x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[m, -1]
```

Rule 2413

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_.) + Log[(f_.)*(x_)^(r_
.)]*(e_.))*((g_.)*(x_))^(m_.), x_Symbol] :> With[{u = IntHide[(g*x)^m*(a +
b*Log[c*x^n])^p, x]}, Dist[d + e*Log[f*x^r], u, x] - Dist[e*r, Int[Simplify
Integrand[u/x, x], x], x]] /; FreeQ[{a, b, c, d, e, f, g, m, n, p, r}, x] &
&  !(EqQ[p, 1] && EqQ[a, 0] && NeQ[d, 0])
```

Rule 2416

```
Int[((a_.) + Log[v_]*(b_.))^(p_.)*((c_.) + Log[v_]*(d_.))^(q_.)*(u_)^(m_.),
 x_Symbol] :> With[{e = Coeff[u, x, 0], f = Coeff[u, x, 1], g = Coeff[v, x,
```

```
 0], h = Coeff[v, x, 1]}, Dist[1/h, Subst[Int[(f*(x/h))^m*(a + b*Log[x])^p*
(c + d*Log[x])^q, x], x, v], x] /; EqQ[f*g - e*h, 0] && NeQ[g, 0]] /; FreeQ
[{a, b, c, d, m, p, q}, x] && LinearQ[{u, v}, x]
```

Rubi steps

$$\int \frac{(a+b\log(c(d+ex)))(f+g\log(c(d+ex)))}{(d+ex)^2}\,dx = \frac{\text{Subst}\left(\int \frac{c^2(a+b\log(x))(f+g\log(x))}{x^2}\,dx, x, c(d+ex)\right)}{ce}$$

$$= \frac{c\text{Subst}\left(\int \frac{(a+b\log(x))(f+g\log(x))}{x^2}\,dx, x, c(d+ex)\right)}{e}$$

$$= -\frac{b(f+g\log(c(d+ex)))}{e(d+ex)} - \frac{(a+b\log(c(d+ex)))(f+}{e(d+ex)}$$

$$= -\frac{bg}{e(d+ex)} - \frac{g(a+b+b\log(c(d+ex)))}{e(d+ex)} - \frac{b(f+g\log}{e(d}$$

Mathematica [A]
time = 0.05, size = 58, normalized size = 0.57

$$-\frac{a(f+g)+b(f+2g)+(ag+b(f+2g))\log(c(d+ex))+bg\log^2(c(d+ex))}{e(d+ex)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*Log[c*(d + e*x)])*(f + g*Log[c*(d + e*x)]))/(d + e*x)^2,x
]
```

```
[Out] -((a*(f + g) + b*(f + 2*g) + (a*g + b*(f + 2*g))*Log[c*(d + e*x)] + b*g*Log
[c*(d + e*x)]^2)/(e*(d + e*x)))
```

Maple [A]
time = 0.37, size = 169, normalized size = 1.66

method	result
norman	$\frac{-\frac{af+ag+bf+2bg}{e}-\frac{(ag+bf+2bg)\ln(c(ex+d))}{e}-\frac{bg\ln(c(ex+d))^2}{e}}{ex+d}$
risch	$-\frac{bg\ln(c(ex+d))^2}{e(ex+d)}-\frac{(ag+bf+2bg)\ln(c(ex+d))}{e(ex+d)}-\frac{af}{e(ex+d)}-\frac{ag}{e(ex+d)}-\frac{bf}{e(ex+d)}-\frac{2bg}{e(ex+d)}$
derivativedivides	$\frac{-\frac{c^2af}{cex+cd}+c^2ag\left(-\frac{\ln(cex+cd)}{cex+cd}-\frac{1}{cex+cd}\right)+c^2bf\left(-\frac{\ln(cex+cd)}{cex+cd}-\frac{1}{cex+cd}\right)+c^2bg\left(-\frac{\ln(cex+cd)^2}{cex+cd}-\frac{2\ln(cex+cd)}{cex+cd}-\frac{2}{cex+cd}\right)}{ce}$

default	$\frac{-\frac{c^2 a f}{c e x+c d}+c^2 a g\left(-\frac{\ln(c e x+c d)}{c e x+c d}-\frac{1}{c e x+c d}\right)+c^2 b f\left(-\frac{\ln(c e x+c d)}{c e x+c d}-\frac{1}{c e x+c d}\right)+c^2 b g\left(-\frac{\ln(c e x+c d)^2}{c e x+c d}-\frac{2\ln(c e x+c d)}{c e x+c d}-\frac{2}{c e x+c d}\right)}{c e}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)))*(f+g*ln(c*(e*x+d)))/(e*x+d)^2,x,method=_RETURNVERBO
SE)
```

```
[Out] 1/c/e*(-c^2*a*f/(c*e*x+c*d)+c^2*a*g*(-1/(c*e*x+c*d)*ln(c*e*x+c*d)-1/(c*e*x+
c*d))+c^2*b*f*(-1/(c*e*x+c*d)*ln(c*e*x+c*d)-1/(c*e*x+c*d))+c^2*b*g*(-1/(c*e
*x+c*d)*ln(c*e*x+c*d)^2-2/(c*e*x+c*d)*ln(c*e*x+c*d)-2/(c*e*x+c*d)))
```

Maxima [A]
time = 0.28, size = 161, normalized size = 1.58

$$-bf\left(\frac{ce}{cxe^3+cde^2}+\frac{\log(cxe+cd)}{xe^2+de}\right)-ag\left(\frac{ce}{cxe^3+cde^2}+\frac{\log(cxe+cd)}{xe^2+de}\right)-\frac{\left(c^2\log(cxe+cd)^2+2\,c^2\log(cxe+cd)+2\,c^2\right)bge^{(-1)}}{(cxe+cd)c}-\frac{af}{xe^2+de}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)))*(f+g*log(c*(e*x+d)))/(e*x+d)^2,x, algorithm=
"maxima")
```

```
[Out] -b*f*(c*e/(c*x*e^3 + c*d*e^2) + log(c*x*e + c*d)/(x*e^2 + d*e)) - a*g*(c*e/
(c*x*e^3 + c*d*e^2) + log(c*x*e + c*d)/(x*e^2 + d*e)) - (c^2*log(c*x*e + c*
d)^2 + 2*c^2*log(c*x*e + c*d) + 2*c^2)*b*g*e^(-1)/((c*x*e + c*d)*c) - a*f/(
x*e^2 + d*e)
```

Fricas [A]
time = 0.35, size = 63, normalized size = 0.62

$$-\frac{bg\log(cxe+cd)^2+(a+b)f+(a+2\,b)g+(bf+(a+2\,b)g)\log(cxe+cd)}{xe^2+de}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)))*(f+g*log(c*(e*x+d)))/(e*x+d)^2,x, algorithm=
"fricas")
```

```
[Out] -(b*g*log(c*x*e + c*d)^2 + (a + b)*f + (a + 2*b)*g + (b*f + (a + 2*b)*g)*lo
g(c*x*e + c*d))/(x*e^2 + d*e)
```

Sympy [A]
time = 0.16, size = 75, normalized size = 0.74

$$-\frac{bg\log(c(d+ex))^2}{de+e^2x}+\frac{(-ag-bf-2bg)\log(c(d+ex))}{de+e^2x}-\frac{af+ag+bf+2bg}{de+e^2x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)))*(f+g*ln(c*(e*x+d)))/(e*x+d)**2,x)
```

```
[Out] -b*g*log(c*(d + e*x))**2/(d*e + e**2*x) + (-a*g - b*f - 2*b*g)*log(c*(d + e
*x))/(d*e + e**2*x) - (a*f + a*g + b*f + 2*b*g)/(d*e + e**2*x)
```

Giac [A]
time = 4.99, size = 104, normalized size = 1.02

$$-\frac{\left(bc^2g\log\left((xe+d)c\right)^2+bc^2f\log\left((xe+d)c\right)+ac^2g\log\left((xe+d)c\right)+2\,bc^2g\log\left((xe+d)c\right)+ac^2f+bc^2f+ac^2g+2\,bc^2g\right)e^{(-1)}}{(xe+d)c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)))*(f+g*log(c*(e*x+d)))/(e*x+d)^2,x, algorithm=
"giac")
```

```
[Out] -(b*c^2*g*log((x*e + d)*c)^2 + b*c^2*f*log((x*e + d)*c) + a*c^2*g*log((x*e
 + d)*c) + 2*b*c^2*g*log((x*e + d)*c) + a*c^2*f + b*c^2*f + a*c^2*g + 2*b*c^
2*g)*e^(-1)/((x*e + d)*c^2)
```

Mupad [B]
time = 0.50, size = 92, normalized size = 0.90

$$-\frac{d\left(b\,g\ln\left(c\,d+c\,e\,x\right)^2+a\,g\,\ln\left(c\,d+c\,e\,x\right)+b\,f\,\ln\left(c\,d+c\,e\,x\right)+2\,b\,g\,\ln\left(c\,d+c\,e\,x\right)\right)-e\left(a\,f\,x+a\,g\,x+b\,f\,x+2\,b\,g\,x\right)}{d^2\,e+x\,d\,e^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*log(c*(d + e*x)))*(f + g*log(c*(d + e*x))))/(d + e*x)^2,x)
```

```
[Out] -(d*(b*g*log(c*d + c*e*x)^2 + a*g*log(c*d + c*e*x) + b*f*log(c*d + c*e*x) +
 2*b*g*log(c*d + c*e*x)) - e*(a*f*x + a*g*x + b*f*x + 2*b*g*x))/(d^2*e + d*
e^2*x)
```

3.404 $\int (a+b\log(c(d(e+fx)^m)^n))^4\,dx$

Optimal. Leaf size=160

$$-24ab^3m^3n^3x+24b^4m^4n^4x-\frac{24b^4m^3n^3(e+fx)\log(c(d(e+fx)^m)^n)}{f}+\frac{12b^2m^2n^2(e+fx)\left(a+b\log(c(d(e+\right.}{f}$$

```
[Out] -24*a*b^3*m^3*n^3*x+24*b^4*m^4*n^4*x-24*b^4*m^3*n^3*(f*x+e)*ln(c*(d*(f*x+e)
^m)^n)/f+12*b^2*m^2*n^2*(f*x+e)*(a+b*ln(c*(d*(f*x+e)^m)^n))^2/f-4*b*m*n*(f*
x+e)*(a+b*ln(c*(d*(f*x+e)^m)^n))^3/f+(f*x+e)*(a+b*ln(c*(d*(f*x+e)^m)^n))^4/
f
```

Rubi [A]
time = 0.14, antiderivative size = 160, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 4, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.200$, Rules used = {2436, 2333, 2332, 2495}

$$-24ab^3m^3n^3x+\frac{12b^2m^2n^2(e+fx)\left(a+b\log(c(d(e+fx)^m)^n)\right)^2}{f}-\frac{4bmn(e+fx)\left(a+b\log(c(d(e+fx)^m)^n)\right)^3}{f}+\frac{(e+fx)\left(a+b\log(c(d(e+fx)^m)^n)\right)^4}{f}-\frac{24b^4m^3n^3(e+fx)\log(c(d(e+fx)^m)^n)}{f}+24b^4m^4n^4x$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^m)^n])^4,x]
```

```
[Out] -24*a*b^3*m^3*n^3*x + 24*b^4*m^4*n^4*x - (24*b^4*m^3*n^3*(e + f*x)*Log[c*(d
*(e + f*x)^m)^n])/f + (12*b^2*m^2*n^2*(e + f*x)*(a + b*Log[c*(d*(e + f*x)^m
)^n])^2)/f - (4*b*m*n*(e + f*x)*(a + b*Log[c*(d*(e + f*x)^m)^n])^3)/f + ((e
 + f*x)*(a + b*Log[c*(d*(e + f*x)^m)^n])^4)/f
```

Rule 2332

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2333

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2436

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2495

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] && !IntegerQ[n] && !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\begin{aligned}
\int (a+b\log(c(d(e+fx)^m)^n))^4\,dx &= \text{Subst}\left(\int (a+b\log(cd^n(e+fx)^{mn}))^4\,dx, cd^n(e+fx)^{mn}, c(d(e+fx)\right.\\
&= \text{Subst}\left(\frac{\text{Subst}\left(\int (a+b\log(cd^nx^{mn}))^4\,dx, x, e+fx\right)}{f}, cd^n(e+fx)^{mn}, c\right.\\
&= \frac{(e+fx)\,(a+b\log(c(d(e+fx)^m)^n))^4}{f} - \text{Subst}\left(\frac{(4bmn)\text{Subst}\left(\int (a+\right.}{}\right.\\
&= -\frac{4bmn(e+fx)\,(a+b\log(c(d(e+fx)^m)^n))^3}{f} + \frac{(e+fx)\,(a+b\log(c(}{f}\\
&= \frac{12b^2m^2n^2(e+fx)\,(a+b\log(c(d(e+fx)^m)^n))^2}{f} - \frac{4bmn(e+fx)\,(a+}{}\\
&= -24ab^3m^3n^3x + \frac{12b^2m^2n^2(e+fx)\,(a+b\log(c(d(e+fx)^m)^n))^2}{f} - \frac{4b}{}\\
&= -24ab^3m^3n^3x + 24b^4m^4n^4x - \frac{24b^4m^3n^3(e+fx)\log(c(d(e+fx)^m)^n)}{f}
\end{aligned}$$

Mathematica [A]
time = 0.05, size = 132, normalized size = 0.82

$$\frac{(e+fx)\,(a+b\log(c(d(e+fx)^m)^n))^4 - 4bmn\left((e+fx)\,(a+b\log(c(d(e+fx)^m)^n))^3 - 3bmn\left((e+fx)\,(a+b\log(c(d(e+fx)^m)^n))^2 - 2bmn(f(a-bmn)x + b(e+fx)\log(c(d(e+fx)^m)^n))\right)\right)}{f}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^m)^n])^4,x]
```

```
[Out] ((e + f*x)*(a + b*Log[c*(d*(e + f*x)^m)^n])^4 - 4*b*m*n*((e + f*x)*(a + b*L
og[c*(d*(e + f*x)^m)^n])^3 - 3*b*m*n*((e + f*x)*(a + b*Log[c*(d*(e + f*x)^m
)^n])^2 - 2*b*m*n*(f*(a - b*m*n)*x + b*(e + f*x)*Log[c*(d*(e + f*x)^m)^n]))
))/f
```

Maple [F]
time = 0.04, size = 0, normalized size = 0.00

$$\int (a+b\ln(c(d(fx+e)^m)^n))^4\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(d*(f*x+e)^m)^n))^4,x)
```

```
[Out] int((a+b*ln(c*(d*(f*x+e)^m)^n))^4,x)
```

Maxima [B] Leaf count of result is larger than twice the leaf count of optimal. 609 vs. $2(168) = 336$.
time = 0.32, size = 609, normalized size = 3.81

$$b^4x\log\left(\left(\left(fx+e\right)^m d\right)^n c\right)^4-4a^3bfmn\left(\frac{x}{f}-\frac{e\log\left(fx+e\right)}{f^2}\right)+4ab^3x\log\left(\left(\left(fx+e\right)^m d\right)^n c\right)^3+6a^2b^2x\log\left(\left(\left(fx+e\right)^m d\right)^n c\right)^2+4a^3bx\log\left(\left(\left(fx+e\right)^m d\right)^n c\right)-6\left(2fmn\left(\frac{x}{f}-\frac{e\log\left(fx+e\right)}{f^2}\right)\log\left(\left(\left(fx+e\right)^m d\right)^n c\right)+\frac{\left(e\log\left(fx+e\right)^2-2fx+2e\log\left(fx+e\right)\right)m^2n^2}{f}\right)a^2b^2-4\left(3fmn\left(\frac{x}{f}-\frac{e\log\left(fx+e\right)}{f^2}\right)\log\left(\left(\left(fx+e\right)^m d\right)^n c\right)^2-\left(\frac{\left(e\log\left(fx+e\right)^3+3e\log\left(fx+e\right)^2-6fx+6e\log\left(fx+e\right)\right)m^2n^2}{f^2}-\frac{3\left(e\log\left(fx+e\right)^2-2fx+2e\log\left(fx+e\right)\right)mn\log\left(\left(\left(fx+e\right)^m d\right)^n c\right)}{f^2}\right)fmn\right)ab^3-\left(4fmn\left(\frac{x}{f}-\frac{e\log\left(fx+e\right)}{f^2}\right)\log\left(\left(\left(fx+e\right)^m d\right)^n c\right)^3+\left(\left(\frac{\left(e\log\left(fx+e\right)^4+4e\log\left(fx+e\right)^3+12e\log\left(fx+e\right)^2-24fx+24e\log\left(fx+e\right)\right)m^2n^2}{f^3}-\frac{4\left(e\log\left(fx+e\right)^3+3e\log\left(fx+e\right)^2-6fx+6e\log\left(fx+e\right)\right)mn\log\left(\left(\left(fx+e\right)^m d\right)^n c\right)}{f^3}\right)fmn+\frac{6\left(e\log\left(fx+e\right)^2-2fx+2e\log\left(fx+e\right)\right)mn\log\left(\left(\left(fx+e\right)^m d\right)^n c\right)^2}{f^2}\right)fmn\right)b^4+a^4x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^m)^n))^4,x, algorithm="maxima")
```

```
[Out] b^4*x*log(((f*x + e)^m*d)^n*c)^4 - 4*a^3*b*f*m*n*(x/f - e*log(f*x + e)/f^2)
 + 4*a*b^3*x*log(((f*x + e)^m*d)^n*c)^3 + 6*a^2*b^2*x*log(((f*x + e)^m*d)^n
*c)^2 + 4*a^3*b*x*log(((f*x + e)^m*d)^n*c) - 6*(2*f*m*n*(x/f - e*log(f*x +
e)/f^2)*log(((f*x + e)^m*d)^n*c) + (e*log(f*x + e)^2 - 2*f*x + 2*e*log(f*x
+ e))*m^2*n^2/f)*a^2*b^2 - 4*(3*f*m*n*(x/f - e*log(f*x + e)/f^2)*log(((f*x
+ e)^m*d)^n*c)^2 - ((e*log(f*x + e)^3 + 3*e*log(f*x + e)^2 - 6*f*x + 6*e*lo
g(f*x + e))*m^2*n^2/f^2 - 3*(e*log(f*x + e)^2 - 2*f*x + 2*e*log(f*x + e))*m
*n*log(((f*x + e)^m*d)^n*c)/f^2)*f*m*n)*a*b^3 - (4*f*m*n*(x/f - e*log(f*x +
 e)/f^2)*log(((f*x + e)^m*d)^n*c)^3 + (((e*log(f*x + e)^4 + 4*e*log(f*x + e
)^3 + 12*e*log(f*x + e)^2 - 24*f*x + 24*e*log(f*x + e))*m^2*n^2/f^3 - 4*(e*
log(f*x + e)^3 + 3*e*log(f*x + e)^2 - 6*f*x + 6*e*log(f*x + e))*m*n*log(((f
*x + e)^m*d)^n*c)/f^3)*f*m*n + 6*(e*log(f*x + e)^2 - 2*f*x + 2*e*log(f*x +
e))*m*n*log(((f*x + e)^m*d)^n*c)^2/f^2)*f*m*n)*b^4 + a^4*x
```

Fricas [B] Leaf count of result is larger than twice the leaf count of optimal. 1438 vs. $2(168) = 336$.
time = 0.38, size = 1438, normalized size = 8.99

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^m)^n))^4,x, algorithm="fricas")
```

```
[Out] (b^4*f*n^4*x*log(d)^4 + b^4*f*x*log(c)^4 + (b^4*f*m^4*n^4*x + b^4*m^4*n^4*e
)*log(f*x + e)^4 - 4*(b^4*f*m*n - a*b^3*f)*x*log(c)^3 - 4*((b^4*f*m^4*n^4 -
 a*b^3*f*m^3*n^3)*x + (b^4*m^4*n^4 - a*b^3*m^3*n^3)*e - (b^4*f*m^3*n^3*x +
b^4*m^3*n^3*e)*log(c) - (b^4*f*m^3*n^4*x + b^4*m^3*n^4*e)*log(d))*log(f*x +
 e)^3 + 6*(2*b^4*f*m^2*n^2 - 2*a*b^3*f*m*n + a^2*b^2*f)*x*log(c)^2 + 4*(b^4
*f*n^3*x*log(c) - (b^4*f*m*n^4 - a*b^3*f*n^3)*x)*log(d)^3 + 6*((b^4*f*m^2*n
^2*x + b^4*m^2*n^2*e)*log(c)^2 + (b^4*f*m^2*n^4*x + b^4*m^2*n^4*e)*log(d)^2
 + (2*b^4*f*m^4*n^4 - 2*a*b^3*f*m^3*n^3 + a^2*b^2*f*m^2*n^2)*x + (2*b^4*m^4
```

```
*n^4 - 2*a*b^3*m^3*n^3 + a^2*b^2*m^2*n^2)*e - 2*((b^4*f*m^3*n^3 - a*b^3*f*m
^2*n^2)*x + (b^4*m^3*n^3 - a*b^3*m^2*n^2)*e)*log(c) - 2*((b^4*f*m^3*n^4 - a
*b^3*f*m^2*n^3)*x + (b^4*m^3*n^4 - a*b^3*m^2*n^3)*e - (b^4*f*m^2*n^3*x + b^
4*m^2*n^3*e)*log(c))*log(d))*log(f*x + e)^2 - 4*(6*b^4*f*m^3*n^3 - 6*a*b^3*
f*m^2*n^2 + 3*a^2*b^2*f*m*n - a^3*b*f)*x*log(c) + 6*(b^4*f*n^2*x*log(c)^2 -
 2*(b^4*f*m*n^3 - a*b^3*f*n^2)*x*log(c) + (2*b^4*f*m^2*n^4 - 2*a*b^3*f*m*n^
3 + a^2*b^2*f*n^2)*x)*log(d)^2 + (24*b^4*f*m^4*n^4 - 24*a*b^3*f*m^3*n^3 + 1
2*a^2*b^2*f*m^2*n^2 - 4*a^3*b*f*m*n + a^4*f)*x + 4*((b^4*f*m*n*x + b^4*m*n*
e)*log(c)^3 + (b^4*f*m*n^4*x + b^4*m*n^4*e)*log(d)^3 - 3*((b^4*f*m^2*n^2 -
a*b^3*f*m*n)*x + (b^4*m^2*n^2 - a*b^3*m*n)*e)*log(c)^2 - 3*((b^4*f*m^2*n^4
- a*b^3*f*m*n^3)*x + (b^4*m^2*n^4 - a*b^3*m*n^3)*e - (b^4*f*m*n^3*x + b^4*m
*n^3*e)*log(c))*log(d)^2 - (6*b^4*f*m^4*n^4 - 6*a*b^3*f*m^3*n^3 + 3*a^2*b^2
*f*m^2*n^2 - a^3*b*f*m*n)*x - (6*b^4*m^4*n^4 - 6*a*b^3*m^3*n^3 + 3*a^2*b^2*
m^2*n^2 - a^3*b*m*n)*e + 3*((2*b^4*f*m^3*n^3 - 2*a*b^3*f*m^2*n^2 + a^2*b^2*
f*m*n)*x + (2*b^4*m^3*n^3 - 2*a*b^3*m^2*n^2 + a^2*b^2*m*n)*e)*log(c) + 3*((
b^4*f*m*n^2*x + b^4*m*n^2*e)*log(c)^2 + (2*b^4*f*m^3*n^4 - 2*a*b^3*f*m^2*n^
3 + a^2*b^2*f*m*n^2)*x + (2*b^4*m^3*n^4 - 2*a*b^3*m^2*n^3 + a^2*b^2*m*n^2)*
e - 2*((b^4*f*m^2*n^3 - a*b^3*f*m*n^2)*x + (b^4*m^2*n^3 - a*b^3*m*n^2)*e)*l
og(c))*log(d))*log(f*x + e) + 4*(b^4*f*n*x*log(c)^3 - 3*(b^4*f*m*n^2 - a*b^
3*f*n)*x*log(c)^2 + 3*(2*b^4*f*m^2*n^3 - 2*a*b^3*f*m*n^2 + a^2*b^2*f*n)*x*l
og(c) - (6*b^4*f*m^3*n^4 - 6*a*b^3*f*m^2*n^3 + 3*a^2*b^2*f*m*n^2 - a^3*b*f*
n)*x)*log(d))/f
```

Sympy [**B**] Leaf count of result is larger than twice the leaf count of optimal. 609 vs. $2(155) = 310$.
time = 3.13, size = 609, normalized size = 3.81

$$\begin{cases} a^4x + \frac{4a^3be\log\left(c\left(d\left(e+fx\right)^m\right)^n\right)}{f} - 4a^3bmnx + 4a^3bx\log\left(c\left(d\left(e+fx\right)^m\right)^n\right) - \frac{12a^2b^2emn\log\left(c\left(d\left(e+fx\right)^m\right)^n\right)}{f} + \frac{6a^2b^2e\log\left(c\left(d\left(e+fx\right)^m\right)^n\right)^2}{f} + 12a^2b^2m^2n^2x - 12a^2b^2mnx\log\left(c\left(d\left(e+fx\right)^m\right)^n\right) + 6a^2b^2x\log\left(c\left(d\left(e+fx\right)^m\right)^n\right)^2 + \frac{24ab^3em^2n^2\log\left(c\left(d\left(e+fx\right)^m\right)^n\right)}{f} - \frac{12ab^3emn\log\left(c\left(d\left(e+fx\right)^m\right)^n\right)^2}{f} + \frac{4ab^3e\log\left(c\left(d\left(e+fx\right)^m\right)^n\right)^3}{f} - 24ab^3m^3n^3x + 24ab^3m^2n^2x\log\left(c\left(d\left(e+fx\right)^m\right)^n\right) - 12ab^3mnx\log\left(c\left(d\left(e+fx\right)^m\right)^n\right)^2 + 4ab^3x\log\left(c\left(d\left(e+fx\right)^m\right)^n\right)^3 - \frac{24b^4em^3n^3\log\left(c\left(d\left(e+fx\right)^m\right)^n\right)}{f} + \frac{12b^4em^2n^2\log\left(c\left(d\left(e+fx\right)^m\right)^n\right)^2}{f} - \frac{4b^4emn\log\left(c\left(d\left(e+fx\right)^m\right)^n\right)^3}{f} + \frac{b^4e\log\left(c\left(d\left(e+fx\right)^m\right)^n\right)^4}{f} + 24b^4m^4n^4x - 24b^4m^3n^3x\log\left(c\left(d\left(e+fx\right)^m\right)^n\right) + 12b^4m^2n^2x\log\left(c\left(d\left(e+fx\right)^m\right)^n\right)^2 - 4b^4mnx\log\left(c\left(d\left(e+fx\right)^m\right)^n\right)^3 + b^4x\log\left(c\left(d\left(e+fx\right)^m\right)^n\right)^4 & \text{for}\: f \neq 0 \\ x\left(a + b\log\left(c\left(de^m\right)^n\right)\right)^4 & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**m)**n))**4,x)
```

```
[Out] Piecewise((a**4*x + 4*a**3*b*e*log(c*(d*(e + f*x)**m)**n)/f - 4*a**3*b*m*n*
x + 4*a**3*b*x*log(c*(d*(e + f*x)**m)**n) - 12*a**2*b**2*e*m*n*log(c*(d*(e
+ f*x)**m)**n)/f + 6*a**2*b**2*e*log(c*(d*(e + f*x)**m)**n)**2/f + 12*a**2*
b**2*m**2*n**2*x - 12*a**2*b**2*m*n*x*log(c*(d*(e + f*x)**m)**n) + 6*a**2*b
**2*x*log(c*(d*(e + f*x)**m)**n)**2 + 24*a*b**3*e*m**2*n**2*log(c*(d*(e + f
*x)**m)**n)/f - 12*a*b**3*e*m*n*log(c*(d*(e + f*x)**m)**n)**2/f + 4*a*b**3*
e*log(c*(d*(e + f*x)**m)**n)**3/f - 24*a*b**3*m**3*n**3*x + 24*a*b**3*m**2*
n**2*x*log(c*(d*(e + f*x)**m)**n) - 12*a*b**3*m*n*x*log(c*(d*(e + f*x)**m)*
*n)**2 + 4*a*b**3*x*log(c*(d*(e + f*x)**m)**n)**3 - 24*b**4*e*m**3*n**3*log
(c*(d*(e + f*x)**m)**n)/f + 12*b**4*e*m**2*n**2*log(c*(d*(e + f*x)**m)**n)*
*2/f - 4*b**4*e*m*n*log(c*(d*(e + f*x)**m)**n)**3/f + b**4*e*log(c*(d*(e +
f*x)**m)**n)**4/f + 24*b**4*m**4*n**4*x - 24*b**4*m**3*n**3*x*log(c*(d*(e +
 f*x)**m)**n) + 12*b**4*m**2*n**2*x*log(c*(d*(e + f*x)**m)**n)**2 - 4*b**4*
```

```
m*n*x*log(c*(d*(e + f*x)**m)**n)**3 + b**4*x*log(c*(d*(e + f*x)**m)**n)**4,
 Ne(f, 0)), (x*(a + b*log(c*(d*e**m)**n))**4, True))
```

Giac [B] Leaf count of result is larger than twice the leaf count of optimal. 1802 vs. $2(168) = 336$.
time = 6.32, size = 1802, normalized size = 11.26

Too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^m)^n))^4,x, algorithm="giac")
```

```
[Out] (f*x + e)*b^4*m^4*n^4*log(f*x + e)^4/f - 4*(f*x + e)*b^4*m^4*n^4*log(f*x +
e)^3/f + 4*(f*x + e)*b^4*m^3*n^4*log(f*x + e)^3*log(d)/f + 12*(f*x + e)*b^4
*m^4*n^4*log(f*x + e)^2/f + 4*(f*x + e)*b^4*m^3*n^3*log(f*x + e)^3*log(c)/f
 - 12*(f*x + e)*b^4*m^3*n^4*log(f*x + e)^2*log(d)/f + 6*(f*x + e)*b^4*m^2*n
^4*log(f*x + e)^2*log(d)^2/f - 24*(f*x + e)*b^4*m^4*n^4*log(f*x + e)/f + 4*
(f*x + e)*a*b^3*m^3*n^3*log(f*x + e)^3/f - 12*(f*x + e)*b^4*m^3*n^3*log(f*x
 + e)^2*log(c)/f + 24*(f*x + e)*b^4*m^3*n^4*log(f*x + e)*log(d)/f + 12*(f*x
 + e)*b^4*m^2*n^3*log(f*x + e)^2*log(c)*log(d)/f - 12*(f*x + e)*b^4*m^2*n^4
*log(f*x + e)*log(d)^2/f + 4*(f*x + e)*b^4*m*n^4*log(f*x + e)*log(d)^3/f +
24*(f*x + e)*b^4*m^4*n^4/f - 12*(f*x + e)*a*b^3*m^3*n^3*log(f*x + e)^2/f +
24*(f*x + e)*b^4*m^3*n^3*log(f*x + e)*log(c)/f + 6*(f*x + e)*b^4*m^2*n^2*lo
g(f*x + e)^2*log(c)^2/f - 24*(f*x + e)*b^4*m^3*n^4*log(d)/f + 12*(f*x + e)*
a*b^3*m^2*n^3*log(f*x + e)^2*log(d)/f - 24*(f*x + e)*b^4*m^2*n^3*log(f*x +
e)*log(c)*log(d)/f + 12*(f*x + e)*b^4*m^2*n^4*log(d)^2/f + 12*(f*x + e)*b^4
*m*n^3*log(f*x + e)*log(c)*log(d)^2/f - 4*(f*x + e)*b^4*m*n^4*log(d)^3/f +
(f*x + e)*b^4*n^4*log(d)^4/f + 24*(f*x + e)*a*b^3*m^3*n^3*log(f*x + e)/f -
24*(f*x + e)*b^4*m^3*n^3*log(c)/f + 12*(f*x + e)*a*b^3*m^2*n^2*log(f*x + e)
^2*log(c)/f - 12*(f*x + e)*b^4*m^2*n^2*log(f*x + e)*log(c)^2/f - 24*(f*x +
e)*a*b^3*m^2*n^3*log(f*x + e)*log(d)/f + 24*(f*x + e)*b^4*m^2*n^3*log(c)*lo
g(d)/f + 12*(f*x + e)*b^4*m*n^2*log(f*x + e)*log(c)^2*log(d)/f + 12*(f*x +
e)*a*b^3*m*n^3*log(f*x + e)*log(d)^2/f - 12*(f*x + e)*b^4*m*n^3*log(c)*log(
d)^2/f + 4*(f*x + e)*b^4*n^3*log(c)*log(d)^3/f - 24*(f*x + e)*a*b^3*m^3*n^3
/f + 6*(f*x + e)*a^2*b^2*m^2*n^2*log(f*x + e)^2/f - 24*(f*x + e)*a*b^3*m^2*
n^2*log(f*x + e)*log(c)/f + 12*(f*x + e)*b^4*m^2*n^2*log(c)^2/f + 4*(f*x +
e)*b^4*m*n*log(f*x + e)*log(c)^3/f + 24*(f*x + e)*a*b^3*m^2*n^3*log(d)/f +
24*(f*x + e)*a*b^3*m*n^2*log(f*x + e)*log(c)*log(d)/f - 12*(f*x + e)*b^4*m*
n^2*log(c)^2*log(d)/f - 12*(f*x + e)*a*b^3*m*n^3*log(d)^2/f + 6*(f*x + e)*b
^4*n^2*log(c)^2*log(d)^2/f + 4*(f*x + e)*a*b^3*n^3*log(d)^3/f - 12*(f*x + e
)*a^2*b^2*m^2*n^2*log(f*x + e)/f + 24*(f*x + e)*a*b^3*m^2*n^2*log(c)/f + 12
*(f*x + e)*a*b^3*m*n*log(f*x + e)*log(c)^2/f - 4*(f*x + e)*b^4*m*n*log(c)^3
/f + 12*(f*x + e)*a^2*b^2*m*n^2*log(f*x + e)*log(d)/f - 24*(f*x + e)*a*b^3*
m*n^2*log(c)*log(d)/f + 4*(f*x + e)*b^4*n*log(c)^3*log(d)/f + 12*(f*x + e)*
a*b^3*n^2*log(c)*log(d)^2/f + 12*(f*x + e)*a^2*b^2*m^2*n^2/f + 12*(f*x + e)
```

```
*a^2*b^2*m*n*log(f*x + e)*log(c)/f - 12*(f*x + e)*a*b^3*m*n*log(c)^2/f + (f
*x + e)*b^4*log(c)^4/f - 12*(f*x + e)*a^2*b^2*m*n^2*log(d)/f + 12*(f*x + e)
*a*b^3*n*log(c)^2*log(d)/f + 6*(f*x + e)*a^2*b^2*n^2*log(d)^2/f + 4*(f*x +
e)*a^3*b*m*n*log(f*x + e)/f - 12*(f*x + e)*a^2*b^2*m*n*log(c)/f + 4*(f*x +
e)*a*b^3*log(c)^3/f + 12*(f*x + e)*a^2*b^2*n*log(c)*log(d)/f - 4*(f*x + e)*
a^3*b*m*n/f + 6*(f*x + e)*a^2*b^2*log(c)^2/f + 4*(f*x + e)*a^3*b*n*log(d)/f
 + 4*(f*x + e)*a^3*b*log(c)/f + (f*x + e)*a^4/f
```

Mupad [B]
time = 0.58, size = 380, normalized size = 2.38

$$\ln\left(c\left(d\left(e+fx\right)^m\right)^n\right)^3\left(\frac{4\left(a\,b^3\,e-b^4\,e\,m\,n\right)}{f}+4\,b^3\,x\left(a-b\,m\,n\right)\right)+\ln\left(c\left(d\left(e+fx\right)^m\right)^n\right)^4\left(b^4\,x+\frac{b^4\,e}{f}\right)+x\left(a^4-4\,a^3\,b\,m\,n+12\,a^2\,b^2\,m^2\,n^2-24\,a\,b^3\,m^3\,n^3+24\,b^4\,m^4\,n^4\right)+\ln\left(c\left(d\left(e+fx\right)^m\right)^n\right)^2\left(\frac{6\left(e\,a^2\,b^2-2\,e\,a\,b^3\,m\,n+2\,e\,b^4\,m^2\,n^2\right)}{f}+6\,b^2\,x\left(a^2-2\,a\,b\,m\,n+2\,b^2\,m^2\,n^2\right)\right)-\frac{\ln\left(e+fx\right)\left(-4\,e\,a^3\,b\,m\,n+12\,e\,a^2\,b^2\,m^2\,n^2-24\,e\,a\,b^3\,m^3\,n^3+24\,e\,b^4\,m^4\,n^4\right)}{f}+\frac{\ln\left(c\left(d\left(e+fx\right)^m\right)^n\right)\left(4\,b\,f\left(a^3-3\,a^2\,b\,m\,n+6\,a\,b^2\,m^2\,n^2-6\,b^3\,m^3\,n^3\right)x^2+4\,b\,e\left(a^3-3\,a^2\,b\,m\,n+6\,a\,b^2\,m^2\,n^2-6\,b^3\,m^3\,n^3\right)x\right)}{e+fx}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d*(e + f*x)^m)^n))^4,x)
```

```
[Out] log(c*(d*(e + f*x)^m)^n)^3*((4*(a*b^3*e - b^4*e*m*n))/f + 4*b^3*x*(a - b*m*
n)) + log(c*(d*(e + f*x)^m)^n)^4*(b^4*x + (b^4*e)/f) + x*(a^4 + 24*b^4*m^4*
n^4 - 24*a*b^3*m^3*n^3 - 4*a^3*b*m*n + 12*a^2*b^2*m^2*n^2) + log(c*(d*(e +
f*x)^m)^n)^2*((6*(a^2*b^2*e + 2*b^4*e*m^2*n^2 - 2*a*b^3*e*m*n))/f + 6*b^2*x
*(a^2 + 2*b^2*m^2*n^2 - 2*a*b*m*n)) - (log(e + f*x)*(24*b^4*e*m^4*n^4 - 24*
a*b^3*e*m^3*n^3 - 4*a^3*b*e*m*n + 12*a^2*b^2*e*m^2*n^2))/f + (log(c*(d*(e +
 f*x)^m)^n)*(4*b*f*x^2*(a^3 - 6*b^3*m^3*n^3 + 6*a*b^2*m^2*n^2 - 3*a^2*b*m*n
) + 4*b*e*x*(a^3 - 6*b^3*m^3*n^3 + 6*a*b^2*m^2*n^2 - 3*a^2*b*m*n)))/(e + f*
x)
```

3.405 $\int (a+b\log (c(d(e+fx)^m)^n))^3 \, dx$

Optimal. Leaf size=121

$$6ab^2m^2n^2x-6b^3m^3n^3x+\frac{6b^3m^2n^2(e+fx)\log (c(d(e+fx)^m)^n)}{f}-\frac{3bmn(e+fx)\,(a+b\log (c(d(e+fx)^m)^n)}{f}$$

```
[Out] 6*a*b^2*m^2*n^2*x-6*b^3*m^3*n^3*x+6*b^3*m^2*n^2*(f*x+e)*ln(c*(d*(f*x+e)^m)^
n)/f-3*b*m*n*(f*x+e)*(a+b*ln(c*(d*(f*x+e)^m)^n))^2/f+(f*x+e)*(a+b*ln(c*(d*(
f*x+e)^m)^n))^3/f
```

Rubi [A]
time = 0.11, antiderivative size = 121, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.200$, Rules used = {2436, 2333, 2332, 2495}

$$6ab^2m^2n^2x-\frac{3bmn(e+fx)\,(a+b\log (c(d(e+fx)^m)^n))^2}{f}+\frac{(e+fx)\,(a+b\log (c(d(e+fx)^m)^n))^3}{f}+\frac{6b^3m^2n^2(e+fx)\log (c(d(e+fx)^m)^n)}{f}-6b^3m^3n^3x$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^m)^n])^3,x]
```

```
[Out] 6*a*b^2*m^2*n^2*x - 6*b^3*m^3*n^3*x + (6*b^3*m^2*n^2*(e + f*x)*Log[c*(d*(e
+ f*x)^m)^n])/f - (3*b*m*n*(e + f*x)*(a + b*Log[c*(d*(e + f*x)^m)^n])^2)/f
+ ((e + f*x)*(a + b*Log[c*(d*(e + f*x)^m)^n])^3)/f
```

Rule 2332

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2333

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2436

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2495

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
```

```
c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\begin{aligned}\int (a+b\log (c(d(e+fx)^m)^n))^3\,dx &= \text{Subst}\left(\int (a+b\log (cd^n(e+fx)^{mn}))^3\,dx, cd^n(e+fx)^{mn}, c(d(e+fx)\right.\\ &= \text{Subst}\left(\frac{\text{Subst}\left(\int (a+b\log (cd^n x^{mn}))^3\,dx, x, e+fx\right)}{f}, cd^n(e+fx)^{mn}, c\right.\\ &= \frac{(e+fx)(a+b\log (c(d(e+fx)^m)^n))^3}{f} - \text{Subst}\left(\frac{(3bmn)\text{Subst}\left(\int (a+\right.}{}\right.\\ &= -\frac{3bmn(e+fx)(a+b\log (c(d(e+fx)^m)^n))^2}{f} + \frac{(e+fx)(a+b\log (c(}{f}\\ &= 6ab^2m^2n^2x - \frac{3bmn(e+fx)(a+b\log (c(d(e+fx)^m)^n))^2}{f} + \frac{(e+fx)}{}\\ &= 6ab^2m^2n^2x - 6b^3m^3n^3x + \frac{6b^3m^2n^2(e+fx)\log (c(d(e+fx)^m)^n)}{f} - \frac{3b}{}\end{aligned}$$

Mathematica [A]
time = 0.01, size = 100, normalized size = 0.83

$$\frac{(e+fx)(a+b\log (c(d(e+fx)^m)^n))^3 - 3bmn\left((e+fx)(a+b\log (c(d(e+fx)^m)^n))^2 - 2bmn(f(a-bmn)x + b(e+fx)\log (c(d(e+fx)^m)^n))\right)}{f}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^m)^n])^3,x]
[Out] ((e + f*x)*(a + b*Log[c*(d*(e + f*x)^m)^n])^3 - 3*b*m*n*((e + f*x)*(a + b*L
og[c*(d*(e + f*x)^m)^n])^2 - 2*b*m*n*(f*(a - b*m*n)*x + b*(e + f*x)*Log[c*(
d*(e + f*x)^m)^n])))/f
```

Maple [F]
time = 0.05, size = 0, normalized size = 0.00

$$\int (a+b\ln (c(d(fx+e)^m)^n))^3\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((a+b*ln(c*(d*(f*x+e)^m)^n))^3,x)

[Out] int((a+b*ln(c*(d*(f*x+e)^m)^n))^3,x)

Maxima [B] Leaf count of result is larger than twice the leaf count of optimal. 343 vs. 2(127) = 254.
time = 0.30, size = 343, normalized size = 2.83

$$-3\,a^{2}bfmn\left(\frac{x}{f}-\frac{e\log\left(fx+e\right)}{f^{2}}\right)+b^{3}x\log\left(\left(\left(fx+e\right)^{m}d\right)^{n}c\right)^{3}+3\,ab^{2}x\log\left(\left(\left(fx+e\right)^{m}d\right)^{n}c\right)^{2}+3\,a^{2}bx\log\left(\left(\left(fx+e\right)^{m}d\right)^{n}c\right)-3\left(2\,fmn\left(\frac{x}{f}-\frac{e\log\left(fx+e\right)}{f^{2}}\right)\log\left(\left(\left(fx+e\right)^{m}d\right)^{n}c\right)+\frac{\left(e\log\left(fx+e\right)^{2}-2\,fx+2\,e\log\left(fx+e\right)\right)m^{2}n^{2}}{f}\right)ab^{2}-\left(3\,fmn\left(\frac{x}{f}-\frac{e\log\left(fx+e\right)}{f^{2}}\right)\log\left(\left(\left(fx+e\right)^{m}d\right)^{n}c\right)^{2}-\left(\frac{\left(e\log\left(fx+e\right)^{3}+3\,e\log\left(fx+e\right)^{2}-6\,fx+6\,e\log\left(fx+e\right)\right)m^{2}n^{2}}{f^{2}}-\frac{3\left(e\log\left(fx+e\right)^{2}-2\,fx+2\,e\log\left(fx+e\right)\right)mn\log\left(\left(\left(fx+e\right)^{m}d\right)^{n}c\right)}{f^{2}}\right)fmn\right)b^{3}+a^{3}x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^m)^n))^3,x, algorithm="maxima")
```

```
[Out] -3*a^2*b*f*m*n*(x/f - e*log(f*x + e)/f^2) + b^3*x*log(((f*x + e)^m*d)^n*c)^
3 + 3*a*b^2*x*log(((f*x + e)^m*d)^n*c)^2 + 3*a^2*b*x*log(((f*x + e)^m*d)^n*
c) - 3*(2*f*m*n*(x/f - e*log(f*x + e)/f^2)*log(((f*x + e)^m*d)^n*c) + (e*lo
g(f*x + e)^2 - 2*f*x + 2*e*log(f*x + e))*m^2*n^2/f)*a*b^2 - (3*f*m*n*(x/f -
 e*log(f*x + e)/f^2)*log(((f*x + e)^m*d)^n*c)^2 - ((e*log(f*x + e)^3 + 3*e*
log(f*x + e)^2 - 6*f*x + 6*e*log(f*x + e))*m^2*n^2/f^2 - 3*(e*log(f*x + e)^
2 - 2*f*x + 2*e*log(f*x + e))*m*n*log(((f*x + e)^m*d)^n*c)/f^2)*f*m*n)*b^3
+ a^3*x
```

Fricas [B] Leaf count of result is larger than twice the leaf count of optimal. 655 vs. 2(127) = 254.
time = 0.39, size = 655, normalized size = 5.41

$$\frac{b^{3}fn^{3}x\log\left(d\right)^{3}+b^{3}fx\log\left(c\right)^{3}+\left(b^{3}fm^{3}n^{3}x+b^{3}m^{3}n^{3}e\right)\log\left(fx+e\right)^{3}-3\left(b^{3}fmn-ab^{2}f\right)x\log\left(c\right)^{2}-3\left(\left(b^{3}fm^{3}n^{3}-ab^{2}fm^{2}n^{2}\right)x+\left(b^{3}m^{3}n^{3}-ab^{2}m^{2}n^{2}\right)e-\left(b^{3}fm^{2}n^{2}x+b^{3}m^{2}n^{2}e\right)\log\left(c\right)-\left(b^{3}fm^{2}n^{3}x+b^{3}m^{2}n^{3}e\right)\log\left(d\right)\right)\log\left(fx+e\right)^{2}+3\left(2\,b^{3}fm^{2}n^{2}-2\,ab^{2}fmn+a^{2}bf\right)x\log\left(c\right)+3\left(b^{3}fn^{2}x\log\left(c\right)-\left(b^{3}fmn^{3}-ab^{2}fn^{2}\right)x\right)\log\left(d\right)^{2}-\left(6\,b^{3}fm^{3}n^{3}-6\,ab^{2}fm^{2}n^{2}+3\,a^{2}bfmn-a^{3}f\right)x+3\left(\left(b^{3}fmnx+b^{3}mne\right)\log\left(c\right)^{2}+\left(b^{3}fmn^{3}x+b^{3}mn^{3}e\right)\log\left(d\right)^{2}+\left(2\,b^{3}fm^{3}n^{3}-2\,ab^{2}fm^{2}n^{2}+a^{2}bfmn\right)x+\left(2\,b^{3}m^{3}n^{3}-2\,ab^{2}m^{2}n^{2}+a^{2}bmn\right)e-2\left(\left(b^{3}fm^{2}n^{2}-ab^{2}fmn\right)x+\left(b^{3}m^{2}n^{2}-ab^{2}mn\right)e\right)\log\left(c\right)-2\left(\left(b^{3}fm^{2}n^{3}-ab^{2}fmn^{2}\right)x+\left(b^{3}m^{2}n^{3}-ab^{2}mn^{2}\right)e-\left(b^{3}fmn^{2}x+b^{3}mn^{2}e\right)\log\left(c\right)\right)\log\left(d\right)\right)\log\left(fx+e\right)+3\left(b^{3}fnx\log\left(c\right)^{2}-2\left(b^{3}fmn^{2}-ab^{2}fn\right)x\log\left(c\right)+\left(2\,b^{3}fm^{2}n^{3}-2\,ab^{2}fmn^{2}+a^{2}bfn\right)x\right)\log\left(d\right)}{f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^m)^n))^3,x, algorithm="fricas")
```

```
[Out] (b^3*f*n^3*x*log(d)^3 + b^3*f*x*log(c)^3 + (b^3*f*m^3*n^3*x + b^3*m^3*n^3*e
)*log(f*x + e)^3 - 3*(b^3*f*m*n - a*b^2*f)*x*log(c)^2 - 3*((b^3*f*m^3*n^3 -
 a*b^2*f*m^2*n^2)*x + (b^3*m^3*n^3 - a*b^2*m^2*n^2)*e - (b^3*f*m^2*n^2*x +
b^3*m^2*n^2*e)*log(c) - (b^3*f*m^2*n^3*x + b^3*m^2*n^3*e)*log(d))*log(f*x +
 e)^2 + 3*(2*b^3*f*m^2*n^2 - 2*a*b^2*f*m*n + a^2*b*f)*x*log(c) + 3*(b^3*f*n
^2*x*log(c) - (b^3*f*m*n^3 - a*b^2*f*n^2)*x)*log(d)^2 - (6*b^3*f*m^3*n^3 -
6*a*b^2*f*m^2*n^2 + 3*a^2*b*f*m*n - a^3*f)*x + 3*((b^3*f*m*n*x + b^3*m*n*e)
*log(c)^2 + (b^3*f*m*n^3*x + b^3*m*n^3*e)*log(d)^2 + (2*b^3*f*m^3*n^3 - 2*a
*b^2*f*m^2*n^2 + a^2*b*f*m*n)*x + (2*b^3*m^3*n^3 - 2*a*b^2*m^2*n^2 + a^2*b*
m*n)*e - 2*((b^3*f*m^2*n^2 - a*b^2*f*m*n)*x + (b^3*m^2*n^2 - a*b^2*m*n)*e)*
log(c) - 2*((b^3*f*m^2*n^3 - a*b^2*f*m*n^2)*x + (b^3*m^2*n^3 - a*b^2*m*n^2)
*e - (b^3*f*m*n^2*x + b^3*m*n^2*e)*log(c))*log(d))*log(f*x + e) + 3*(b^3*f*
n*x*log(c)^2 - 2*(b^3*f*m*n^2 - a*b^2*f*n)*x*log(c) + (2*b^3*f*m^2*n^3 - 2*
a*b^2*f*m*n^2 + a^2*b*f*n)*x)*log(d))/f
```

Sympy [B] Leaf count of result is larger than twice the leaf count of optimal. 360 vs. $2(117) = 234$.
time = 1.35, size = 360, normalized size = 2.98

$$\begin{cases} a^3x + \frac{3a^2be\log\left(c\left(d\left(e+fx\right)^m\right)^n\right)}{f} - 3a^2bmnx + 3a^2bx\log\left(c\left(d\left(e+fx\right)^m\right)^n\right) - \frac{6ab^2emn\log\left(c\left(d\left(e+fx\right)^m\right)^n\right)}{f} + \frac{3ab^2e\log\left(c\left(d\left(e+fx\right)^m\right)^n\right)^2}{f} + 6ab^2m^2n^2x - 6ab^2mnx\log\left(c\left(d\left(e+fx\right)^m\right)^n\right) + 3ab^2x\log\left(c\left(d\left(e+fx\right)^m\right)^n\right)^2 + \frac{6b^3em^2n^2\log\left(c\left(d\left(e+fx\right)^m\right)^n\right)}{f} - \frac{3b^3emn\log\left(c\left(d\left(e+fx\right)^m\right)^n\right)^2}{f} + \frac{b^3e\log\left(c\left(d\left(e+fx\right)^m\right)^n\right)^3}{f} - 6b^3m^3n^3x + 6b^3m^2n^2x\log\left(c\left(d\left(e+fx\right)^m\right)^n\right) - 3b^3mnx\log\left(c\left(d\left(e+fx\right)^m\right)^n\right)^2 + b^3x\log\left(c\left(d\left(e+fx\right)^m\right)^n\right)^3 & \text{for}\: f \neq 0 \\ x\left(a + b\log\left(c\left(de^m\right)^n\right)\right)^3 & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**m)**n))**3,x)
```

```
[Out] Piecewise((a**3*x + 3*a**2*b*e*log(c*(d*(e + f*x)**m)**n)/f - 3*a**2*b*m*n*
x + 3*a**2*b*x*log(c*(d*(e + f*x)**m)**n) - 6*a*b**2*e*m*n*log(c*(d*(e + f*
x)**m)**n)/f + 3*a*b**2*e*log(c*(d*(e + f*x)**m)**n)**2/f + 6*a*b**2*m**2*n
**2*x - 6*a*b**2*m*n*x*log(c*(d*(e + f*x)**m)**n) + 3*a*b**2*x*log(c*(d*(e
+ f*x)**m)**n)**2 + 6*b**3*e*m**2*n**2*log(c*(d*(e + f*x)**m)**n)/f - 3*b**
3*e*m*n*log(c*(d*(e + f*x)**m)**n)**2/f + b**3*e*log(c*(d*(e + f*x)**m)**n)
**3/f - 6*b**3*m**3*n**3*x + 6*b**3*m**2*n**2*x*log(c*(d*(e + f*x)**m)**n)
- 3*b**3*m*n*x*log(c*(d*(e + f*x)**m)**n)**2 + b**3*x*log(c*(d*(e + f*x)**m
)**n)**3, Ne(f, 0)), (x*(a + b*log(c*(d*e**m)**n))**3, True))
```

Giac [B] Leaf count of result is larger than twice the leaf count of optimal. 822 vs. $2(127) = 254$.
time = 4.13, size = 822, normalized size = 6.79

$$\frac{(fx+e)b^3m^3n^3\log(fx+e)^3}{f} - \frac{3(fx+e)b^3m^3n^3\log(fx+e)^2}{f} + \frac{3(fx+e)b^3m^2n^3\log(fx+e)^2\log(d)}{f} + \frac{6(fx+e)b^3m^3n^3\log(fx+e)}{f} + \frac{3(fx+e)b^3m^2n^2\log(fx+e)^2\log(c)}{f} - \frac{6(fx+e)b^3m^2n^3\log(fx+e)\log(d)}{f} + \frac{3(fx+e)b^3mn^3\log(fx+e)\log(d)^2}{f} - \frac{6(fx+e)b^3m^3n^3}{f} + \frac{3(fx+e)ab^2m^2n^2\log(fx+e)^2}{f} - \frac{6(fx+e)b^3m^2n^2\log(fx+e)\log(c)}{f} + \frac{6(fx+e)b^3m^2n^3\log(d)}{f} + \frac{6(fx+e)b^3mn^2\log(fx+e)\log(c)\log(d)}{f} - \frac{3(fx+e)b^3mn^3\log(d)^2}{f} + \frac{(fx+e)b^3n^3\log(d)^3}{f} - \frac{6(fx+e)ab^2m^2n^2\log(fx+e)}{f} + \frac{6(fx+e)b^3m^2n^2\log(c)}{f} + \frac{3(fx+e)b^3mn\log(fx+e)\log(c)^2}{f} + \frac{6(fx+e)ab^2mn^2\log(fx+e)\log(d)}{f} - \frac{6(fx+e)b^3mn^2\log(c)\log(d)}{f} + \frac{3(fx+e)b^3n^2\log(c)\log(d)^2}{f} + \frac{6(fx+e)ab^2m^2n^2}{f} + \frac{6(fx+e)ab^2mn\log(fx+e)\log(c)}{f} - \frac{3(fx+e)b^3mn\log(c)^2}{f} - \frac{6(fx+e)ab^2mn^2\log(d)}{f} + \frac{3(fx+e)b^3n\log(c)^2\log(d)}{f} + \frac{3(fx+e)ab^2n^2\log(d)^2}{f} + \frac{3(fx+e)a^2bmn\log(fx+e)}{f} - \frac{6(fx+e)ab^2mn\log(c)}{f} + \frac{(fx+e)b^3\log(c)^3}{f} + \frac{6(fx+e)ab^2n\log(c)\log(d)}{f} - \frac{3(fx+e)a^2bmn}{f} + \frac{3(fx+e)ab^2\log(c)^2}{f} + \frac{3(fx+e)a^2bn\log(d)}{f} + \frac{3(fx+e)a^2b\log(c)}{f} + \frac{(fx+e)a^3}{f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^m)^n))^3,x, algorithm="giac")
```

```
[Out] (f*x + e)*b^3*m^3*n^3*log(f*x + e)^3/f - 3*(f*x + e)*b^3*m^3*n^3*log(f*x +
e)^2/f + 3*(f*x + e)*b^3*m^2*n^3*log(f*x + e)^2*log(d)/f + 6*(f*x + e)*b^3*
m^3*n^3*log(f*x + e)/f + 3*(f*x + e)*b^3*m^2*n^2*log(f*x + e)^2*log(c)/f -
6*(f*x + e)*b^3*m^2*n^3*log(f*x + e)*log(d)/f + 3*(f*x + e)*b^3*m*n^3*log(f
*x + e)*log(d)^2/f - 6*(f*x + e)*b^3*m^3*n^3/f + 3*(f*x + e)*a*b^2*m^2*n^2*
log(f*x + e)^2/f - 6*(f*x + e)*b^3*m^2*n^2*log(f*x + e)*log(c)/f + 6*(f*x +
 e)*b^3*m^2*n^3*log(d)/f + 6*(f*x + e)*b^3*m*n^2*log(f*x + e)*log(c)*log(d)
/f - 3*(f*x + e)*b^3*m*n^3*log(d)^2/f + (f*x + e)*b^3*n^3*log(d)^3/f - 6*(f
*x + e)*a*b^2*m^2*n^2*log(f*x + e)/f + 6*(f*x + e)*b^3*m^2*n^2*log(c)/f + 3
*(f*x + e)*b^3*m*n*log(f*x + e)*log(c)^2/f + 6*(f*x + e)*a*b^2*m*n^2*log(f*
x + e)*log(d)/f - 6*(f*x + e)*b^3*m*n^2*log(c)*log(d)/f + 3*(f*x + e)*b^3*n
^2*log(c)*log(d)^2/f + 6*(f*x + e)*a*b^2*m^2*n^2/f + 6*(f*x + e)*a*b^2*m*n*
log(f*x + e)*log(c)/f - 3*(f*x + e)*b^3*m*n*log(c)^2/f - 6*(f*x + e)*a*b^2*
m*n^2*log(d)/f + 3*(f*x + e)*b^3*n*log(c)^2*log(d)/f + 3*(f*x + e)*a*b^2*n^
2*log(d)^2/f + 3*(f*x + e)*a^2*b*m*n*log(f*x + e)/f - 6*(f*x + e)*a*b^2*m*n
*log(c)/f + (f*x + e)*b^3*log(c)^3/f + 6*(f*x + e)*a*b^2*n*log(c)*log(d)/f
- 3*(f*x + e)*a^2*b*m*n/f + 3*(f*x + e)*a*b^2*log(c)^2/f + 3*(f*x + e)*a^2*
b*n*log(d)/f + 3*(f*x + e)*a^2*b*log(c)/f + (f*x + e)*a^3/f
```

Mupad [B]
time = 0.41, size = 242, normalized size = 2.00

$$x\,\left(a^3-3\,a^2\,b\,m\,n+6\,a\,b^2\,m^2\,n^2-6\,b^3\,m^3\,n^3\right)+\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^m\right)}^n\right)^2\,\left(\frac{3\,\left(a\,b^2\,e-b^3\,e\,m\,n\right)}{f}+3\,b^2\,x\,\left(a-b\,m\,n\right)\right)+\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^m\right)}^n\right)^3\,\left(b^3\,x+\frac{b^3\,e}{f}\right)+\frac{\ln\left(e+f\,x\right)\,\left(3\,e\,a^2\,b\,m\,n-6\,e\,a\,b^2\,m^2\,n^2+6\,e\,b^3\,m^3\,n^3\right)}{f}+\frac{\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^m\right)}^n\right)\,\left(3\,b\,f\,\left(a^2-2\,a\,b\,m\,n+2\,b^2\,m^2\,n^2\right)\,x^2+3\,b\,e\,\left(a^2-2\,a\,b\,m\,n+2\,b^2\,m^2\,n^2\right)\,x\right)}{e+f\,x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d*(e + f*x)^m)^n))^3,x)
```

```
[Out] x*(a^3 - 6*b^3*m^3*n^3 + 6*a*b^2*m^2*n^2 - 3*a^2*b*m*n) + log(c*(d*(e + f*x
)^m)^n)^2*((3*(a*b^2*e - b^3*e*m*n))/f + 3*b^2*x*(a - b*m*n)) + log(c*(d*(e
 + f*x)^m)^n)^3*(b^3*x + (b^3*e)/f) + (log(e + f*x)*(6*b^3*e*m^3*n^3 - 6*a*
b^2*e*m^2*n^2 + 3*a^2*b*e*m*n))/f + (log(c*(d*(e + f*x)^m)^n)*(3*b*e*x*(a^2
 + 2*b^2*m^2*n^2 - 2*a*b*m*n) + 3*b*f*x^2*(a^2 + 2*b^2*m^2*n^2 - 2*a*b*m*n)
))/(e + f*x)
```

3.406 $\int (a+b\log (c(d(e+fx)^m)^n))^2 \, dx$

Optimal. Leaf size=78

$$-2abmnx+2b^2m^2n^2x-\frac{2b^2mn(e+fx)\log (c(d(e+fx)^m)^n)}{f}+\frac{(e+fx)(a+b\log (c(d(e+fx)^m)^n))^2}{f}$$

```
[Out] -2*a*b*m*n*x+2*b^2*m^2*n^2*x-2*b^2*m*n*(f*x+e)*ln(c*(d*(f*x+e)^m)^n)/f+(f*x
+e)*(a+b*ln(c*(d*(f*x+e)^m)^n))^2/f
```

Rubi [A]
time = 0.07, antiderivative size = 78, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.200$, Rules used = {2436, 2333, 2332, 2495}

$$\frac{(e+fx)(a+b\log (c(d(e+fx)^m)^n))^2}{f}-2abmnx-\frac{2b^2mn(e+fx)\log (c(d(e+fx)^m)^n)}{f}+2b^2m^2n^2x$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^m)^n])^2,x]
```

```
[Out] -2*a*b*m*n*x + 2*b^2*m^2*n^2*x - (2*b^2*m*n*(e + f*x)*Log[c*(d*(e + f*x)^m)
^n])/f + ((e + f*x)*(a + b*Log[c*(d*(e + f*x)^m)^n])^2)/f
```

Rule 2332

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2333

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2436

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2495

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] && !IntegerQ[n] && !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
```

```
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int (a+b\log (c(d(e+fx)^m)^n))^2\,dx = \text{Subst}\left(\int (a+b\log (cd^n(e+fx)^{mn}))^2\,dx, cd^n(e+fx)^{mn}, c(d(e+fx$$
$$= \text{Subst}\left(\frac{\text{Subst}(\int (a+b\log (cd^nx^{mn}))^2\,dx, x, e+fx)}{f}, cd^n(e+fx)^{mn},\right.$$
$$= \frac{(e+fx)\,(a+b\log (c(d(e+fx)^m)^n))^2}{f} - \text{Subst}\left(\frac{(2bmn)\text{Subst}(\int (a\right.$$
$$= -2abmnx + \frac{(e+fx)\,(a+b\log (c(d(e+fx)^m)^n))^2}{f} - \text{Subst}\left(\frac{(2b^2mn\right.$$
$$= -2abmnx + 2b^2m^2n^2x - \frac{2b^2mn(e+fx)\log (c(d(e+fx)^m)^n)}{f} + \frac{(e\,}{}$$

Mathematica [A]
time = 0.01, size = 69, normalized size = 0.88

$$\frac{(e+fx)\,(a+b\log (c(d(e+fx)^m)^n))^2}{f} - 2bmn\left(ax - bmnx + \frac{b(e+fx)\log (c(d(e+fx)^m)^n)}{f}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^m)^n])^2,x]
[Out] ((e + f*x)*(a + b*Log[c*(d*(e + f*x)^m)^n])^2)/f - 2*b*m*n*(a*x - b*m*n*x +
 (b*(e + f*x)*Log[c*(d*(e + f*x)^m)^n])/f)
```

Maple [F]
time = 0.03, size = 0, normalized size = 0.00

$$\int (a+b\ln (c(d(fx+e)^m)^n))^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(d*(f*x+e)^m)^n))^2,x)
[Out] int((a+b*ln(c*(d*(f*x+e)^m)^n))^2,x)
```

Maxima [A]
time = 0.30, size = 159, normalized size = 2.04

$$-2\,abfmn\left(\frac{x}{f}-\frac{e\log (fx+e)}{f^2}\right)+b^2x\log (((fx+e)^m d)^n\,c)^2+2\,abx\log (((fx+e)^m d)^n\,c)-\left(2\,fmn\left(\frac{x}{f}-\frac{e\log (fx+e)}{f^2}\right)\log (((fx+e)^m d)^n\,c)+\frac{(e\log (fx+e)^2-2\,fx+2\,e\log (fx+e))m^2n^2}{f}\right)b^2+a^2x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^m)^n))^2,x, algorithm="maxima")
```

```
[Out] -2*a*b*f*m*n*(x/f - e*log(f*x + e)/f^2) + b^2*x*log(((f*x + e)^m*d)^n*c)^2
 + 2*a*b*x*log(((f*x + e)^m*d)^n*c) - (2*f*m*n*(x/f - e*log(f*x + e)/f^2)*lo
g(((f*x + e)^m*d)^n*c) + (e*log(f*x + e)^2 - 2*f*x + 2*e*log(f*x + e))*m^2*
n^2/f)*b^2 + a^2*x
```

Fricas [B] Leaf count of result is larger than twice the leaf count of optimal. 238 vs. $2(82) = 164$.
time = 0.36, size = 238, normalized size = 3.05

$$\frac{b^2fn^2x\log(d)^2 + b^2fx\log(c)^2 + (b^2fm^2n^2x + b^2m^2n^2e)\log(fx+e)^2 - 2(b^2fmn - abf)x\log(c) + (2b^2fm^2n^2 - 2abfmn + a^2f)x - 2((b^2fm^2n^2 - abfmn)x + (b^2m^2n^2 - abmn)e - (b^2fmnx + b^2mne)\log(c) - (b^2fmn^2x + b^2mn^2e)\log(d))\log(fx+e) + 2(b^2fnx\log(c) - (b^2fmn^2 - abfn)x)\log(d)}{f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^m)^n))^2,x, algorithm="fricas")
```

```
[Out] (b^2*f*n^2*x*log(d)^2 + b^2*f*x*log(c)^2 + (b^2*f*m^2*n^2*x + b^2*m^2*n^2*e
)*log(f*x + e)^2 - 2*(b^2*f*m*n - a*b*f)*x*log(c) + (2*b^2*f*m^2*n^2 - 2*a*
b*f*m*n + a^2*f)*x - 2*((b^2*f*m^2*n^2 - a*b*f*m*n)*x + (b^2*m^2*n^2 - a*b*
m*n)*e - (b^2*f*m*n*x + b^2*m*n*e)*log(c) - (b^2*f*m*n^2*x + b^2*m*n^2*e)*l
og(d))*log(f*x + e) + 2*(b^2*f*n*x*log(c) - (b^2*f*m*n^2 - a*b*f*n)*x)*log(
d))/f
```

Sympy [B] Leaf count of result is larger than twice the leaf count of optimal. 178 vs. $2(76) = 152$.
time = 0.64, size = 178, normalized size = 2.28

$$\begin{cases} a^2x + \frac{2abe\log\left(c\left(d\left(e+fx\right)^m\right)^n\right)}{f} - 2abmnx + 2abx\log\left(c\left(d\left(e+fx\right)^m\right)^n\right) - \frac{2b^2emn\log\left(c\left(d\left(e+fx\right)^m\right)^n\right)}{f} + \frac{b^2e\log\left(c\left(d\left(e+fx\right)^m\right)^n\right)^2}{f} + 2b^2m^2n^2x - 2b^2mnx\log\left(c\left(d\left(e+fx\right)^m\right)^n\right) + b^2x\log\left(c\left(d\left(e+fx\right)^m\right)^n\right)^2 & \text{for}\ f \neq 0 \\ x\left(a + b\log\left(c\left(de^m\right)^n\right)\right)^2 & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**m)**n))**2,x)
```

```
[Out] Piecewise((a**2*x + 2*a*b*e*log(c*(d*(e + f*x)**m)**n)/f - 2*a*b*m*n*x + 2*
a*b*x*log(c*(d*(e + f*x)**m)**n) - 2*b**2*e*m*n*log(c*(d*(e + f*x)**m)**n)/
f + b**2*e*log(c*(d*(e + f*x)**m)**n)**2/f + 2*b**2*m**2*n**2*x - 2*b**2*m*
n*x*log(c*(d*(e + f*x)**m)**n) + b**2*x*log(c*(d*(e + f*x)**m)**n)**2, Ne(f
, 0)), (x*(a + b*log(c*(d*e**m)**n))**2, True))
```

Giac [B] Leaf count of result is larger than twice the leaf count of optimal. 303 vs. $2(82) = 164$.
time = 6.76, size = 303, normalized size = 3.88

$$\frac{(fx+e)b^2m^2n^2\log(fx+e)^2}{f} - \frac{2(fx+e)b^2m^2n^2\log(fx+e)}{f} + \frac{2(fx+e)b^2mn^2\log(fx+e)\log(d)}{f} + \frac{2(fx+e)b^2m^2n^2}{f} + \frac{2(fx+e)b^2mn\log(fx+e)\log(c)}{f} - \frac{2(fx+e)b^2mn^2\log(d)}{f} + \frac{(fx+e)b^2n^2\log(d)^2}{f} + \frac{2(fx+e)abmn\log(fx+e)}{f} - \frac{2(fx+e)b^2mn\log(c)}{f} + \frac{2(fx+e)b^2n\log(c)\log(d)}{f} - \frac{2(fx+e)abmn}{f} + \frac{(fx+e)b^2\log(c)^2}{f} + \frac{2(fx+e)abn\log(d)}{f} + \frac{2(fx+e)ab\log(c)}{f} + \frac{(fx+e)a^2}{f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^m)^n))^2,x, algorithm="giac")
```

```
[Out] (f*x + e)*b^2*m^2*n^2*log(f*x + e)^2/f - 2*(f*x + e)*b^2*m^2*n^2*log(f*x +
e)/f + 2*(f*x + e)*b^2*m*n^2*log(f*x + e)*log(d)/f + 2*(f*x + e)*b^2*m^2*n^
2/f + 2*(f*x + e)*b^2*m*n*log(f*x + e)*log(c)/f - 2*(f*x + e)*b^2*m*n^2*log
(d)/f + (f*x + e)*b^2*n^2*log(d)^2/f + 2*(f*x + e)*a*b*m*n*log(f*x + e)/f -
 2*(f*x + e)*b^2*m*n*log(c)/f + 2*(f*x + e)*b^2*n*log(c)*log(d)/f - 2*(f*x
+ e)*a*b*m*n/f + (f*x + e)*b^2*log(c)^2/f + 2*(f*x + e)*a*b*n*log(d)/f + 2*
(f*x + e)*a*b*log(c)/f + (f*x + e)*a^2/f
```

Mupad [B]
time = 0.28, size = 111, normalized size = 1.42

$$\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^m\right)}^n\right)^2\,\left(b^2\,x+\frac{b^2\,e}{f}\right)+x\,\left(a^2-2\,a\,b\,m\,n+2\,b^2\,m^2\,n^2\right)-\frac{\ln\left(e+f\,x\right)\,\left(2\,b^2\,e\,m^2\,n^2-2\,a\,b\,e\,m\,n\right)}{f}+2\,b\,x\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^m\right)}^n\right)\,\left(a-b\,m\,n\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d*(e + f*x)^m)^n))^2,x)
```

```
[Out] log(c*(d*(e + f*x)^m)^n)^2*(b^2*x + (b^2*e)/f) + x*(a^2 + 2*b^2*m^2*n^2 - 2
*a*b*m*n) - (log(e + f*x)*(2*b^2*e*m^2*n^2 - 2*a*b*e*m*n))/f + 2*b*x*log(c*
(d*(e + f*x)^m)^n)*(a - b*m*n)
```

3.407 $\int (a+b\log (c(d(e+fx)^m)^n))\ dx$

Optimal. Leaf size=34

$$ax-bmnx+\frac{b(e+fx)\log (c(d(e+fx)^m)^n)}{f}$$

```
[Out] a*x-b*m*n*x+b*(f*x+e)*ln(c*(d*(f*x+e)^m)^n)/f
```

Rubi [A]
time = 0.02, antiderivative size = 34, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {2436, 2332, 2495}

$$ax+\frac{b(e+fx)\log (c(d(e+fx)^m)^n)}{f}-bmnx$$

Antiderivative was successfully verified.

```
[In] Int[a + b*Log[c*(d*(e + f*x)^m)^n],x]
```

```
[Out] a*x - b*m*n*x + (b*(e + f*x)*Log[c*(d*(e + f*x)^m)^n])/f
```

Rule 2332

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2436

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2495

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int (a+b\log(c(d(e+fx)^m)^n))\,dx = ax+b\int \log(c(d(e+fx)^m)^n)\,dx$$
$$= ax+b\text{Subst}\left(\int \log(cd^n(e+fx)^{mn})\,dx, cd^n(e+fx)^{mn}, c(d(e+fx)^m\right.$$
$$= ax+b\text{Subst}\left(\frac{\text{Subst}(\int \log(cd^nx^{mn})\,dx, x, e+fx)}{f}, cd^n(e+fx)^{mn}, c(\right.$$
$$= ax-bmnx+\frac{b(e+fx)\log(c(d(e+fx)^m)^n)}{f}$$

Mathematica [A]
time = 0.01, size = 34, normalized size = 1.00

$$ax-bmnx+\frac{b(e+fx)\log(c(d(e+fx)^m)^n)}{f}$$

Antiderivative was successfully verified.

```
[In] Integrate[a + b*Log[c*(d*(e + f*x)^m)^n],x]
[Out] a*x - b*m*n*x + (b*(e + f*x)*Log[c*(d*(e + f*x)^m)^n])/f
```

Maple [A]
time = 0.07, size = 42, normalized size = 1.24

method	result	size
default	$ax+b\ln(c(d(fx+e)^m)^n)\,x-bmnx+\frac{bemn\ln(fx+e)}{f}$	42

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(a+b*ln(c*(d*(f*x+e)^m)^n),x,method=_RETURNVERBOSE)
[Out] a*x+b*ln(c*(d*(f*x+e)^m)^n)*x-b*m*n*x+b*e*m*n/f*ln(f*x+e)
```

Maxima [A]
time = 0.28, size = 48, normalized size = 1.41

$$-bfmn\left(\frac{x}{f}-\frac{e\log(fx+e)}{f^2}\right)+bx\log(((fx+e)^md)^n\,c)+ax$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(a+b*log(c*(d*(f*x+e)^m)^n),x, algorithm="maxima")
[Out] -b*f*m*n*(x/f - e*log(f*x + e)/f^2) + b*x*log(((f*x + e)^m*d)^n*c) + a*x
```

Fricas [A]
time = 0.34, size = 52, normalized size = 1.53

$$\frac{bfnx\log(d) + bfx\log(c) - (bfmn - af)x + (bfmnx + bmne)\log(fx + e)}{f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(a+b*log(c*(d*(f*x+e)^m)^n),x, algorithm="fricas")
```

```
[Out] (b*f*n*x*log(d) + b*f*x*log(c) - (b*f*m*n - a*f)*x + (b*f*m*n*x + b*m*n*e)*
log(f*x + e))/f
```

Sympy [A]
time = 0.22, size = 53, normalized size = 1.56

$$ax + b\left(\begin{cases} \frac{e\log\left(c\left(d\left(e+fx\right)^{m}\right)^{n}\right)}{f} - mnx + x\log\left(c\left(d\left(e+fx\right)^{m}\right)^{n}\right) & \text{for } f \neq 0 \\ x\log\left(c\left(de^{m}\right)^{n}\right) & \text{otherwise} \end{cases}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(a+b*ln(c*(d*(f*x+e)**m)**n),x)
```

```
[Out] a*x + b*Piecewise((e*log(c*(d*(e + f*x)**m)**n)/f - m*n*x + x*log(c*(d*(e +
 f*x)**m)**n), Ne(f, 0)), (x*log(c*(d*e**m)**n), True))
```

Giac [A]
time = 1.80, size = 64, normalized size = 1.88

$$\left(\frac{(fx+e)mn\log(fx+e)}{f} - \frac{(fx+e)mn}{f} + \frac{(fx+e)n\log(d)}{f} + \frac{(fx+e)\log(c)}{f}\right)b + ax$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(a+b*log(c*(d*(f*x+e)^m)^n),x, algorithm="giac")
```

```
[Out] ((f*x + e)*m*n*log(f*x + e)/f - (f*x + e)*m*n/f + (f*x + e)*n*log(d)/f + (f
*x + e)*log(c)/f)*b + a*x
```

Mupad [B]
time = 0.21, size = 41, normalized size = 1.21

$$x\,(a - b\,m\,n) + b\,x\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^m\right)}^n\right) + \frac{b\,e\,m\,n\,\ln(e+f\,x)}{f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(a + b*log(c*(d*(e + f*x)^m)^n),x)
```

```
[Out] x*(a - b*m*n) + b*x*log(c*(d*(e + f*x)^m)^n) + (b*e*m*n*log(e + f*x))/f
```

3.408 $\int \frac{1}{a+b\log(c(d(e+fx)^m)^n)}\,dx$

Optimal. Leaf size=83

$$\frac{e^{-\frac{a}{bmn}}(e+fx)\left(c(d(e+fx)^m)^n\right)^{-\frac{1}{mn}}\operatorname{Ei}\left(\frac{a+b\log(c(d(e+fx)^m)^n)}{bmn}\right)}{bfmn}$$

```
[Out] (f*x+e)*Ei((a+b*ln(c*(d*(f*x+e)^m)^n))/b/m/n)/b/exp(a/b/m/n)/f/m/n/((c*(d*(
f*x+e)^m)^n)^(1/m/n))
```

Rubi [A]
time = 0.09, antiderivative size = 83, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.200$, Rules used = {2436, 2337, 2209, 2495}

$$\frac{(e+fx)e^{-\frac{a}{bmn}}\left(c(d(e+fx)^m)^n\right)^{-\frac{1}{mn}}\operatorname{Ei}\left(\frac{a+b\log(c(d(e+fx)^m)^n)}{bmn}\right)}{bfmn}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^m)^n])^(-1),x]
```

```
[Out] ((e + f*x)*ExpIntegralEi[(a + b*Log[c*(d*(e + f*x)^m)^n])/(b*m*n)])/(b*E^(a
/(b*m*n))*f*m*n*(c*(d*(e + f*x)^m)^n)^(1/(m*n)))
```

Rule 2209

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/((c_.) + (d_.)*(x_)), x_Symbol] :> Si
mp[(F^(g*(e - c*(f/d)))/d)*ExpIntegralEi[f*g*(c + d*x)*(Log[F]/d)], x] /; F
reeQ[{F, c, d, e, f, g}, x] &&  !TrueQ[$UseGamma]
```

Rule 2337

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2436

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2495

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
```

```
c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{1}{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}\,dx = \text{Subst}\left(\int \frac{1}{a+b\log\left(cd^n(e+fx)^{mn}\right)}\,dx, cd^n(e+fx)^{mn}, c(d(e+fx)^m)^n\right)$$

$$= \text{Subst}\left(\frac{\text{Subst}\left(\int \frac{1}{a+b\log(cd^nx^{mn})}\,dx, x, e+fx\right)}{f}, cd^n(e+fx)^{mn}, c(d(e+fx$$

$$= \text{Subst}\left(\frac{\left((e+fx)\left(cd^n(e+fx)^{mn}\right)^{-\frac{1}{mn}}\right)\text{Subst}\left(\int \frac{e^{\frac{x}{mn}}}{a+bx}\,dx, x, \log\left(cd^n(e+\right.\right.}{fmn}$$

$$= \frac{e^{-\frac{a}{bmn}}(e+fx)\left(c(d(e+fx)^m)^n\right)^{-\frac{1}{mn}}\text{Ei}\left(\frac{a+b\log(c(d(e+fx)^m)^n)}{bmn}\right)}{bfmn}$$

Mathematica [**A**]
time = 0.07, size = 83, normalized size = 1.00

$$\frac{e^{-\frac{a}{bmn}}(e+fx)\left(c(d(e+fx)^m)^n\right)^{-\frac{1}{mn}}\text{Ei}\left(\frac{a+b\log(c(d(e+fx)^m)^n)}{bmn}\right)}{bfmn}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^m)^n])^(-1),x]
[Out] ((e + f*x)*ExpIntegralEi[(a + b*Log[c*(d*(e + f*x)^m)^n])/(b*m*n)])/(b*E^(a
/(b*m*n))*f*m*n*(c*(d*(e + f*x)^m)^n)^(1/(m*n)))
```

Maple [**F**]
time = 0.05, size = 0, normalized size = 0.00

$$\int \frac{1}{a+b\ln\left(c\left(d\left(fx+e\right)^{m}\right)^{n}\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+b*ln(c*(d*(f*x+e)^m)^n)),x)
[Out] int(1/(a+b*ln(c*(d*(f*x+e)^m)^n)),x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(d*(f*x+e)^m)^n)),x, algorithm="maxima")
```

```
[Out] integrate(1/(b*log(((f*x + e)^m*d)^n*c) + a), x)
```

Fricas [A]
time = 0.37, size = 66, normalized size = 0.80

$$\frac{e^{\left(-\frac{bn\log(d)+b\log(c)+a}{bmn}\right)}\operatorname{log\_integral}\left((fx+e)e^{\left(\frac{bn\log(d)+b\log(c)+a}{bmn}\right)}\right)}{bfmn}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(d*(f*x+e)^m)^n)),x, algorithm="fricas")
```

```
[Out] e^(-(b*n*log(d) + b*log(c) + a)/(b*m*n))*log_integral((f*x + e)*e^((b*n*log
(d) + b*log(c) + a)/(b*m*n)))/(b*f*m*n)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{1}{a+b\log\left(c\left(d\left(e+fx\right)^{m}\right)^{n}\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*ln(c*(d*(f*x+e)**m)**n)),x)
```

```
[Out] Integral(1/(a + b*log(c*(d*(e + f*x)**m)**n)), x)
```

Giac [A]
time = 6.40, size = 79, normalized size = 0.95

$$\frac{\operatorname{Ei}\left(\frac{\log(d)}{m}+\frac{\log(c)}{mn}+\frac{a}{bmn}+\log\left(fx+e\right)\right)e^{\left(-\frac{a}{bmn}\right)}}{bc^{\frac{1}{mn}}d^{\left(\frac{1}{m}\right)}fmn}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(d*(f*x+e)^m)^n)),x, algorithm="giac")
```

```
[Out] Ei(log(d)/m + log(c)/(m*n) + a/(b*m*n) + log(f*x + e))*e^(-a/(b*m*n))/(b*c^
(1/(m*n))*d^(1/m)*f*m*n)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{1}{a+b\ln \left(c\left(d\left(e+f\,x\right)^m\right)^n\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a + b*log(c*(d*(e + f*x)^m)^n)),x)
[Out] int(1/(a + b*log(c*(d*(e + f*x)^m)^n)), x)
```

3.409 $\int \frac{1}{(a+b\log(c(d(e+fx)^m)^n))^2}\,dx$

Optimal. Leaf size=123

$$\frac{e^{-\frac{a}{bmn}}(e+fx)\left(c(d(e+fx)^m)^n\right)^{-\frac{1}{mn}}\operatorname{Ei}\left(\frac{a+b\log(c(d(e+fx)^m)^n)}{bmn}\right)}{b^2fm^2n^2}-\frac{e+fx}{bfmn\left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)}$$

```
[Out] (f*x+e)*Ei((a+b*ln(c*(d*(f*x+e)^m)^n))/b/m/n)/b^2/exp(a/b/m/n)/f/m^2/n^2/((
c*(d*(f*x+e)^m)^n)^(1/m/n))+(-f*x-e)/b/f/m/n/(a+b*ln(c*(d*(f*x+e)^m)^n))
```

Rubi [A]
time = 0.12, antiderivative size = 123, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.250$, Rules used = {2436, 2334, 2337, 2209, 2495}

$$\frac{(e+fx)e^{-\frac{a}{bmn}}\left(c(d(e+fx)^m)^n\right)^{-\frac{1}{mn}}\operatorname{Ei}\left(\frac{a+b\log(c(d(e+fx)^m)^n)}{bmn}\right)}{b^2fm^2n^2}-\frac{e+fx}{bfmn\left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^m)^n])^(-2),x]
```

```
[Out] ((e + f*x)*ExpIntegralEi[(a + b*Log[c*(d*(e + f*x)^m)^n])/(b*m*n)])/(b^2*E^
(a/(b*m*n))*f*m^2*n^2*(c*(d*(e + f*x)^m)^n)^(1/(m*n))) - (e + f*x)/(b*f*m*n
*(a + b*Log[c*(d*(e + f*x)^m)^n]))
```

Rule 2209

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/((c_.) + (d_.)*(x_)), x_Symbol] :> Si
mp[(F^(g*(e - c*(f/d)))/d)*ExpIntegralEi[f*g*(c + d*x)*(Log[F]/d)], x] /; F
reeQ[{F, c, d, e, f, g}, x] && !TrueQ[$UseGamma]
```

Rule 2334

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Simp[x*((a + b
*Log[c*x^n])^(p + 1)/(b*n*(p + 1))), x] - Dist[1/(b*n*(p + 1)), Int[(a + b*
Log[c*x^n])^(p + 1), x], x] /; FreeQ[{a, b, c, n}, x] && LtQ[p, -1] && Inte
gerQ[2*p]
```

Rule 2337

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2436

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2495

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{1}{(a+b\log(c(d(e+fx)^m)^n))^2}\,dx = \text{Subst}\left(\int \frac{1}{(a+b\log(cd^n(e+fx)^{mn}))^2}\,dx, cd^n(e+fx)^{mn}, c(d(e+fx)$$

$$= \text{Subst}\left(\frac{\text{Subst}\left(\int \frac{1}{(a+b\log(cd^nx^{mn}))^2}\,dx, x, e+fx\right)}{f}, cd^n(e+fx)^{mn}, c(d(e$$

$$= -\frac{e+fx}{bfmn(a+b\log(c(d(e+fx)^m)^n))} + \text{Subst}\left(\frac{\text{Subst}\left(\int \frac{1}{a+b\log(cd^nx^{mn})}\right.}{bfmn}\right.$$

$$= -\frac{e+fx}{bfmn(a+b\log(c(d(e+fx)^m)^n))} + \text{Subst}\left(\frac{\left((e+fx)(cd^n(e+f\right.}{}\right.$$

$$= \frac{e^{-\frac{a}{bmn}}(e+fx)(c(d(e+fx)^m)^n)^{-\frac{1}{mn}}\,\text{Ei}\left(\frac{a+b\log(c(d(e+fx)^m)^n)}{bmn}\right)}{b^2fm^2n^2} - \frac{}{bfmn}$$

Mathematica [A]
time = 0.08, size = 163, normalized size = 1.33

$$-\frac{e^{-\frac{a}{bmn}}(e+fx)(c(d(e+fx)^m)^n)^{-\frac{1}{mn}}\left(be^{\frac{a}{bmn}}mn(c(d(e+fx)^m)^n)^{\frac{1}{mn}} - \text{Ei}\left(\frac{a+b\log(c(d(e+fx)^m)^n)}{bmn}\right)(a+b\log(c(d(e+fx)^m)^n))\right)}{b^2fm^2n^2(a+b\log(c(d(e+fx)^m)^n))}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^m)^n])^(-2),x]
```

```
[Out] -(((e + f*x)*(b*E^(a/(b*m*n))*m*n*(c*(d*(e + f*x)^m)^n)^(1/(m*n)) - ExpInte
gralEi[(a + b*Log[c*(d*(e + f*x)^m)^n])/(b*m*n)]*(a + b*Log[c*(d*(e + f*x)^
m)^n])))/(b^2*E^(a/(b*m*n))*f*m^2*n^2*(c*(d*(e + f*x)^m)^n)^(1/(m*n))*(a +
b*Log[c*(d*(e + f*x)^m)^n])))
```

Maple [F]
time = 0.03, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(a + b\ln\left(c\left(d\left(fx+e\right)^{m}\right)^{n}\right)\right)^{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+b*ln(c*(d*(f*x+e)^m)^n))^2,x)
```

```
[Out] int(1/(a+b*ln(c*(d*(f*x+e)^m)^n))^2,x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(d*(f*x+e)^m)^n))^2,x, algorithm="maxima")
```

```
[Out] -(f*x + e)/(b^2*f*m*n*log(((f*x + e)^m)^n) + a*b*f*m*n + (f*m*n^2*log(d) +
f*m*n*log(c))*b^2) + integrate(1/(b^2*m*n*log(((f*x + e)^m)^n) + a*b*m*n +
(m*n^2*log(d) + m*n*log(c))*b^2), x)
```

Fricas [A]
time = 0.36, size = 175, normalized size = 1.42

$$-\frac{\left(\left(bfmnx + bmne\right)e^{\left(\frac{bn\log\left(d\right)+b\log\left(c\right)+a}{bmn}\right)} - \left(bmn\log\left(fx+e\right) + bn\log\left(d\right) + b\log\left(c\right) + a\right)\mathrm{log\_integral}\left(\left(fx+e\right)e^{\left(\frac{bn\log\left(d\right)+b\log\left(c\right)+a}{bmn}\right)}\right)\right)e^{\left(-\frac{bn\log\left(d\right)+b\log\left(c\right)+a}{bmn}\right)}}{b^{3}fm^{3}n^{3}\log\left(fx+e\right) + b^{3}fm^{2}n^{3}\log\left(d\right) + b^{3}fm^{2}n^{2}\log\left(c\right) + ab^{2}fm^{2}n^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(d*(f*x+e)^m)^n))^2,x, algorithm="fricas")
```

```
[Out] -((b*f*m*n*x + b*m*n*e)*e^((b*n*log(d) + b*log(c) + a)/(b*m*n)) - (b*m*n*lo
g(f*x + e) + b*n*log(d) + b*log(c) + a)*log_integral((f*x + e)*e^((b*n*log(
d) + b*log(c) + a)/(b*m*n))))*e^(-(b*n*log(d) + b*log(c) + a)/(b*m*n))/(b^3
*f*m^3*n^3*log(f*x + e) + b^3*f*m^2*n^3*log(d) + b^3*f*m^2*n^2*log(c) + a*b
^2*f*m^2*n^2)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(a + b\log\left(c\left(d\left(e+fx\right)^{m}\right)^{n}\right)\right)^{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*ln(c*(d*(f*x+e)**m)**n))**2,x)
```

```
[Out] Integral((a + b*log(c*(d*(e + f*x)**m)**n))**(-2), x)
```

Giac [B] Leaf count of result is larger than twice the leaf count of optimal. 593 vs. $2(128) = 256$.
time = 4.75, size = 593, normalized size = 4.82

$$-\frac{(fx+e)bmn}{b^3fm^3n^3\log(fx+e)+b^3fm^2n^3\log(d)+b^3fm^2n^2\log(c)+ab^2fm^2n^2}+\frac{bmn\text{Ei}\left(\frac{\log(d)}{m}+\frac{\log(c)}{mn}+\frac{a}{bmn}+\log(fx+e)\right)e^{\left(-\frac{a}{bmn}\right)}\log(fx+e)}{(b^3fm^3n^3\log(fx+e)+b^3fm^2n^3\log(d)+b^3fm^2n^2\log(c)+ab^2fm^2n^2)c^{\frac{1}{mn}}d^{\left(\frac{1}{m}\right)}}+\frac{bn\text{Ei}\left(\frac{\log(d)}{m}+\frac{\log(c)}{mn}+\frac{a}{bmn}+\log(fx+e)\right)e^{\left(-\frac{a}{bmn}\right)}\log(d)}{(b^3fm^3n^3\log(fx+e)+b^3fm^2n^3\log(d)+b^3fm^2n^2\log(c)+ab^2fm^2n^2)c^{\frac{1}{mn}}d^{\left(\frac{1}{m}\right)}}+\frac{b\text{Ei}\left(\frac{\log(d)}{m}+\frac{\log(c)}{mn}+\frac{a}{bmn}+\log(fx+e)\right)e^{\left(-\frac{a}{bmn}\right)}\log(c)}{(b^3fm^3n^3\log(fx+e)+b^3fm^2n^3\log(d)+b^3fm^2n^2\log(c)+ab^2fm^2n^2)c^{\frac{1}{mn}}d^{\left(\frac{1}{m}\right)}}+\frac{a\text{Ei}\left(\frac{\log(d)}{m}+\frac{\log(c)}{mn}+\frac{a}{bmn}+\log(fx+e)\right)e^{\left(-\frac{a}{bmn}\right)}}{(b^3fm^3n^3\log(fx+e)+b^3fm^2n^3\log(d)+b^3fm^2n^2\log(c)+ab^2fm^2n^2)c^{\frac{1}{mn}}d^{\left(\frac{1}{m}\right)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(d*(f*x+e)^m)^n))^2,x, algorithm="giac")
```

```
[Out] -(f*x + e)*b*m*n/(b^3*f*m^3*n^3*log(f*x + e) + b^3*f*m^2*n^3*log(d) + b^3*f
*m^2*n^2*log(c) + a*b^2*f*m^2*n^2) + b*m*n*Ei(log(d)/m + log(c)/(m*n) + a/(
b*m*n) + log(f*x + e))*e^(-a/(b*m*n))*log(f*x + e)/((b^3*f*m^3*n^3*log(f*x
+ e) + b^3*f*m^2*n^3*log(d) + b^3*f*m^2*n^2*log(c) + a*b^2*f*m^2*n^2)*c^(1/
(m*n))*d^(1/m)) + b*n*Ei(log(d)/m + log(c)/(m*n) + a/(b*m*n) + log(f*x + e)
)*e^(-a/(b*m*n))*log(d)/((b^3*f*m^3*n^3*log(f*x + e) + b^3*f*m^2*n^3*log(d)
 + b^3*f*m^2*n^2*log(c) + a*b^2*f*m^2*n^2)*c^(1/(m*n))*d^(1/m)) + b*Ei(log(
d)/m + log(c)/(m*n) + a/(b*m*n) + log(f*x + e))*e^(-a/(b*m*n))*log(c)/((b^3
*f*m^3*n^3*log(f*x + e) + b^3*f*m^2*n^3*log(d) + b^3*f*m^2*n^2*log(c) + a*b
^2*f*m^2*n^2)*c^(1/(m*n))*d^(1/m)) + a*Ei(log(d)/m + log(c)/(m*n) + a/(b*m*
n) + log(f*x + e))*e^(-a/(b*m*n))/((b^3*f*m^3*n^3*log(f*x + e) + b^3*f*m^2*
n^3*log(d) + b^3*f*m^2*n^2*log(c) + a*b^2*f*m^2*n^2)*c^(1/(m*n))*d^(1/m))
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{1}{\left(a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^m\right)}^n\right)\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a + b*log(c*(d*(e + f*x)^m)^n))^2,x)
```

```
[Out] int(1/(a + b*log(c*(d*(e + f*x)^m)^n))^2, x)
```

3.410 $\int \frac{1}{(a+b\log(c(d(e+fx)^m)^n))^3}\,dx$

Optimal. Leaf size=169

$$\frac{e^{-\frac{a}{bmn}}(e+fx)\left(c(d(e+fx)^m)^n\right)^{-\frac{1}{mn}}\operatorname{Ei}\left(\frac{a+b\log(c(d(e+fx)^m)^n)}{bmn}\right)}{2b^3fm^3n^3}-\frac{e+fx}{2bfmn\left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)^2}-\frac{}{2b^2fn}$$

```
[Out] 1/2*(f*x+e)*Ei((a+b*ln(c*(d*(f*x+e)^m)^n))/b/m/n)/b^3/exp(a/b/m/n)/f/m^3/n^
3/((c*(d*(f*x+e)^m)^n)^(1/m/n))+1/2*(-f*x-e)/b/f/m/n/(a+b*ln(c*(d*(f*x+e)^m
)^n))^2+1/2*(-f*x-e)/b^2/f/m^2/n^2/(a+b*ln(c*(d*(f*x+e)^m)^n))
```

Rubi [A]

time = 0.16, antiderivative size = 169, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.250$, Rules used = {2436, 2334, 2337, 2209, 2495}

$$\frac{(e+fx)e^{-\frac{a}{bmn}}\left(c(d(e+fx)^m)^n\right)^{-\frac{1}{mn}}\operatorname{Ei}\left(\frac{a+b\log(c(d(e+fx)^m)^n)}{bmn}\right)}{2b^3fm^3n^3}-\frac{e+fx}{2b^2fm^2n^2\left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)}-\frac{e+fx}{2bfmn\left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^m)^n])^(-3),x]
```

```
[Out] ((e + f*x)*ExpIntegralEi[(a + b*Log[c*(d*(e + f*x)^m)^n])/(b*m*n)])/(2*b^3*
E^(a/(b*m*n))*f*m^3*n^3*(c*(d*(e + f*x)^m)^n)^(1/(m*n))) - (e + f*x)/(2*b*f
*m*n*(a + b*Log[c*(d*(e + f*x)^m)^n])^2) - (e + f*x)/(2*b^2*f*m^2*n^2*(a +
b*Log[c*(d*(e + f*x)^m)^n]))
```

Rule 2209

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/((c_.) + (d_.)*(x_)), x_Symbol] :> Si
mp[(F^(g*(e - c*(f/d)))/d)*ExpIntegralEi[f*g*(c + d*x)*(Log[F]/d)], x] /; F
reeQ[{F, c, d, e, f, g}, x] &&  !TrueQ[$UseGamma]
```

Rule 2334

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Simp[x*((a + b
*Log[c*x^n])^(p + 1)/(b*n*(p + 1))), x] - Dist[1/(b*n*(p + 1)), Int[(a + b*
Log[c*x^n])^(p + 1), x], x] /; FreeQ[{a, b, c, n}, x] && LtQ[p, -1] && Inte
gerQ[2*p]
```

Rule 2337

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2436

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2495

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] && !IntegerQ[n] && !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{1}{(a+b\log(c(d(e+fx)^m)^n))^3}\,dx = \text{Subst}\left(\int \frac{1}{(a+b\log(cd^n(e+fx)^{mn}))^3}\,dx, cd^n(e+fx)^{mn}, c(d(e+fx)$$

$$= \text{Subst}\left(\frac{\text{Subst}\left(\int \frac{1}{(a+b\log(cd^nx^{mn}))^3}\,dx, x, e+fx\right)}{f}, cd^n(e+fx)^{mn}, c(d(e$$

$$= -\frac{e+fx}{2bfmn(a+b\log(c(d(e+fx)^m)^n))^2} + \text{Subst}\left(\frac{\text{Subst}\left(\int \frac{1}{(a+b\log(cd^nx}\right.}{2bf}$$

$$= -\frac{e+fx}{2bfmn(a+b\log(c(d(e+fx)^m)^n))^2} - \frac{e+fx}{2b^2fm^2n^2(a+b\log(c(d(e}$$

$$= -\frac{e+fx}{2bfmn(a+b\log(c(d(e+fx)^m)^n))^2} - \frac{e+fx}{2b^2fm^2n^2(a+b\log(c(d(e}$$

$$= \frac{e^{-\frac{a}{bmn}}(e+fx)(c(d(e+fx)^m)^n)^{-\frac{1}{mn}}\text{Ei}\left(\frac{a+b\log(c(d(e+fx)^m)^n)}{bmn}\right)}{2b^3fm^3n^3} - \frac{}{2bfmn}$$

Mathematica [A]
time = 0.13, size = 189, normalized size = 1.12

$$-\frac{e^{-\frac{a}{bmn}}(e+fx)(c(d(e+fx)^m)^n)^{-\frac{1}{mn}}\left(-\text{Ei}\left(\frac{a+b\log(c(d(e+fx)^m)^n)}{bmn}\right)(a+b\log(c(d(e+fx)^m)^n))^2+be^{\frac{a}{bmn}}mn(c(d(e+fx)^m)^n)^{\frac{1}{mn}}(a+bmn+b\log(c(d(e+fx)^m)^n))\right)}{2b^3fm^3n^3(a+b\log(c(d(e+fx)^m)^n))^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^m)^n])^(-3),x]
```

```
[Out] -1/2*((e + f*x)*(-(ExpIntegralEi[(a + b*Log[c*(d*(e + f*x)^m)^n])/(b*m*n)]*
(a + b*Log[c*(d*(e + f*x)^m)^n])^2) + b*E^(a/(b*m*n))*m*n*(c*(d*(e + f*x)^m
)^n)^(1/(m*n))*(a + b*m*n + b*Log[c*(d*(e + f*x)^m)^n])))/(b^3*E^(a/(b*m*n)
)*f*m^3*n^3*(c*(d*(e + f*x)^m)^n)^(1/(m*n))*(a + b*Log[c*(d*(e + f*x)^m)^n]
)^2)
```

Maple [F]
time = 0.05, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(a+b\ln \left(c\left(d\left(fx+e\right)^{m}\right)^{n}\right)\right)^{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+b*ln(c*(d*(f*x+e)^m)^n))^3,x)
```

```
[Out] int(1/(a+b*ln(c*(d*(f*x+e)^m)^n))^3,x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(d*(f*x+e)^m)^n))^3,x, algorithm="maxima")
```

```
[Out] -1/2*(((f*m*n + f*n*log(d) + f*log(c))*b + a*f)*x + ((m*n + n*log(d) + log(
c))*b + a)*e + (b*f*x + b*e)*log(((f*x + e)^m)^n))/(b^4*f*m^2*n^2*log(((f*x
 + e)^m)^n)^2 + a^2*b^2*f*m^2*n^2 + 2*(f*m^2*n^3*log(d) + f*m^2*n^2*log(c))
*a*b^3 + (f*m^2*n^4*log(d)^2 + 2*f*m^2*n^3*log(c)*log(d) + f*m^2*n^2*log(c)
^2)*b^4 + 2*(a*b^3*f*m^2*n^2 + (f*m^2*n^3*log(d) + f*m^2*n^2*log(c))*b^4)*l
og(((f*x + e)^m)^n)) + integrate(1/2/(b^3*m^2*n^2*log(((f*x + e)^m)^n) + a*
b^2*m^2*n^2 + (m^2*n^3*log(d) + m^2*n^2*log(c))*b^3), x)
```

Fricas [B] Leaf count of result is larger than twice the leaf count of optimal. 455 vs. 2(170) = 340.
time = 0.37, size = 455, normalized size = 2.69

$$-\frac{\left(\left(\left(b^{2} f m^{2} n^{2}+a b f m n\right) x+\left(b^{2} m^{2} n^{2}+a b m n\right) e+\left(b^{2} f m^{2} n^{2} x+b^{2} m^{2} n^{2} e\right) \log \left(f x+e\right)+\left(b^{2} f m n x+b^{2} m n e\right) \log \left(c\right)+\left(b^{2} f m n^{2} x+b^{2} m n^{2} e\right) \log \left(d\right)\right) e^{\left(\frac{b n \log\left(d\right)+b \log\left(c\right)+a}{b m n}\right)}-\left(b^{2} m^{2} n^{2} \log \left(f x+e\right)^{2}+b^{2} n^{2} \log \left(d\right)^{2}+b^{2} \log \left(c\right)^{2}+2 \, a b \log \left(c\right)+a^{2}+2 \, \left(b^{2} m n^{2} \log \left(d\right)+b^{2} m n \log \left(c\right)+a b m n\right) \log \left(f x+e\right)+2 \, \left(b^{2} n \log \left(c\right)+a b n\right) \log \left(d\right)\right) \operatorname{log\_integral}\left(\left(f x+e\right) e^{\left(\frac{b n \log\left(d\right)+b \log\left(c\right)+a}{b m n}\right)}\right)\right) e^{\left(-\frac{b n \log\left(d\right)+b \log\left(c\right)+a}{b m n}\right)}}{2 \, \left(b^{5} f m^{5} n^{5} \log \left(f x+e\right)^{2}+b^{5} f m^{3} n^{5} \log \left(d\right)^{2}+b^{5} f m^{3} n^{3} \log \left(c\right)^{2}+2 \, a b^{4} f m^{3} n^{3} \log \left(c\right)+a^{2} b^{3} f m^{3} n^{3}+2 \, \left(b^{5} f m^{4} n^{5} \log \left(d\right)+b^{5} f m^{4} n^{4} \log \left(c\right)+a b^{4} f m^{4} n^{4}\right) \log \left(f x+e\right)+2 \, \left(b^{5} f m^{3} n^{4} \log \left(c\right)+a b^{4} f m^{3} n^{4}\right) \log \left(d\right)\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(d*(f*x+e)^m)^n))^3,x, algorithm="fricas")
```

```
[Out] -1/2*(((b^2*f*m^2*n^2 + a*b*f*m*n)*x + (b^2*m^2*n^2 + a*b*m*n)*e + (b^2*f*m
^2*n^2*x + b^2*m^2*n^2*e)*log(f*x + e) + (b^2*f*m*n*x + b^2*m*n*e)*log(c) +
 (b^2*f*m*n^2*x + b^2*m*n^2*e)*log(d))*e^((b*n*log(d) + b*log(c) + a)/(b*m*
n)) - (b^2*m^2*n^2*log(f*x + e)^2 + b^2*n^2*log(d)^2 + b^2*log(c)^2 + 2*a*b
```

```
*log(c) + a^2 + 2*(b^2*m*n^2*log(d) + b^2*m*n*log(c) + a*b*m*n)*log(f*x + e
) + 2*(b^2*n*log(c) + a*b*n)*log(d))*log_integral((f*x + e)*e^((b*n*log(d)
+ b*log(c) + a)/(b*m*n))))*e^(-(b*n*log(d) + b*log(c) + a)/(b*m*n))/(b^5*f*
m^5*n^5*log(f*x + e)^2 + b^5*f*m^3*n^5*log(d)^2 + b^5*f*m^3*n^3*log(c)^2 +
2*a*b^4*f*m^3*n^3*log(c) + a^2*b^3*f*m^3*n^3 + 2*(b^5*f*m^4*n^5*log(d) + b^
5*f*m^4*n^4*log(c) + a*b^4*f*m^4*n^4)*log(f*x + e) + 2*(b^5*f*m^3*n^4*log(c
) + a*b^4*f*m^3*n^4)*log(d))
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(a+b\log\left(c\left(d\left(e+fx\right)^m\right)^n\right)\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*ln(c*(d*(f*x+e)**m)**n))**3,x)
```

```
[Out] Integral((a + b*log(c*(d*(e + f*x)**m)**n))**(-3), x)
```

Giac [B] Leaf count of result is larger than twice the leaf count of optimal. 3481 vs. $2(170) = 340$.
time = 6.21, size = 3481, normalized size = 20.60

Too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(d*(f*x+e)^m)^n))^3,x, algorithm="giac")
```

```
[Out] -1/2*(f*x + e)*b^2*m^2*n^2*log(f*x + e)/(b^5*f*m^5*n^5*log(f*x + e)^2 + 2*b
^5*f*m^4*n^5*log(f*x + e)*log(d) + 2*b^5*f*m^4*n^4*log(f*x + e)*log(c) + b^
5*f*m^3*n^5*log(d)^2 + 2*a*b^4*f*m^4*n^4*log(f*x + e) + 2*b^5*f*m^3*n^4*log
(c)*log(d) + b^5*f*m^3*n^3*log(c)^2 + 2*a*b^4*f*m^3*n^4*log(d) + 2*a*b^4*f*
m^3*n^3*log(c) + a^2*b^3*f*m^3*n^3) + 1/2*b^2*m^2*n^2*Ei(log(d)/m + log(c)/
(m*n) + a/(b*m*n) + log(f*x + e))*e^(-a/(b*m*n))*log(f*x + e)^2/((b^5*f*m^5
*n^5*log(f*x + e)^2 + 2*b^5*f*m^4*n^5*log(f*x + e)*log(d) + 2*b^5*f*m^4*n^4
*log(f*x + e)*log(c) + b^5*f*m^3*n^5*log(d)^2 + 2*a*b^4*f*m^4*n^4*log(f*x +
 e) + 2*b^5*f*m^3*n^4*log(c)*log(d) + b^5*f*m^3*n^3*log(c)^2 + 2*a*b^4*f*m^
3*n^4*log(d) + 2*a*b^4*f*m^3*n^3*log(c) + a^2*b^3*f*m^3*n^3)*c^(1/(m*n))*d^
(1/m)) - 1/2*(f*x + e)*b^2*m^2*n^2/(b^5*f*m^5*n^5*log(f*x + e)^2 + 2*b^5*f*
m^4*n^5*log(f*x + e)*log(d) + 2*b^5*f*m^4*n^4*log(f*x + e)*log(c) + b^5*f*m
^3*n^5*log(d)^2 + 2*a*b^4*f*m^4*n^4*log(f*x + e) + 2*b^5*f*m^3*n^4*log(c)*l
og(d) + b^5*f*m^3*n^3*log(c)^2 + 2*a*b^4*f*m^3*n^4*log(d) + 2*a*b^4*f*m^3*n
^3*log(c) + a^2*b^3*f*m^3*n^3) - 1/2*(f*x + e)*b^2*m*n^2*log(d)/(b^5*f*m^5*
n^5*log(f*x + e)^2 + 2*b^5*f*m^4*n^5*log(f*x + e)*log(d) + 2*b^5*f*m^4*n^4*
log(f*x + e)*log(c) + b^5*f*m^3*n^5*log(d)^2 + 2*a*b^4*f*m^4*n^4*log(f*x +
e) + 2*b^5*f*m^3*n^4*log(c)*log(d) + b^5*f*m^3*n^3*log(c)^2 + 2*a*b^4*f*m^3
```

*n^4*log(d) + 2*a*b^4*f*m^3*n^3*log(c) + a^2*b^3*f*m^3*n^3) + b^2*m*n^2*Ei(
log(d)/m + log(c)/(m*n) + a/(b*m*n) + log(f*x + e))*e^(-a/(b*m*n))*log(f*x
+ e)*log(d)/((b^5*f*m^5*n^5*log(f*x + e)^2 + 2*b^5*f*m^4*n^5*log(f*x + e)*l
og(d) + 2*b^5*f*m^4*n^4*log(f*x + e)*log(c) + b^5*f*m^3*n^5*log(d)^2 + 2*a*
b^4*f*m^4*n^4*log(f*x + e) + 2*b^5*f*m^3*n^4*log(c)*log(d) + b^5*f*m^3*n^3*
log(c)^2 + 2*a*b^4*f*m^3*n^4*log(d) + 2*a*b^4*f*m^3*n^3*log(c) + a^2*b^3*f*
m^3*n^3)*c^(1/(m*n))*d^(1/m)) - 1/2*(f*x + e)*b^2*m*n*log(c)/(b^5*f*m^5*n^5
*log(f*x + e)^2 + 2*b^5*f*m^4*n^5*log(f*x + e)*log(d) + 2*b^5*f*m^4*n^4*log
(f*x + e)*log(c) + b^5*f*m^3*n^5*log(d)^2 + 2*a*b^4*f*m^4*n^4*log(f*x + e)
+ 2*b^5*f*m^3*n^4*log(c)*log(d) + b^5*f*m^3*n^3*log(c)^2 + 2*a*b^4*f*m^3*n^
4*log(d) + 2*a*b^4*f*m^3*n^3*log(c) + a^2*b^3*f*m^3*n^3) + b^2*m*n*Ei(log(d
)/m + log(c)/(m*n) + a/(b*m*n) + log(f*x + e))*e^(-a/(b*m*n))*log(f*x + e)*
log(c)/((b^5*f*m^5*n^5*log(f*x + e)^2 + 2*b^5*f*m^4*n^5*log(f*x + e)*log(d)
 + 2*b^5*f*m^4*n^4*log(f*x + e)*log(c) + b^5*f*m^3*n^5*log(d)^2 + 2*a*b^4*f
*m^4*n^4*log(f*x + e) + 2*b^5*f*m^3*n^4*log(c)*log(d) + b^5*f*m^3*n^3*log(c
)^2 + 2*a*b^4*f*m^3*n^4*log(d) + 2*a*b^4*f*m^3*n^3*log(c) + a^2*b^3*f*m^3*n
^3)*c^(1/(m*n))*d^(1/m)) + 1/2*b^2*n^2*Ei(log(d)/m + log(c)/(m*n) + a/(b*m*
n) + log(f*x + e))*e^(-a/(b*m*n))*log(d)^2/((b^5*f*m^5*n^5*log(f*x + e)^2 +
 2*b^5*f*m^4*n^5*log(f*x + e)*log(d) + 2*b^5*f*m^4*n^4*log(f*x + e)*log(c)
+ b^5*f*m^3*n^5*log(d)^2 + 2*a*b^4*f*m^4*n^4*log(f*x + e) + 2*b^5*f*m^3*n^4
*log(c)*log(d) + b^5*f*m^3*n^3*log(c)^2 + 2*a*b^4*f*m^3*n^4*log(d) + 2*a*b^
4*f*m^3*n^3*log(c) + a^2*b^3*f*m^3*n^3)*c^(1/(m*n))*d^(1/m)) - 1/2*(f*x + e
)*a*b*m*n/(b^5*f*m^5*n^5*log(f*x + e)^2 + 2*b^5*f*m^4*n^5*log(f*x + e)*log(
d) + 2*b^5*f*m^4*n^4*log(f*x + e)*log(c) + b^5*f*m^3*n^5*log(d)^2 + 2*a*b^4
*f*m^4*n^4*log(f*x + e) + 2*b^5*f*m^3*n^4*log(c)*log(d) + b^5*f*m^3*n^3*log
(c)^2 + 2*a*b^4*f*m^3*n^4*log(d) + 2*a*b^4*f*m^3*n^3*log(c) + a^2*b^3*f*m^3
*n^3) + a*b*m*n*Ei(log(d)/m + log(c)/(m*n) + a/(b*m*n) + log(f*x + e))*e^(-
a/(b*m*n))*log(f*x + e)/((b^5*f*m^5*n^5*log(f*x + e)^2 + 2*b^5*f*m^4*n^5*lo
g(f*x + e)*log(d) + 2*b^5*f*m^4*n^4*log(f*x + e)*log(c) + b^5*f*m^3*n^5*log
(d)^2 + 2*a*b^4*f*m^4*n^4*log(f*x + e) + 2*b^5*f*m^3*n^4*log(c)*log(d) + b^
5*f*m^3*n^3*log(c)^2 + 2*a*b^4*f*m^3*n^4*log(d) + 2*a*b^4*f*m^3*n^3*log(c)
+ a^2*b^3*f*m^3*n^3)*c^(1/(m*n))*d^(1/m)) + b^2*n*Ei(log(d)/m + log(c)/(m*n
) + a/(b*m*n) + log(f*x + e))*e^(-a/(b*m*n))*log(c)*log(d)/((b^5*f*m^5*n^5*
log(f*x + e)^2 + 2*b^5*f*m^4*n^5*log(f*x + e)*log(d) + 2*b^5*f*m^4*n^4*log(
f*x + e)*log(c) + b^5*f*m^3*n^5*log(d)^2 + 2*a*b^4*f*m^4*n^4*log(f*x + e) +
 2*b^5*f*m^3*n^4*log(c)*log(d) + b^5*f*m^3*n^3*log(c)^2 + 2*a*b^4*f*m^3*n^4
*log(d) + 2*a*b^4*f*m^3*n^3*log(c) + a^2*b^3*f*m^3*n^3)*c^(1/(m*n))*d^(1/m)
) + 1/2*b^2*Ei(log(d)/m + log(c)/(m*n) + a/(b*m*n) + log(f*x + e))*e^(-a/(b
*m*n))*log(c)^2/((b^5*f*m^5*n^5*log(f*x + e)^2 + 2*b^5*f*m^4*n^5*log(f*x +
e)*log(d) + 2*b^5*f*m^4*n^4*log(f*x + e)*log(c) + b^5*f*m^3*n^5*log(d)^2 +
2*a*b^4*f*m^4*n^4*log(f*x + e) + 2*b^5*f*m^3*n^4*log(c)*log(d) + b^5*f*m^3*
n^3*log(c)^2 + 2*a*b^4*f*m^3*n^4*log(d) + 2*a*b^4*f*m^3*n^3*log(c) + a^2*b^
3*f*m^3*n^3)*c^(1/(m*n))*d^(1/m)) + a*b*n*Ei(log(d)/m + log(c)/(m*n) + a/(b
*m*n) + log(f*x + e))*e^(-a/(b*m*n))*log(d)/((b^5*f*m^5*n^5*log(f*x + e)^2
+ 2*b^5*f*m^4*n^5*log(f*x + e)*log(d) + 2*b^5*f*m^4*n^4*log(f*x + e)*log(c)

```
 + b^5*f*m^3*n^5*log(d)^2 + 2*a*b^4*f*m^4*n^4*log(f*x + e) + 2*b^5*f*m^3*n^
4*log(c)*log(d) + b^5*f*m^3*n^3*log(c)^2 + 2*a*b^4*f*m^3*n^4*log(d) + 2*a*b
^4*f*m^3*n^3*log(c) + a^2*b^3*f*m^3*n^3)*c^(1/(m*n))*d^(1/m)) + a*b*Ei(log(
d)/m + log(c)/(m*n) + a/(b*m*n) + log(f*x + e))...
```

Mupad [F]

time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{1}{\left(a+b\ln\left(c\left(d\left(e+f\,x\right)^m\right)^n\right)\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a + b*log(c*(d*(e + f*x)^m)^n))^3,x)
[Out] int(1/(a + b*log(c*(d*(e + f*x)^m)^n))^3, x)
```

3.411 $\int (a+b\log(c(d(e+fx)^m)^n))^{5/2}\,dx$

Optimal. Leaf size=219

$$-\frac{15b^{5/2}e^{-\frac{a}{bmn}}m^{5/2}n^{5/2}\sqrt{\pi}\,(e+fx)\,(c(d(e+fx)^m)^n)^{-\frac{1}{mn}}\operatorname{erfi}\left(\frac{\sqrt{a+b\log(c(d(e+fx)^m)^n)}}{\sqrt{b}\,\sqrt{m}\,\sqrt{n}}\right)}{8f}+\frac{15b^2m^2n^2}{}$$

```
[Out] -5/2*b*m*n*(f*x+e)*(a+b*ln(c*(d*(f*x+e)^m)^n))^(3/2)/f+(f*x+e)*(a+b*ln(c*(d
*(f*x+e)^m)^n))^(5/2)/f-15/8*b^(5/2)*m^(5/2)*n^(5/2)*(f*x+e)*erfi((a+b*ln(c
*(d*(f*x+e)^m)^n))^(1/2)/b^(1/2)/m^(1/2)/n^(1/2))*Pi^(1/2)/exp(a/b/m/n)/f/(
(c*(d*(f*x+e)^m)^n)^(1/m/n))+15/4*b^2*m^2*n^2*(f*x+e)*(a+b*ln(c*(d*(f*x+e)^
m)^n))^(1/2)/f
```

Rubi [A]

time = 0.26, antiderivative size = 219, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.273$, Rules used = {2436, 2333, 2337, 2211, 2235, 2495}

$$-\frac{15\sqrt{\pi}\,b^{5/2}m^{5/2}n^{5/2}(e+fx)e^{-\frac{a}{bmn}}(c(d(e+fx)^m)^n)^{-\frac{1}{mn}}\operatorname{Erfi}\left(\frac{\sqrt{a+b\log(c(d(e+fx)^m)^n)}}{\sqrt{b}\,\sqrt{m}\,\sqrt{n}}\right)}{8f}+\frac{15b^2m^2n^2(e+fx)\sqrt{a+b\log(c(d(e+fx)^m)^n)}}{4f}+\frac{(e+fx)(a+b\log(c(d(e+fx)^m)^n))^{5/2}}{f}-\frac{5bmn(e+fx)(a+b\log(c(d(e+fx)^m)^n))^{3/2}}{2f}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^m)^n])^(5/2),x]
```

```
[Out] (-15*b^(5/2)*m^(5/2)*n^(5/2)*Sqrt[Pi]*(e + f*x)*Erfi[Sqrt[a + b*Log[c*(d*(e
 + f*x)^m)^n]]/(Sqrt[b]*Sqrt[m]*Sqrt[n])])/(8*E^(a/(b*m*n))*f*(c*(d*(e + f*
x)^m)^n)^(1/(m*n))) + (15*b^2*m^2*n^2*(e + f*x)*Sqrt[a + b*Log[c*(d*(e + f*
x)^m)^n]])/(4*f) - (5*b*m*n*(e + f*x)*(a + b*Log[c*(d*(e + f*x)^m)^n])^(3/2
))/(2*f) + ((e + f*x)*(a + b*Log[c*(d*(e + f*x)^m)^n])^(5/2))/f
```

Rule 2211

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - c*(f/d)) + f*g*(x^2/d)), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !TrueQ[$UseGamma]
```

Rule 2235

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[F^a*Sqrt
[Pi]*(Erfi[(c + d*x)*Rt[b*Log[F], 2]]/(2*d*Rt[b*Log[F], 2])), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2333

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2337

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2436

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2495

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int (a+b\log(c(d(e+fx)^m)^n))^{5/2}\,dx = \text{Subst}\Big(\int (a+b\log(cd^n(e+fx)^{mn}))^{5/2}\,dx, cd^n(e+fx)^{mn}, c(d(e+$$

$$= \text{Subst}\left(\frac{\text{Subst}\left(\int (a+b\log(cd^n x^{mn}))^{5/2}\,dx, x, e+fx\right)}{f}, cd^n(e+fx\right.$$

$$= \frac{(e+fx)(a+b\log(c(d(e+fx)^m)^n))^{5/2}}{f} - \text{Subst}\left(\frac{(5bmn)\text{Subst}\left(\int\right.}{}\right.$$

$$= -\frac{5bmn(e+fx)(a+b\log(c(d(e+fx)^m)^n))^{3/2}}{2f} + \frac{(e+fx)(a+b\,\mathrm{l}}{}$$

$$= \frac{15b^2m^2n^2(e+fx)\sqrt{a+b\log(c(d(e+fx)^m)^n)}}{4f} - \frac{5bmn(e+fx)(}{}$$

$$= \frac{15b^2m^2n^2(e+fx)\sqrt{a+b\log(c(d(e+fx)^m)^n)}}{4f} - \frac{5bmn(e+fx)(}{}$$

$$= \frac{15b^2m^2n^2(e+fx)\sqrt{a+b\log(c(d(e+fx)^m)^n)}}{4f} - \frac{5bmn(e+fx)(}{}$$

$$= -\frac{15b^{5/2}e^{-\frac{a}{bmn}}m^{5/2}n^{5/2}\sqrt{\pi}(e+fx)(c(d(e+fx)^m)^n)^{-\frac{1}{mn}}\operatorname{erfi}\left(\frac{\sqrt{a}}{}\right.}{8f}$$

Mathematica [A]
time = 0.22, size = 190, normalized size = 0.87

$$\frac{(e+fx)\left(8(a+b\log(c(d(e+fx)^m)^n))^{5/2} - 5bmn\left(3b^{3/2}e^{-\frac{a}{bmn}}m^{3/2}n^{3/2}\sqrt{\pi}(c(d(e+fx)^m)^n)^{-\frac{1}{mn}}\operatorname{erfi}\left(\frac{\sqrt{a+b\log(c(d(e+fx)^m)^n)}}{\sqrt{b}\sqrt{m}\sqrt{n}}\right) + 2\sqrt{a+b\log(c(d(e+fx)^m)^n)}(2a-3bmn+2b\log(c(d(e+fx)^m)^n))\right)\right)}{8f}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^m)^n])^(5/2),x]
```

```
[Out] ((e + f*x)*(8*(a + b*Log[c*(d*(e + f*x)^m)^n])^(5/2) - 5*b*m*n*((3*b^(3/2)*
m^(3/2)*n^(3/2)*Sqrt[Pi]*Erfi[Sqrt[a + b*Log[c*(d*(e + f*x)^m)^n]]/(Sqrt[b]
*Sqrt[m]*Sqrt[n])])/(E^(a/(b*m*n))*(c*(d*(e + f*x)^m)^n)^(1/(m*n))) + 2*Sqr
```

```
t[a + b*Log[c*(d*(e + f*x)^m)^n]]*(2*a - 3*b*m*n + 2*b*Log[c*(d*(e + f*x)^m
)^n]))))/(8*f)
```

Maple [F]
time = 0.06, size = 0, normalized size = 0.00

$$\int \left(a+b\ln \left(c\left(d\left(fx+e\right)^{m}\right)^{n}\right)\right)^{\frac{5}{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(d*(f*x+e)^m)^n))^(5/2),x)
[Out] int((a+b*ln(c*(d*(f*x+e)^m)^n))^(5/2),x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^m)^n))^(5/2),x, algorithm="maxima")
[Out] integrate((b*log(((f*x + e)^m*d)^n*c) + a)^(5/2), x)
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^m)^n))^(5/2),x, algorithm="fricas")
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: SystemError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**m)**n))**(5/2),x)
[Out] Exception raised: SystemError >> excessive stack use: stack is 4369 deep
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^m)^n))^(5/2),x, algorithm="giac")
[Out] integrate((b*log(((f*x + e)^m*d)^n*c) + a)^(5/2), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int (a + b\ln(c(d(e + f x)^m)^n))^{5/2} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d*(e + f*x)^m)^n))^(5/2),x)
[Out] int((a + b*log(c*(d*(e + f*x)^m)^n))^(5/2), x)
```

3.412 $\int (a+b\log(c(d(e+fx)^m)^n))^{3/2}\,dx$

Optimal. Leaf size=176

$$\frac{3b^{3/2}e^{-\frac{a}{bmn}}m^{3/2}n^{3/2}\sqrt{\pi}\,(e+fx)\,(c(d(e+fx)^m)^n)^{-\frac{1}{mn}}\operatorname{erfi}\left(\frac{\sqrt{a+b\log(c(d(e+fx)^m)^n)}}{\sqrt{b}\sqrt{m}\sqrt{n}}\right)}{4f}-\frac{3bmn(e+fx)}{}$$

```
[Out] (f*x+e)*(a+b*ln(c*(d*(f*x+e)^m)^n))^(3/2)/f+3/4*b^(3/2)*m^(3/2)*n^(3/2)*(f*
x+e)*erfi((a+b*ln(c*(d*(f*x+e)^m)^n))^(1/2)/b^(1/2)/m^(1/2)/n^(1/2))*Pi^(1/
2)/exp(a/b/m/n)/f/((c*(d*(f*x+e)^m)^n)^(1/m/n))-3/2*b*m*n*(f*x+e)*(a+b*ln(c
*(d*(f*x+e)^m)^n))^(1/2)/f
```

Rubi [A]
time = 0.20, antiderivative size = 176, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.273$, Rules used = {2436, 2333, 2337, 2211, 2235, 2495}

$$\frac{3\sqrt{\pi}\,b^{3/2}m^{3/2}n^{3/2}(e+fx)e^{-\frac{a}{bmn}}(c(d(e+fx)^m)^n)^{-\frac{1}{mn}}\operatorname{Erfi}\left(\frac{\sqrt{a+b\log(c(d(e+fx)^m)^n)}}{\sqrt{b}\sqrt{m}\sqrt{n}}\right)}{4f}+\frac{(e+fx)\,(a+b\log(c(d(e+fx)^m)^n))^{3/2}}{f}-\frac{3bmn(e+fx)\sqrt{a+b\log(c(d(e+fx)^m)^n)}}{2f}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^m)^n])^(3/2),x]
```

```
[Out] (3*b^(3/2)*m^(3/2)*n^(3/2)*Sqrt[Pi]*(e + f*x)*Erfi[Sqrt[a + b*Log[c*(d*(e +
 f*x)^m)^n]]/(Sqrt[b]*Sqrt[m]*Sqrt[n])])/(4*E^(a/(b*m*n))*f*(c*(d*(e + f*x)
^m)^n)^(1/(m*n))) - (3*b*m*n*(e + f*x)*Sqrt[a + b*Log[c*(d*(e + f*x)^m)^n]]
)/(2*f) + ((e + f*x)*(a + b*Log[c*(d*(e + f*x)^m)^n])^(3/2))/f
```

Rule 2211

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - c*(f/d)) + f*g*(x^2/d)), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !TrueQ[$UseGamma]
```

Rule 2235

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[F^a*Sqrt
[Pi]*(Erfi[(c + d*x)*Rt[b*Log[F], 2]]/(2*d*Rt[b*Log[F], 2])), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2333

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
```

```
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2337

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2436

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2495

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int (a+b\log(c(d(e+fx)^m)^n))^{3/2}\,dx = \text{Subst}\left(\int (a+b\log(cd^n(e+fx)^{mn}))^{3/2}\,dx, cd^n(e+fx)^{mn}, c(d(e+\right.$$

$$= \text{Subst}\left(\frac{\text{Subst}\left(\int (a+b\log(cd^nx^{mn}))^{3/2}\,dx, x, e+fx\right)}{f}, cd^n(e+fx)^{\cdot}\right.$$

$$= \frac{(e+fx)(a+b\log(c(d(e+fx)^m)^n))^{3/2}}{f} - \text{Subst}\left(\frac{(3bmn)\text{Subst}\left(\int\right.}{}\right.$$

$$= -\frac{3bmn(e+fx)\sqrt{a+b\log(c(d(e+fx)^m)^n)}}{2f} + \frac{(e+fx)(a+b\log}{}$$

$$= -\frac{3bmn(e+fx)\sqrt{a+b\log(c(d(e+fx)^m)^n)}}{2f} + \frac{(e+fx)(a+b\log}{}$$

$$= -\frac{3bmn(e+fx)\sqrt{a+b\log(c(d(e+fx)^m)^n)}}{2f} + \frac{(e+fx)(a+b\log}{}$$

$$= \frac{3b^{3/2}e^{-\frac{a}{bmn}}m^{3/2}n^{3/2}\sqrt{\pi}(e+fx)(c(d(e+fx)^m)^n)^{-\frac{1}{mn}}\text{erfi}\left(\frac{\sqrt{a+b}}{}\right.}{4f}$$

Mathematica [A]
time = 0.05, size = 160, normalized size = 0.91

$$\frac{(e+fx)\left(3b^{3/2}e^{-\frac{a}{bmn}}m^{3/2}n^{3/2}\sqrt{\pi}(c(d(e+fx)^m)^n)^{-\frac{1}{mn}}\text{erfi}\left(\frac{\sqrt{a+b\log(c(d(e+fx)^m)^n)}}{\sqrt{b}\sqrt{m}\sqrt{n}}\right)+2\sqrt{a+b\log(c(d(e+fx)^m)^n)}(2a-3bmn+2b\log(c(d(e+fx)^m)^n))\right)}{4f}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^m)^n])^(3/2),x]
```

```
[Out] ((e + f*x)*((3*b^(3/2)*m^(3/2)*n^(3/2)*Sqrt[Pi]*Erfi[Sqrt[a + b*Log[c*(d*(e
 + f*x)^m)^n]]/(Sqrt[b]*Sqrt[m]*Sqrt[n])])/(E^(a/(b*m*n))*(c*(d*(e + f*x)^m
)^n)^(1/(m*n))) + 2*Sqrt[a + b*Log[c*(d*(e + f*x)^m)^n]]*(2*a - 3*b*m*n + 2
*b*Log[c*(d*(e + f*x)^m)^n])))/(4*f)
```

Maple [F]
time = 0.04, size = 0, normalized size = 0.00

$$\int (a+b\ln(c(d(fx+e)^m)^n))^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(d*(f*x+e)^m)^n))^(3/2),x)
```

```
[Out] int((a+b*ln(c*(d*(f*x+e)^m)^n))^(3/2),x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^m)^n))^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((b*log(((f*x + e)^m*d)^n*c) + a)^(3/2), x)
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^m)^n))^(3/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int (a + b\log (c(d(e + fx)^m)^n))^{\frac{3}{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**m)**n))**(3/2),x)
```

```
[Out] Integral((a + b*log(c*(d*(e + f*x)**m)**n))**(3/2), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^m)^n))^(3/2),x, algorithm="giac")
```

```
[Out] integrate((b*log(((f*x + e)^m*d)^n*c) + a)^(3/2), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int \left(a+b\ln \left(c\left(d\left(e+f\,x\right)^m\right)^n\right)\right)^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d*(e + f*x)^m)^n))^(3/2),x)
[Out] int((a + b*log(c*(d*(e + f*x)^m)^n))^(3/2), x)
```

3.413 $\int \sqrt{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}\,dx$

Optimal. Leaf size=139

$$-\frac{\sqrt{b}\,e^{-\frac{a}{bmn}}\sqrt{m}\,\sqrt{n}\,\sqrt{\pi}\,(e+fx)\left(c(d(e+fx)^m)^n\right)^{-\frac{1}{mn}}\operatorname{erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}}{\sqrt{b}\,\sqrt{m}\,\sqrt{n}}\right)}{2f}+\frac{(e+fx)\sqrt{\cdots}}{\cdots}$$

```
[Out] -1/2*(f*x+e)*erfi((a+b*ln(c*(d*(f*x+e)^m)^n))^(1/2)/b^(1/2)/m^(1/2)/n^(1/2)
)*b^(1/2)*m^(1/2)*n^(1/2)*Pi^(1/2)/exp(a/b/m/n)/f/((c*(d*(f*x+e)^m)^n)^(1/m
/n))+(f*x+e)*(a+b*ln(c*(d*(f*x+e)^m)^n))^(1/2)/f
```

Rubi [A]

time = 0.16, antiderivative size = 139, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.273$, Rules used = {2436, 2333, 2337, 2211, 2235, 2495}

$$\frac{(e+fx)\sqrt{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}}{f}-\frac{\sqrt{\pi}\,\sqrt{b}\,\sqrt{m}\,\sqrt{n}\,(e+fx)e^{-\frac{a}{bmn}}\left(c(d(e+fx)^m)^n\right)^{-\frac{1}{mn}}\operatorname{Erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}}{\sqrt{b}\,\sqrt{m}\,\sqrt{n}}\right)}{2f}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[a + b*Log[c*(d*(e + f*x)^m)^n]],x]
```

```
[Out] -1/2*(Sqrt[b]*Sqrt[m]*Sqrt[n]*Sqrt[Pi]*(e + f*x)*Erfi[Sqrt[a + b*Log[c*(d*(
e + f*x)^m)^n]]/(Sqrt[b]*Sqrt[m]*Sqrt[n])])/(E^(a/(b*m*n))*f*(c*(d*(e + f*x
)^m)^n)^(1/(m*n))) + ((e + f*x)*Sqrt[a + b*Log[c*(d*(e + f*x)^m)^n]])/f
```

Rule 2211

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - c*(f/d)) + f*g*(x^2/d)), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !TrueQ[$UseGamma]
```

Rule 2235

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[F^a*Sqrt
[Pi]*(Erfi[(c + d*x)*Rt[b*Log[F], 2]]/(2*d*Rt[b*Log[F], 2])), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2333

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2337

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2436

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2495

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \sqrt{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}\,dx = \text{Subst}\left(\int \sqrt{a+b\log\left(cd^n(e+fx)^{mn}\right)}\,dx, cd^n(e+fx)^{mn}, c(d(e+fx$$

$$= \text{Subst}\left(\frac{\text{Subst}\left(\int \sqrt{a+b\log\left(cd^nx^{mn}\right)}\,dx, x, e+fx\right)}{f}, cd^n(e+fx)^{mn},\right.$$

$$= \frac{(e+fx)\sqrt{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}}{f} - \text{Subst}\left(\frac{(bmn)\text{Subst}\left(\int \frac{}{\sqrt{a}}\right.}{}\right.$$

$$= \frac{(e+fx)\sqrt{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}}{f} - \text{Subst}\left(\frac{\left(b(e+fx)\left(cd^n(e+\right.\right.}{}\right.$$

$$= \frac{(e+fx)\sqrt{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}}{f} - \text{Subst}\left(\frac{\left(\left(e+fx\right)\left(cd^n(e+\right.\right.}{}\right.$$

$$= -\frac{\sqrt{b}\,e^{-\frac{a}{bmn}}\sqrt{m}\,\sqrt{n}\,\sqrt{\pi}\,(e+fx)\left(c\left(d(e+fx)^m\right)^n\right)^{-\frac{1}{mn}}\text{erfi}\left(\frac{\sqrt{a+b}}{}\right.}{2f}$$

Mathematica [A]
time = 0.04, size = 134, normalized size = 0.96

$$\frac{(e+fx)\left(-\sqrt{b}\,e^{-\frac{a}{bmn}}\sqrt{m}\,\sqrt{n}\,\sqrt{\pi}\,(c(d(e+fx)^m)^n)^{-\frac{1}{mn}}\operatorname{erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}}{\sqrt{b}\,\sqrt{m}\,\sqrt{n}}\right)+2\sqrt{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}\right)}{2f}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[a + b*Log[c*(d*(e + f*x)^m)^n]],x]
```

```
[Out] ((e + f*x)*(-((Sqrt[b]*Sqrt[m]*Sqrt[n]*Sqrt[Pi]*Erfi[Sqrt[a + b*Log[c*(d*(e
 + f*x)^m)^n]]/(Sqrt[b]*Sqrt[m]*Sqrt[n])]])/(E^(a/(b*m*n))*(c*(d*(e + f*x)^m
)^n)^(1/(m*n)))) + 2*Sqrt[a + b*Log[c*(d*(e + f*x)^m)^n]]))/(2*f)
```

Maple [F]
time = 0.04, size = 0, normalized size = 0.00

$$\int\sqrt{a+b\ln\left(c\left(d\left(fx+e\right)^{m}\right)^{n}\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(d*(f*x+e)^m)^n))^(1/2),x)
```

```
[Out] int((a+b*ln(c*(d*(f*x+e)^m)^n))^(1/2),x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^m)^n))^(1/2),x, algorithm="maxima")
```

```
[Out] integrate(sqrt(b*log(((f*x + e)^m*d)^n*c) + a), x)
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^m)^n))^(1/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt{a + b\log\left(c\left(d\left(e + fx\right)^{m}\right)^{n}\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**m)**n))**(1/2),x)
[Out] Integral(sqrt(a + b*log(c*(d*(e + f*x)**m)**n)), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^m)^n))^(1/2),x, algorithm="giac")
[Out] integrate(sqrt(b*log(((f*x + e)^m*d)^n*c) + a), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int \sqrt{a + b\,\ln\left(c\left(d\left(e + f\,x\right)^{m}\right)^{n}\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d*(e + f*x)^m)^n))^(1/2),x)
[Out] int((a + b*log(c*(d*(e + f*x)^m)^n))^(1/2), x)
```

3.414 $\int \frac{1}{\sqrt{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}}\,dx$

Optimal. Leaf size=104

$$\frac{e^{-\frac{a}{bmn}}\sqrt{\pi}\,(e+fx)\left(c\left(d(e+fx)^m\right)^n\right)^{-\frac{1}{mn}}\operatorname{erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}}{\sqrt{b}\sqrt{m}\sqrt{n}}\right)}{\sqrt{b}\,f\sqrt{m}\sqrt{n}}$$

```
[Out] (f*x+e)*erfi((a+b*ln(c*(d*(f*x+e)^m)^n))^(1/2)/b^(1/2)/m^(1/2)/n^(1/2))*Pi^
(1/2)/exp(a/b/m/n)/f/((c*(d*(f*x+e)^m)^n)^(1/m/n))/b^(1/2)/m^(1/2)/n^(1/2)
```

Rubi [A]
time = 0.14, antiderivative size = 104, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.227$, Rules used = {2436, 2337, 2211, 2235, 2495}

$$\frac{\sqrt{\pi}\,(e+fx)e^{-\frac{a}{bmn}}\left(c\left(d(e+fx)^m\right)^n\right)^{-\frac{1}{mn}}\operatorname{Erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}}{\sqrt{b}\sqrt{m}\sqrt{n}}\right)}{\sqrt{b}\,f\sqrt{m}\sqrt{n}}$$

Antiderivative was successfully verified.

```
[In] Int[1/Sqrt[a + b*Log[c*(d*(e + f*x)^m)^n]],x]
```

```
[Out] (Sqrt[Pi]*(e + f*x)*Erfi[Sqrt[a + b*Log[c*(d*(e + f*x)^m)^n]]/(Sqrt[b]*Sqrt
[m]*Sqrt[n])])/(Sqrt[b]*E^(a/(b*m*n))*f*Sqrt[m]*Sqrt[n]*(c*(d*(e + f*x)^m)^
n)^(1/(m*n)))
```

Rule 2211

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - c*(f/d)) + f*g*(x^2/d)), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !TrueQ[$UseGamma]
```

Rule 2235

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[F^a*Sqrt
[Pi]*(Erfi[(c + d*x)*Rt[b*Log[F], 2]]/(2*d*Rt[b*Log[F], 2])), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2337

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
```

```
{a, b, c, n, p}, x]
```

Rule 2436

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2495

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{1}{\sqrt{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}}\,dx = \text{Subst}\left(\int \frac{1}{\sqrt{a+b\log\left(cd^n(e+fx)^{mn}\right)}}\,dx, cd^n(e+fx)^{mn}, c(d(e+f$$

$$= \text{Subst}\left(\frac{\text{Subst}\left(\int \frac{1}{\sqrt{a+b\log\left(cd^nx^{mn}\right)}}\,dx, x, e+fx\right)}{f}, cd^n(e+fx)^m\right.$$

$$= \text{Subst}\left(\frac{\left((e+fx)\left(cd^n(e+fx)^{mn}\right)^{-\frac{1}{mn}}\right)\text{Subst}\left(\int \frac{e^{\frac{x}{mn}}}{\sqrt{a+bx}}\,dx, x, \log\right.}{fmn}\right.$$

$$= \text{Subst}\left(\frac{\left(2(e+fx)\left(cd^n(e+fx)^{mn}\right)^{-\frac{1}{mn}}\right)\text{Subst}\left(\int e^{-\frac{a}{bmn}+\frac{x^2}{bmn}}\,dx, x, \right.}{bfmn}\right.$$

$$= \frac{e^{-\frac{a}{bmn}}\sqrt{\pi}\,(e+fx)\left(c\left(d(e+fx)^m\right)^n\right)^{-\frac{1}{mn}}\text{erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+f\right.\right.}}{\sqrt{b}\sqrt{m}\sqrt{n}}\right.}{\sqrt{b}\,f\sqrt{m}\sqrt{n}}$$

Mathematica [A]

time = 0.02, size = 104, normalized size = 1.00

$$\frac{e^{-\frac{a}{bmn}}\sqrt{\pi}\,(e+fx)\,(c(d(e+fx)^m)^n)^{-\frac{1}{mn}}\operatorname{erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}}{\sqrt{b}\,\sqrt{m}\,\sqrt{n}}\right)}{\sqrt{b}\,f\sqrt{m}\,\sqrt{n}}$$

Antiderivative was successfully verified.

```
[In] Integrate[1/Sqrt[a + b*Log[c*(d*(e + f*x)^m)^n]],x]
```

```
[Out] (Sqrt[Pi]*(e + f*x)*Erfi[Sqrt[a + b*Log[c*(d*(e + f*x)^m)^n]]/(Sqrt[b]*Sqrt
[m]*Sqrt[n])])/(Sqrt[b]*E^(a/(b*m*n))*f*Sqrt[m]*Sqrt[n]*(c*(d*(e + f*x)^m)^
n)^(1/(m*n)))
```

Maple [F]
time = 0.03, size = 0, normalized size = 0.00

$$\int \frac{1}{\sqrt{a+b\ln\left(c\left(d\left(fx+e\right)^{m}\right)^{n}\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+b*ln(c*(d*(f*x+e)^m)^n))^(1/2),x)
```

```
[Out] int(1/(a+b*ln(c*(d*(f*x+e)^m)^n))^(1/2),x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(d*(f*x+e)^m)^n))^(1/2),x, algorithm="maxima")
```

```
[Out] integrate(1/sqrt(b*log(((f*x + e)^m*d)^n*c) + a), x)
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(d*(f*x+e)^m)^n))^(1/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\sqrt{a + b\log\left(c\left(d\left(e + fx\right)^{m}\right)^{n}\right)}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*ln(c*(d*(f*x+e)**m)**n))**(1/2),x)
[Out] Integral(1/sqrt(a + b*log(c*(d*(e + f*x)**m)**n)), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(d*(f*x+e)^m)^n))^(1/2),x, algorithm="giac")
[Out] integrate(1/sqrt(b*log(((f*x + e)^m*d)^n*c) + a), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{1}{\sqrt{a + b\,\ln\left(c\left(d\left(e + f\,x\right)^{m}\right)^{n}\right)}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a + b*log(c*(d*(e + f*x)^m)^n))^(1/2),x)
[Out] int(1/(a + b*log(c*(d*(e + f*x)^m)^n))^(1/2), x)
```

3.415 $\int \frac{1}{(a+b\log(c(d(e+fx)^m)^n))^{3/2}}\,dx$

Optimal. Leaf size=147

$$\frac{2e^{-\frac{a}{bmn}}\sqrt{\pi}\,(e+fx)\left(c(d(e+fx)^m)^n\right)^{-\frac{1}{mn}}\operatorname{erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}}{\sqrt{b}\sqrt{m}\sqrt{n}}\right)}{b^{3/2}fm^{3/2}n^{3/2}}-\frac{2(e+fx)}{bfmn\sqrt{a+b\log\left(c\left(d(e\right.\right.}}$$

```
[Out] 2*(f*x+e)*erfi((a+b*ln(c*(d*(f*x+e)^m)^n))^(1/2)/b^(1/2)/m^(1/2)/n^(1/2))*P
i^(1/2)/b^(3/2)/exp(a/b/m/n)/f/m^(3/2)/n^(3/2)/((c*(d*(f*x+e)^m)^n)^(1/m/n)
)-2*(f*x+e)/b/f/m/n/(a+b*ln(c*(d*(f*x+e)^m)^n))^(1/2)
```

Rubi [A]
time = 0.18, antiderivative size = 147, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.273$, Rules used = {2436, 2334, 2337, 2211, 2235, 2495}

$$\frac{2\sqrt{\pi}\,(e+fx)e^{-\frac{a}{bmn}}\left(c(d(e+fx)^m)^n\right)^{-\frac{1}{mn}}\operatorname{Erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}}{\sqrt{b}\sqrt{m}\sqrt{n}}\right)}{b^{3/2}fm^{3/2}n^{3/2}}-\frac{2(e+fx)}{bfmn\sqrt{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^m)^n])^(-3/2),x]
```

```
[Out] (2*Sqrt[Pi]*(e + f*x)*Erfi[Sqrt[a + b*Log[c*(d*(e + f*x)^m)^n]]/(Sqrt[b]*Sq
rt[m]*Sqrt[n])])/(b^(3/2)*E^(a/(b*m*n))*f*m^(3/2)*n^(3/2)*(c*(d*(e + f*x)^m
)^n)^(1/(m*n))) - (2*(e + f*x))/(b*f*m*n*Sqrt[a + b*Log[c*(d*(e + f*x)^m)^n
]])
```

Rule 2211

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - c*(f/d)) + f*g*(x^2/d)), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !TrueQ[$UseGamma]
```

Rule 2235

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[F^a*Sqrt
[Pi]*(Erfi[(c + d*x)*Rt[b*Log[F], 2]]/(2*d*Rt[b*Log[F], 2])), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2334

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Simp[x*((a + b
*Log[c*x^n])^(p + 1)/(b*n*(p + 1))), x] - Dist[1/(b*n*(p + 1)), Int[(a + b*
Log[c*x^n])^(p + 1), x], x] /; FreeQ[{a, b, c, n}, x] && LtQ[p, -1] && Inte
gerQ[2*p]
```

Rule 2337

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2436

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2495

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{1}{(a+b\log(c(d(e+fx)^m)^n))^{3/2}}\,dx = \text{Subst}\left(\int \frac{1}{(a+b\log(cd^n(e+fx)^{mn}))^{3/2}}\,dx, cd^n(e+fx)^{mn}, c(d(e\right.$$

$$= \text{Subst}\left(\frac{\text{Subst}\left(\int \frac{1}{(a+b\log(cd^nx^{mn}))^{3/2}}\,dx, x, e+fx\right)}{f}, cd^n(e+fx)^{mn}, c\right.$$

$$= -\frac{2(e+fx)}{bfmn\sqrt{a+b\log(c(d(e+fx)^m)^n)}} + \text{Subst}\left(\frac{2\text{Subst}\left(\int \frac{}{\sqrt{a+}}\right.}{}\right.$$

$$= -\frac{2(e+fx)}{bfmn\sqrt{a+b\log(c(d(e+fx)^m)^n)}} + \text{Subst}\left(\frac{\left(2(e+fx)(cd^n(e\right.}{}\right.$$

$$= -\frac{2(e+fx)}{bfmn\sqrt{a+b\log(c(d(e+fx)^m)^n)}} + \text{Subst}\left(\frac{\left(4(e+fx)(cd^n(e\right.}{}\right.$$

$$= \frac{2e^{-\frac{a}{bmn}}\sqrt{\pi}(e+fx)(c(d(e+fx)^m)^n)^{-\frac{1}{mn}}\,\text{erfi}\left(\frac{\sqrt{a+b\log(c(d(e}}{\sqrt{b}\sqrt{m}\sqrt{}}\right.}{b^{3/2}fm^{3/2}n^{3/2}}$$

Mathematica [A]
time = 0.16, size = 181, normalized size = 1.23

$$-\frac{2e^{-\frac{a}{bmn}}(e+fx)(c(d(e+fx)^m)^n)^{-\frac{1}{mn}}\left(e^{\frac{a}{bmn}}(c(d(e+fx)^m)^n)^{\frac{1}{mn}} - \Gamma\left(\frac{1}{2}, -\frac{a+b\log(c(d(e+fx)^m)^n)}{bmn}\right)\sqrt{-\frac{a+b\log(c(d(e+fx)^m)^n)}{bmn}}\right)}{bfmn\sqrt{a+b\log(c(d(e+fx)^m)^n)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^m)^n])^(-3/2),x]
```

```
[Out] (-2*(e + f*x)*(E^(a/(b*m*n))*(c*(d*(e + f*x)^m)^n)^(1/(m*n)) - Gamma[1/2, -
((a + b*Log[c*(d*(e + f*x)^m)^n])/(b*m*n))]*Sqrt[-((a + b*Log[c*(d*(e + f*x
)^m)^n])/(b*m*n))]))/(b*E^(a/(b*m*n))*f*m*n*(c*(d*(e + f*x)^m)^n)^(1/(m*n))
*Sqrt[a + b*Log[c*(d*(e + f*x)^m)^n]])
```

Maple [F]
time = 0.03, size = 0, normalized size = 0.00

$$\int \frac{1}{(a+b\ln(c(d(fx+e)^m)^n))^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+b*ln(c*(d*(f*x+e)^m)^n))^(3/2),x)
```

```
[Out] int(1/(a+b*ln(c*(d*(f*x+e)^m)^n))^(3/2),x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(d*(f*x+e)^m)^n))^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((b*log(((f*x + e)^m*d)^n*c) + a)^(-3/2), x)
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(d*(f*x+e)^m)^n))^(3/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(a + b \log \left(c \left(d \left(e + f x\right)^{m}\right)^{n}\right)\right)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*ln(c*(d*(f*x+e)**m)**n))**(3/2),x)
```

```
[Out] Integral((a + b*log(c*(d*(e + f*x)**m)**n))**(-3/2), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(d*(f*x+e)^m)^n))^(3/2),x, algorithm="giac")
```

```
[Out] integrate((b*log(((f*x + e)^m*d)^n*c) + a)^(-3/2), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{1}{\left(a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^m\right)}^n\right)\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a + b*log(c*(d*(e + f*x)^m)^n))^(3/2),x)
[Out] int(1/(a + b*log(c*(d*(e + f*x)^m)^n))^(3/2), x)
```

3.416 $\int \frac{1}{(a+b\log(c(d(e+fx)^m)^n))^{5/2}}\,dx$

Optimal. Leaf size=194

$$\frac{4e^{-\frac{a}{bmn}}\sqrt{\pi}\,(e+fx)\,(c(d(e+fx)^m)^n)^{-\frac{1}{mn}}\,\mathrm{erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}}{\sqrt{b}\,\sqrt{m}\,\sqrt{n}}\right)}{3b^{5/2}fm^{5/2}n^{5/2}}-\frac{2(e+fx)}{3bfmn\left(a+b\log\left(c\left(d(e+\right.\right.\right.}$$

[Out] -2/3*(f*x+e)/b/f/m/n/(a+b*ln(c*(d*(f*x+e)^m)^n))^(3/2)+4/3*(f*x+e)*erfi((a+b*ln(c*(d*(f*x+e)^m)^n))^(1/2)/b^(1/2)/m^(1/2)/n^(1/2))*Pi^(1/2)/b^(5/2)/exp(a/b/m/n)/f/m^(5/2)/n^(5/2)/((c*(d*(f*x+e)^m)^n)^(1/m/n))-4/3*(f*x+e)/b^2/f/m^2/n^2/(a+b*ln(c*(d*(f*x+e)^m)^n))^(1/2)

Rubi [A]
time = 0.23, antiderivative size = 194, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.273$, Rules used = {2436, 2334, 2337, 2211, 2235, 2495}

$$\frac{4\sqrt{\pi}\,(e+fx)e^{-\frac{a}{bmn}}(c(d(e+fx)^m)^n)^{-\frac{1}{mn}}\,\mathrm{Erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}}{\sqrt{b}\,\sqrt{m}\,\sqrt{n}}\right)}{3b^{5/2}fm^{5/2}n^{5/2}}-\frac{4(e+fx)}{3b^2fm^2n^2\sqrt{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}}-\frac{2(e+fx)}{3bfmn\left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)^{3/2}}$$

Antiderivative was successfully verified.

[In] Int[(a + b*Log[c*(d*(e + f*x)^m)^n])^(-5/2),x]

[Out] (4*Sqrt[Pi]*(e + f*x)*Erfi[Sqrt[a + b*Log[c*(d*(e + f*x)^m)^n]]/(Sqrt[b]*Sqrt[m]*Sqrt[n])])/(3*b^(5/2)*E^(a/(b*m*n))*f*m^(5/2)*n^(5/2)*(c*(d*(e + f*x)^m)^n)^(1/(m*n))) - (2*(e + f*x))/(3*b*f*m*n*(a + b*Log[c*(d*(e + f*x)^m)^n])^(3/2)) - (4*(e + f*x))/(3*b^2*f*m^2*n^2*Sqrt[a + b*Log[c*(d*(e + f*x)^m)^n]])

Rule 2211

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - c*(f/d)) + f*g*(x^2/d)), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !TrueQ[$UseGamma]
```

Rule 2235

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[F^a*Sqrt
[Pi]*(Erfi[(c + d*x)*Rt[b*Log[F], 2]]/(2*d*Rt[b*Log[F], 2])), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2334

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Simp[x*((a + b
*Log[c*x^n])^(p + 1)/(b*n*(p + 1))), x] - Dist[1/(b*n*(p + 1)), Int[(a + b*
Log[c*x^n])^(p + 1), x], x] /; FreeQ[{a, b, c, n}, x] && LtQ[p, -1] && Inte
gerQ[2*p]
```

Rule 2337

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2436

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2495

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{1}{(a+b\log(c(d(e+fx)^m)^n))^{5/2}}\,dx = \text{Subst}\left(\int \frac{1}{(a+b\log(cd^n(e+fx)^{mn}))^{5/2}}\,dx, cd^n(e+fx)^{mn}, c(d(e+\right.$$

$$= \text{Subst}\left(\frac{\text{Subst}\left(\int \frac{1}{(a+b\log(cd^n x^{mn}))^{5/2}}\,dx, x, e+fx\right)}{f}, cd^n(e+fx)^{mn}, c(\right.$$

$$= -\frac{2(e+fx)}{3bfmn(a+b\log(c(d(e+fx)^m)^n))^{3/2}} + \text{Subst}\left(\frac{2\text{Subst}\left(\int \frac{}{(a+b\log}\right.}{}\right.$$

$$= -\frac{2(e+fx)}{3bfmn(a+b\log(c(d(e+fx)^m)^n))^{3/2}} - \frac{4(e+fx}{3b^2fm^2n^2\sqrt{a+b\log(c(}}$$

$$= -\frac{2(e+fx)}{3bfmn(a+b\log(c(d(e+fx)^m)^n))^{3/2}} - \frac{4(e+fx}{3b^2fm^2n^2\sqrt{a+b\log(c(}}$$

$$= -\frac{2(e+fx)}{3bfmn(a+b\log(c(d(e+fx)^m)^n))^{3/2}} - \frac{4(e+fx}{3b^2fm^2n^2\sqrt{a+b\log(c(}}$$

$$= \frac{4e^{-\frac{a}{bmn}}\sqrt{\pi}(e+fx)(c(d(e+fx)^m)^n)^{-\frac{1}{mn}}\text{erfi}\left(\frac{\sqrt{a+b\log(c(d(e+}}{\sqrt{b}\sqrt{m}\sqrt{n}}\right.}{3b^{5/2}fm^{5/2}n^{5/2}}$$

Mathematica [A]
time = 0.21, size = 211, normalized size = 1.09

$$-\frac{2e^{-\frac{a}{bmn}}(e+fx)(c(d(e+fx)^m)^n)^{-\frac{1}{mn}}\left(2bmn\Gamma\left(\frac{1}{2},-\frac{a+b\log(c(d(e+fx)^m)^n)}{bmn}\right)\left(-\frac{a+b\log(c(d(e+fx)^m)^n)}{bmn}\right)^{3/2}+e^{\frac{a}{bmn}}(c(d(e+fx)^m)^n)^{\frac{1}{mn}}(2a+bmn+2b\log(c(d(e+fx)^m)^n))\right)}{3b^2fm^2n^2(a+b\log(c(d(e+fx)^m)^n))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^m)^n])^(-5/2),x]
```

```
[Out] (-2*(e + f*x)*(2*b*m*n*Gamma[1/2, -((a + b*Log[c*(d*(e + f*x)^m)^n])/(b*m*n
))]*(-((a + b*Log[c*(d*(e + f*x)^m)^n])/(b*m*n)))^(3/2) + E^(a/(b*m*n))*(c*
(d*(e + f*x)^m)^n)^(1/(m*n))*(2*a + b*m*n + 2*b*Log[c*(d*(e + f*x)^m)^n])))
/(3*b^2*E^(a/(b*m*n))*f*m^2*n^2*(c*(d*(e + f*x)^m)^n)^(1/(m*n))*(a + b*Log[
c*(d*(e + f*x)^m)^n])^(3/2))
```

Maple [F]
time = 0.04, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(a+b\ln\left(c\left(d\left(fx+e\right)^{m}\right)^{n}\right)\right)^{\frac{5}{2}}}dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+b*ln(c*(d*(f*x+e)^m)^n))^(5/2),x)
```

```
[Out] int(1/(a+b*ln(c*(d*(f*x+e)^m)^n))^(5/2),x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(d*(f*x+e)^m)^n))^(5/2),x, algorithm="maxima")
```

```
[Out] integrate((b*log(((f*x + e)^m*d)^n*c) + a)^(-5/2), x)
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(d*(f*x+e)^m)^n))^(5/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(a+b\log\left(c\left(d\left(e+fx\right)^{m}\right)^{n}\right)\right)^{\frac{5}{2}}}dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*ln(c*(d*(f*x+e)**m)**n))**(5/2),x)
```

```
[Out] Integral((a + b*log(c*(d*(e + f*x)**m)**n))**(-5/2), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(d*(f*x+e)^m)^n))^(5/2),x, algorithm="giac")
[Out] integrate((b*log(((f*x + e)^m*d)^n*c) + a)^(-5/2), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{1}{\left(a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^m\right)}^n\right)\right)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a + b*log(c*(d*(e + f*x)^m)^n))^(5/2),x)
[Out] int(1/(a + b*log(c*(d*(e + f*x)^m)^n))^(5/2), x)
```

3.417 $\int \frac{1}{(a+b\log(c(d(e+fx)^m)^n))^{7/2}}\,dx$

Optimal. Leaf size=237

$$\frac{8e^{-\frac{a}{bmn}}\sqrt{\pi}\,(e+fx)\,(c(d(e+fx)^m)^n)^{-\frac{1}{mn}}\,\mathrm{erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}}{\sqrt{b}\,\sqrt{m}\,\sqrt{n}}\right)}{15b^{7/2}fm^{7/2}n^{7/2}}-\frac{2(e+fx)}{5bfmn\left(a+b\log\left(c\left(d(e\right.\right.\right.}$$

[Out] -2/5*(f*x+e)/b/f/m/n/(a+b*ln(c*(d*(f*x+e)^m)^n))^(5/2)-4/15*(f*x+e)/b^2/f/m^2/n^2/(a+b*ln(c*(d*(f*x+e)^m)^n))^(3/2)+8/15*(f*x+e)*erfi((a+b*ln(c*(d*(f*x+e)^m)^n))^(1/2)/b^(1/2)/m^(1/2)/n^(1/2))*Pi^(1/2)/b^(7/2)/exp(a/b/m/n)/f/m^(7/2)/n^(7/2)/((c*(d*(f*x+e)^m)^n)^(1/m/n))-8/15*(f*x+e)/b^3/f/m^3/n^3/(a+b*ln(c*(d*(f*x+e)^m)^n))^(1/2)

Rubi [A]

time = 0.28, antiderivative size = 237, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.273$, Rules used = {2436, 2334, 2337, 2211, 2235, 2495}

$$\frac{8\sqrt{\pi}\,(e+fx)e^{-\frac{a}{bmn}}(c(d(e+fx)^m)^n)^{-\frac{1}{mn}}\,\mathrm{Erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}}{\sqrt{b}\,\sqrt{m}\,\sqrt{n}}\right)}{15b^{7/2}fm^{7/2}n^{7/2}}-\frac{8(e+fx)}{15b^3fm^3n^3\sqrt{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}}-\frac{4(e+fx)}{15b^2fm^2n^2\left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)^{3/2}}-\frac{2(e+fx)}{5bfmn\left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)^{5/2}}$$

Antiderivative was successfully verified.

[In] Int[(a + b*Log[c*(d*(e + f*x)^m)^n])^(-7/2),x]

[Out] (8*Sqrt[Pi]*(e + f*x)*Erfi[Sqrt[a + b*Log[c*(d*(e + f*x)^m)^n]]/(Sqrt[b]*Sqrt[m]*Sqrt[n])])/(15*b^(7/2)*E^(a/(b*m*n))*f*m^(7/2)*n^(7/2)*(c*(d*(e + f*x)^m)^n)^(1/(m*n))) - (2*(e + f*x))/(5*b*f*m*n*(a + b*Log[c*(d*(e + f*x)^m)^n])^(5/2)) - (4*(e + f*x))/(15*b^2*f*m^2*n^2*(a + b*Log[c*(d*(e + f*x)^m)^n])^(3/2)) - (8*(e + f*x))/(15*b^3*f*m^3*n^3*Sqrt[a + b*Log[c*(d*(e + f*x)^m)^n]])

Rule 2211

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d, Subst[Int[F^(g*(e - c*(f/d)) + f*g*(x^2/d)), x], x, Sqrt[c + d*x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !TrueQ[$UseGamma]
```

Rule 2235

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[F^a*Sqrt[Pi]*(Erfi[(c + d*x)*Rt[b*Log[F], 2]]/(2*d*Rt[b*Log[F], 2])), x] /; FreeQ[{F, a, b, c, d}, x] && PosQ[b]
```

Rule 2334

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Simp[x*((a + b
*Log[c*x^n])^(p + 1)/(b*n*(p + 1))), x] - Dist[1/(b*n*(p + 1)), Int[(a + b*
Log[c*x^n])^(p + 1), x], x] /; FreeQ[{a, b, c, n}, x] && LtQ[p, -1] && Inte
gerQ[2*p]
```

Rule 2337

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2436

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2495

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{1}{(a+b\log(c(d(e+fx)^m)^n))^{7/2}}\,dx = \text{Subst}\left(\int \frac{1}{(a+b\log(cd^n(e+fx)^{mn}))^{7/2}}\,dx, cd^n(e+fx)^{mn}, c(d(e\cdots\right.$$

$$= \text{Subst}\left(\frac{\text{Subst}\left(\int \frac{1}{(a+b\log(cd^nx^{mn}))^{7/2}}\,dx, x, e+fx\right)}{f}, cd^n(e+fx)^{mn}, c\cdots\right.$$

$$= -\frac{2(e+fx)}{5bfmn(a+b\log(c(d(e+fx)^m)^n))^{5/2}} + \text{Subst}\left(\frac{2\text{Subst}\left(\int \frac{\cdots}{(a+b\cdots}\right.}{\cdots}\right.$$

$$= -\frac{2(e+fx)}{5bfmn(a+b\log(c(d(e+fx)^m)^n))^{5/2}} - \frac{4(e+\cdots}{15b^2fm^2n^2(a+b\log(\cdots}$$

$$= -\frac{2(e+fx)}{5bfmn(a+b\log(c(d(e+fx)^m)^n))^{5/2}} - \frac{4(e+\cdots}{15b^2fm^2n^2(a+b\log(\cdots}$$

$$= -\frac{2(e+fx)}{5bfmn(a+b\log(c(d(e+fx)^m)^n))^{5/2}} - \frac{4(e+\cdots}{15b^2fm^2n^2(a+b\log(\cdots}$$

$$= -\frac{2(e+fx)}{5bfmn(a+b\log(c(d(e+fx)^m)^n))^{5/2}} - \frac{4(e+\cdots}{15b^2fm^2n^2(a+b\log(\cdots}$$

$$= \frac{8e^{-\frac{a}{bmn}}\sqrt{\pi}(e+fx)(c(d(e+fx)^m)^n)^{-\frac{1}{mn}}\,\text{erfi}\left(\frac{\sqrt{a+b\log(c(d(e\cdots}}{\sqrt{b}\sqrt{m}\sqrt{\cdots}}\right.}{15b^{7/2}fm^{7/2}n^{7/2}}$$

<u>Mathematica</u> [A]
time = 0.29, size = 272, normalized size = 1.15

$$-\frac{2e^{-\frac{a}{bmn}}(e+fx)(c(d(e+fx)^m)^n)^{-\frac{1}{mn}}\left(-4\Gamma\left(\frac{1}{2},-\frac{a+b\log(c(d(e+fx)^m)^n)}{bmn}\right)(a+b\log(c(d(e+fx)^m)^n))^2\sqrt{-\frac{a+b\log(c(d(e+fx)^m)^n)}{bmn}}+e^{\frac{a}{bmn}}(c(d(e+fx)^m)^n)^{\frac{1}{mn}}\left(4a^2+2abmn+3b^2m^2n^2+2b(4a+bmn)\log(c(d(e+fx)^m)^n)+4b^2\log^2(c(d(e+fx)^m)^n)\right)\right)}{15b^3fm^3n^3(a+b\log(c(d(e+fx)^m)^n))^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^m)^n])^(-7/2),x]
```

```
[Out] (-2*(e + f*x)*(-4*Gamma[1/2, -((a + b*Log[c*(d*(e + f*x)^m)^n])/(b*m*n))]*(
a + b*Log[c*(d*(e + f*x)^m)^n])^2*Sqrt[-((a + b*Log[c*(d*(e + f*x)^m)^n])/(
```

```
b*m*n))] + E^(a/(b*m*n))*(c*(d*(e + f*x)^m)^n)^(1/(m*n))*(4*a^2 + 2*a*b*m*n
 + 3*b^2*m^2*n^2 + 2*b*(4*a + b*m*n)*Log[c*(d*(e + f*x)^m)^n] + 4*b^2*Log[c
*(d*(e + f*x)^m)^n]^2)))/(15*b^3*E^(a/(b*m*n))*f*m^3*n^3*(c*(d*(e + f*x)^m)
^n)^(1/(m*n))*(a + b*Log[c*(d*(e + f*x)^m)^n])^(5/2))
```

Maple [F]
time = 0.03, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(a+b\ln\left(c\left(d\left(fx+e\right)^{m}\right)^{n}\right)\right)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+b*ln(c*(d*(f*x+e)^m)^n))^(7/2),x)
```

```
[Out] int(1/(a+b*ln(c*(d*(f*x+e)^m)^n))^(7/2),x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(d*(f*x+e)^m)^n))^(7/2),x, algorithm="maxima")
```

```
[Out] integrate((b*log(((f*x + e)^m*d)^n*c) + a)^(-7/2), x)
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(d*(f*x+e)^m)^n))^(7/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: SystemError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*ln(c*(d*(f*x+e)**m)**n))**(7/2),x)
```

```
[Out] Exception raised: SystemError >> excessive stack use: stack is 6190 deep
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(d*(f*x+e)^m)^n))^(7/2),x, algorithm="giac")
[Out] integrate((b*log(((f*x + e)^m*d)^n*c) + a)^(-7/2), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{1}{\left(a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^m\right)}^n\right)\right)^{7/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a + b*log(c*(d*(e + f*x)^m)^n))^(7/2),x)
[Out] int(1/(a + b*log(c*(d*(e + f*x)^m)^n))^(7/2), x)
```

3.418 $\int (a+b\log (c(d(e+fx)^m)^n))^p\,dx$

Optimal. Leaf size=131

$$\frac{e^{-\frac{a}{bmn}}(e+fx)\left(c(d(e+fx)^m)^n\right)^{-\frac{1}{mn}}\Gamma\left(1+p,-\frac{a+b\log(c(d(e+fx)^m)^n)}{bmn}\right)\left(a+b\log\left(c(d(e+fx)^m)^n\right)\right)^p\left(-\frac{a+b\log(c(\cdots}{b\cdots}\right.}{f}$$

```
[Out] (f*x+e)*GAMMA(1+p,(-a-b*ln(c*(d*(f*x+e)^m)^n))/b/m/n)*(a+b*ln(c*(d*(f*x+e)^
m)^n))^p/exp(a/b/m/n)/f/((c*(d*(f*x+e)^m)^n)^(1/m/n))/(((-a-b*ln(c*(d*(f*x+
e)^m)^n))/b/m/n)^p)
```

Rubi [A]

time = 0.11, antiderivative size = 131, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.200$, Rules used = {2436, 2337, 2212, 2495}

$$\frac{(e+fx)e^{-\frac{a}{bmn}}\left(c(d(e+fx)^m)^n\right)^{-\frac{1}{mn}}\left(a+b\log\left(c(d(e+fx)^m)^n\right)\right)^p\left(-\frac{a+b\log(c(d(e+fx)^m)^n)}{bmn}\right)^{-p}\text{Gamma}\left(p+1,-\frac{a+b\log(c(d(e+fx)^m)^n)}{bmn}\right)}{f}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^m)^n])^p,x]
```

```
[Out] ((e + f*x)*Gamma[1 + p, -((a + b*Log[c*(d*(e + f*x)^m)^n])/(b*m*n))]*(a + b
*Log[c*(d*(e + f*x)^m)^n])^p)/(E^(a/(b*m*n))*f*(c*(d*(e + f*x)^m)^n)^(1/(m*
n))*(-((a + b*Log[c*(d*(e + f*x)^m)^n])/(b*m*n)))^p)
```

Rule 2212

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))*((c_.) + (d_.)*(x_))^(m_), x_Symbol]
:> Simp[(-F^(g*(e - c*(f/d))))*((c + d*x)^FracPart[m]/(d*((-f)*g*(Log[F]/d)
)^(IntPart[m] + 1)*((-f)*g*Log[F]*((c + d*x)/d))^FracPart[m]))*Gamma[m + 1,
 ((-f)*g*(Log[F]/d))*(c + d*x)], x] /; FreeQ[{F, c, d, e, f, g, m}, x] &&
!IntegerQ[m]
```

Rule 2337

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2436

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2495

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int (a+b\log(c(d(e+fx)^m)^n))^p\,dx = \text{Subst}\left(\int (a+b\log(cd^n(e+fx)^{mn}))^p\,dx, cd^n(e+fx)^{mn}, c(d(e+fx$$

$$= \text{Subst}\left(\frac{\text{Subst}\left(\int (a+b\log(cd^n x^{mn}))^p\,dx, x, e+fx\right)}{f}, cd^n(e+fx)^{mn},\right.$$

$$= \text{Subst}\left(\frac{\left((e+fx)\left(cd^n(e+fx)^{mn}\right)^{-\frac{1}{mn}}\right)\text{Subst}\left(\int e^{\frac{x}{mn}}(a+bx)^p\,dx, x,\right.}{fmn}\right.$$

$$= \frac{e^{-\frac{a}{bmn}}(e+fx)\left(c(d(e+fx)^m)^n\right)^{-\frac{1}{mn}}\Gamma\left(1+p,-\frac{a+b\log(c(d(e+fx)^m)^n)}{bmn}\right)(}{f}$$

Mathematica [A]
time = 0.14, size = 131, normalized size = 1.00

$$\frac{e^{-\frac{a}{bmn}}(e+fx)\left(c(d(e+fx)^m)^n\right)^{-\frac{1}{mn}}\Gamma\left(1+p,-\frac{a+b\log(c(d(e+fx)^m)^n)}{bmn}\right)(a+b\log(c(d(e+fx)^m)^n))^p\left(-\frac{a+b\log(c(d(e+fx)^m)^n)}{bmn}\right)^{-p}}{f}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^m)^n])^p,x]
```

```
[Out] ((e + f*x)*Gamma[1 + p, -((a + b*Log[c*(d*(e + f*x)^m)^n])/(b*m*n))]*(a + b
*Log[c*(d*(e + f*x)^m)^n])^p)/(E^(a/(b*m*n))*f*(c*(d*(e + f*x)^m)^n)^(1/(m*
n))*(-((a + b*Log[c*(d*(e + f*x)^m)^n])/(b*m*n)))^p)
```

Maple [F]
time = 0.06, size = 0, normalized size = 0.00

$$\int (a+b\ln(c(d(fx+e)^m)^n))^p\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(d*(f*x+e)^m)^n))^p,x)
```

[Out] int((a+b*ln(c*(d*(f*x+e)^m)^n))^p,x)

Maxima [**F(-2)**]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^m)^n))^p,x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError >> ECL says: In function CAR, the value of t
he first argument is  0which is not of the expected type LIST
```

Fricas [**A**]
time = 0.09, size = 81, normalized size = 0.62

$$\frac{e^{\left(-\frac{bmnp\log\left(-\frac{1}{bmn}\right)+bn\log(d)+b\log(c)+a}{bmn}\right)}\Gamma\left(p+1,-\frac{bmn\log(fx+e)+bn\log(d)+b\log(c)+a}{bmn}\right)}{f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^m)^n))^p,x, algorithm="fricas")
```

```
[Out] e^(-(b*m*n*p*log(-1/(b*m*n)) + b*n*log(d) + b*log(c) + a)/(b*m*n))*gamma(p
+ 1, -(b*m*n*log(f*x + e) + b*n*log(d) + b*log(c) + a)/(b*m*n))/f
```

Sympy [**F**]
time = 0.00, size = 0, normalized size = 0.00

$$\int \left(a+b\log\left(c(d(e+fx)^m)^n\right)\right)^p\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**m)**n))**p,x)
```

```
[Out] Integral((a + b*log(c*(d*(e + f*x)**m)**n))**p, x)
```

Giac [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^m)^n))^p,x, algorithm="giac")
```

```
[Out] integrate((b*log(((f*x + e)^m*d)^n*c) + a)^p, x)
```

Mupad [F]

time = 0.00, size = -1, normalized size = -0.01

$$\int (a+b\ln (c\,(d\,(e+f\,x)^m)^n))^p\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d*(e + f*x)^m)^n))^p,x)
[Out] int((a + b*log(c*(d*(e + f*x)^m)^n))^p, x)
```

3.419 $\int \left(a+b\log\left(c\sqrt{d\sqrt{e+fx}}\right)\right)^p\,dx$

Optimal. Leaf size=109

$$\frac{4^{-p}e^{-\frac{4a}{b}}\Gamma\left(1+p,-\frac{4\left(a+b\log\left(c\sqrt{d\sqrt{e+fx}}\right)\right)}{b}\right)\left(a+b\log\left(c\sqrt{d\sqrt{e+fx}}\right)\right)^p\left(-\frac{a+b\log\left(c\sqrt{d\sqrt{e+fx}}\right)}{b}\right.}{c^4d^2f}$$

```
[Out] GAMMA(1+p,-4*(a+b*ln(c*(d*(f*x+e)^(1/2))^(1/2)))/b)*(a+b*ln(c*(d*(f*x+e)^(1
/2))^(1/2)))^p/(4^p)/c^4/d^2/exp(4*a/b)/f/(((-a-b*ln(c*(d*(f*x+e)^(1/2))^(1
/2)))/b)^p)
```

Rubi [A]
time = 0.11, antiderivative size = 109, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.167$, Rules used = {2436, 2336, 2212, 2495}

$$\frac{4^{-p}e^{-\frac{4a}{b}}\left(a+b\log\left(c\sqrt{d\sqrt{e+fx}}\right)\right)^p\left(-\frac{a+b\log\left(c\sqrt{d\sqrt{e+fx}}\right)}{b}\right)^{-p}\text{Gamma}\left(p+1,-\frac{4\left(a+b\log\left(c\sqrt{d\sqrt{e+fx}}\right)\right)}{b}\right)}{c^4d^2f}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*Sqrt[d*Sqrt[e + f*x]]])^p,x]
```

```
[Out] (Gamma[1 + p, (-4*(a + b*Log[c*Sqrt[d*Sqrt[e + f*x]]]))/b]*(a + b*Log[c*Sqr
t[d*Sqrt[e + f*x]]])^p)/(4^p*c^4*d^2*E^((4*a)/b)*f*(-((a + b*Log[c*Sqrt[d*S
qrt[e + f*x]]])/b))^p)
```

Rule 2212

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))*((c_.) + (d_.)*(x_))^(m_), x_Symbol]
:> Simp[(-F^(g*(e - c*(f/d))))*((c + d*x)^FracPart[m]/(d*((-f)*g*(Log[F]/d)
)^(IntPart[m] + 1)*((-f)*g*Log[F]*((c + d*x)/d))^FracPart[m]))*Gamma[m + 1,
 ((-f)*g*(Log[F]/d))*(c + d*x)], x] /; FreeQ[{F, c, d, e, f, g, m}, x] &&
!IntegerQ[m]
```

Rule 2336

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[1/(n*c^(1
/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b,
 c, p}, x] && IntegerQ[1/n]
```

Rule 2436

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2495

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] && !IntegerQ[n] && !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\begin{aligned}
\int \left(a+b\log\left(c\sqrt{d\sqrt{e+fx}}\right)\right)^p dx &= \text{Subst}\left(\int \left(a+b\log\left(c\sqrt{d}\sqrt[4]{e+fx}\right)\right)^p dx, c\sqrt{d}\sqrt[4]{e+fx}, c\sqrt{\right. \\
&= \text{Subst}\left(\frac{\text{Subst}\left(\int \left(a+b\log\left(c\sqrt{d}\sqrt[4]{x}\right)\right)^p dx, x, e+fx\right)}{f}, c\sqrt{d}\sqrt[4]{\right. \\
&= \text{Subst}\left(\frac{4\text{Subst}\left(\int e^{4x}(a+bx)^p dx, x, \log\left(c\sqrt{d}\sqrt[4]{e+fx}\right)\right)}{c^4d^2f}, c\sqrt{\right. \\
&= \frac{4^{-p}e^{-\frac{4a}{b}}\Gamma\left(1+p,-\frac{4\left(a+b\log\left(c\sqrt{d\sqrt{e+fx}}\right)\right)}{b}\right)\left(a+b\log\left(c\right.\right.}{c^4d^2f}
\end{aligned}$$

Mathematica [A]
time = 0.10, size = 109, normalized size = 1.00

$$\frac{2^{-2p}e^{-\frac{4a}{b}}\Gamma\left(1+p,-\frac{4\left(a+b\log\left(c\sqrt{d\sqrt{e+fx}}\right)\right)}{b}\right)\left(a+b\log\left(c\sqrt{d\sqrt{e+fx}}\right)\right)^p\left(-\frac{a+b\log\left(c\sqrt{d\sqrt{e+fx}}\right)}{b}\right)^{-p}}{c^4d^2f}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*Sqrt[d*Sqrt[e + f*x]]])^p,x]
```

```
[Out] (Gamma[1 + p, (-4*(a + b*Log[c*Sqrt[d*Sqrt[e + f*x]]]))/b]*(a + b*Log[c*Sqr
t[d*Sqrt[e + f*x]]])^p)/(2^(2*p)*c^4*d^2*E^((4*a)/b)*f*(-((a + b*Log[c*Sqrt
[d*Sqrt[e + f*x]]])/b))^p)
```

Maple [F]
time = 0.09, size = 0, normalized size = 0.00

$$\int \left(a + b \ln \left(c \sqrt{d \sqrt{f x + e}}\right)\right)^{p} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(d*(f*x+e)^(1/2))^(1/2)))^p,x)
```

```
[Out] int((a+b*ln(c*(d*(f*x+e)^(1/2))^(1/2)))^p,x)
```

Maxima [A]
time = 0.05, size = 72, normalized size = 0.66

$$-\frac{4 \left(b \log \left(\sqrt{\sqrt{f x + e}\, d}\, c\right) + a\right)^{p+1} e^{\left(-\frac{4 a}{b}\right)} E_{-p}\left(-\frac{4 \left(b \log \left(\sqrt{\sqrt{f x + e}\, d}\, c\right) + a\right)}{b}\right)}{b c^{4} d^{2} f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^(1/2))^(1/2)))^p,x, algorithm="maxima")
```

```
[Out] -4*(b*log(sqrt(sqrt(f*x + e)*d)*c) + a)^(p + 1)*e^(-4*a/b)*exp_integral_e(-
p, -4*(b*log(sqrt(sqrt(f*x + e)*d)*c) + a)/b)/(b*c^4*d^2*f)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^(1/2))^(1/2)))^p,x, algorithm="fricas")
```

```
[Out] integral((b*log(sqrt(sqrt(f*x + e)*d)*c) + a)^p, x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \left(a + b \log \left(c \sqrt{d \sqrt{e + f x}}\right)\right)^{p}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**(1/2))**(1/2)))**p,x)
[Out] Integral((a + b*log(c*sqrt(d*sqrt(e + f*x))))**p, x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^(1/2))^(1/2)))^p,x, algorithm="giac")
[Out] integrate((b*log(sqrt(sqrt(f*x + e)*d)*c) + a)^p, x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int \left(a+b\,\ln\left(c\,\sqrt{d\,\sqrt{e+f\,x}}\right)\right)^p\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d*(e + f*x)^(1/2))^(1/2)))^p,x)
[Out] int((a + b*log(c*(d*(e + f*x)^(1/2))^(1/2)))^p, x)
```

3.420 $\int (g+hx)^3 (a+b\log(c(d(e+fx)^p)^q))\,dx$

Optimal. Leaf size=158

$$-\frac{b(fg-eh)^3pqx}{4f^3}-\frac{b(fg-eh)^2pq(g+hx)^2}{8f^2h}-\frac{b(fg-eh)pq(g+hx)^3}{12fh}-\frac{bpq(g+hx)^4}{16h}-\frac{b(fg-eh)^4pq\log(e+$$

```
[Out] -1/4*b*(-e*h+f*g)^3*p*q*x/f^3-1/8*b*(-e*h+f*g)^2*p*q*(h*x+g)^2/f^2/h-1/12*b
*(-e*h+f*g)*p*q*(h*x+g)^3/f/h-1/16*b*p*q*(h*x+g)^4/h-1/4*b*(-e*h+f*g)^4*p*q
*ln(f*x+e)/f^4/h+1/4*(h*x+g)^4*(a+b*ln(c*(d*(f*x+e)^p)^q))/h
```

Rubi [A]
time = 0.12, antiderivative size = 158, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.115$, Rules used = {2442, 45, 2495}

$$\frac{(g+hx)^4(a+b\log(c(d(e+fx)^p)^q))}{4h}-\frac{bpq(fg-eh)^4\log(e+fx)}{4f^4h}-\frac{bpqx(fg-eh)^3}{4f^3}-\frac{bpq(g+hx)^2(fg-eh)^2}{8f^2h}-\frac{bpq(g+hx)^3(fg-eh)}{12fh}-\frac{bpq(g+hx)^4}{16h}$$

Antiderivative was successfully verified.

```
[In] Int[(g + h*x)^3*(a + b*Log[c*(d*(e + f*x)^p)^q]),x]
```

```
[Out] -1/4*(b*(f*g - e*h)^3*p*q*x)/f^3 - (b*(f*g - e*h)^2*p*q*(g + h*x)^2)/(8*f^2
*h) - (b*(f*g - e*h)*p*q*(g + h*x)^3)/(12*f*h) - (b*p*q*(g + h*x)^4)/(16*h)
 - (b*(f*g - e*h)^4*p*q*Log[e + f*x])/(4*f^4*h) + ((g + h*x)^4*(a + b*Log[c
*(d*(e + f*x)^p)^q]))/(4*h)
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2442

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[(f + g*x)^(q + 1)*((a + b*Log[c*(d + e*x)^n])/(
g*(q + 1))), x] - Dist[b*e*(n/(g*(q + 1))), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 2495

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
```

```
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int (g+hx)^3\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)dx = \text{Subst}\left(\int (g+hx)^3\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)dx, cd^q(e+fx\right.$$
$$= \frac{(g+hx)^4\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)}{4h} - \text{Subst}\left(\frac{(bfpq)\int \frac{(g+h}{e+}}{4h}\right.$$
$$= \frac{(g+hx)^4\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)}{4h} - \text{Subst}\left(\frac{(bfpq)\int \left(\frac{h(}{}\right.}{}\right.$$
$$= -\frac{b(fg-eh)^3pqx}{4f^3} - \frac{b(fg-eh)^2pq(g+hx)^2}{8f^2h} - \frac{b(fg-eh)pq}{12f}$$

Mathematica [A]
time = 0.18, size = 233, normalized size = 1.47

$$\frac{-12be(-4f^3g^3+6ef^2g^2h-4e^2fgh^2+e^3h^3)pq\log(e+fx)+fx(12af^3(4g^3+6g^2hx+4gh^2x^2+h^3x^3)-bpq(-12e^3h^3+6e^2fh^2(8g+hx)-4ef^2h(18g^2+6ghx+h^2x^2)+f^3(48g^3+36g^2hx+16gh^2x^2+3h^3x^3))+12bf^3(4g^3+6g^2hx+4gh^2x^2+h^3x^3)\log\left(c(d(e+fx)^p)^q\right))}{48f^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(g + h*x)^3*(a + b*Log[c*(d*(e + f*x)^p)^q]),x]
```

```
[Out] (-12*b*e*(-4*f^3*g^3 + 6*e*f^2*g^2*h - 4*e^2*f*g*h^2 + e^3*h^3)*p*q*Log[e +
 f*x] + f*x*(12*a*f^3*(4*g^3 + 6*g^2*h*x + 4*g*h^2*x^2 + h^3*x^3) - b*p*q*(
-12*e^3*h^3 + 6*e^2*f*h^2*(8*g + h*x) - 4*e*f^2*h*(18*g^2 + 6*g*h*x + h^2*x
^2) + f^3*(48*g^3 + 36*g^2*h*x + 16*g*h^2*x^2 + 3*h^3*x^3)) + 12*b*f^3*(4*g
^3 + 6*g^2*h*x + 4*g*h^2*x^2 + h^3*x^3)*Log[c*(d*(e + f*x)^p)^q]))/(48*f^4)
```

Maple [F]
time = 0.17, size = 0, normalized size = 0.00

$$\int (hx+g)^3\left(a+b\ln\left(c(d(fx+e)^p)^q\right)\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x+g)^3*(a+b*ln(c*(d*(f*x+e)^p)^q)),x)
```

```
[Out] int((h*x+g)^3*(a+b*ln(c*(d*(f*x+e)^p)^q)),x)
```

Maxima [B] Leaf count of result is larger than twice the leaf count of optimal. 309 vs. $2(152) = 304$.
time = 0.32, size = 309, normalized size = 1.96

$$\frac{1}{4}bh^3x^4\log\left(\left(\left(fx+e\right)^pd\right)^qc\right)+\frac{1}{4}ah^3x^4-bfg^3pq\left(\frac{x}{f}-\frac{e\log\left(fx+e\right)}{f^2}\right)-\frac{3}{4}bfg^2hpq\left(\frac{fx^2-2xe}{f^2}+\frac{2e^2\log\left(fx+e\right)}{f^3}\right)-\frac{1}{6}bfgh^2pq\left(\frac{2f^2x^3-3fx^2e+6xe^2}{f^3}-\frac{6e^3\log\left(fx+e\right)}{f^4}\right)-\frac{1}{48}bfh^3pq\left(\frac{3f^3x^4-4f^2x^3e+6fx^2e^2-12xe^3}{f^4}+\frac{12e^4\log\left(fx+e\right)}{f^5}\right)+bgh^2x^3\log\left(\left(\left(fx+e\right)^pd\right)^qc\right)+agh^2x^3+\frac{3}{2}bg^2hx^2\log\left(\left(\left(fx+e\right)^pd\right)^qc\right)+\frac{3}{2}ag^2hx^2+bg^3x\log\left(\left(\left(fx+e\right)^pd\right)^qc\right)+ag^3x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^3*(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="maxima")
```

```
[Out] 1/4*b*h^3*x^4*log(((f*x + e)^p*d)^q*c) + 1/4*a*h^3*x^4 - b*f*g^3*p*q*(x/f -
 e*log(f*x + e)/f^2) - 3/4*b*f*g^2*h*p*q*((f*x^2 - 2*x*e)/f^2 + 2*e^2*log(f
*x + e)/f^3) - 1/6*b*f*g*h^2*p*q*((2*f^2*x^3 - 3*f*x^2*e + 6*x*e^2)/f^3 - 6
*e^3*log(f*x + e)/f^4) - 1/48*b*f*h^3*p*q*((3*f^3*x^4 - 4*f^2*x^3*e + 6*f*x
^2*e^2 - 12*x*e^3)/f^4 + 12*e^4*log(f*x + e)/f^5) + b*g*h^2*x^3*log(((f*x +
 e)^p*d)^q*c) + a*g*h^2*x^3 + 3/2*b*g^2*h*x^2*log(((f*x + e)^p*d)^q*c) + 3/
2*a*g^2*h*x^2 + b*g^3*x*log(((f*x + e)^p*d)^q*c) + a*g^3*x
```

Fricas [B] Leaf count of result is larger than twice the leaf count of optimal. 419 vs. $2(152) = 304$.
time = 0.35, size = 419, normalized size = 2.65

$$\frac{12\,bfh^3pqxe^3-3\,(bf^4h^3pq-4\,af^4h^3)x^4-16\,(bf^4gh^2pq-3\,af^4gh^2)x^3-36\,(bf^4g^2hpq-2\,af^4g^2h)x^2-48\,(bf^4g^3pq-af^4g^3)x-6\,(bf^2h^3pqx^2+8\,bf^2gh^2pqx)e^2+4\,(bf^3h^3pqx^3+6\,bf^3gh^2pqx^2+18\,bf^3g^2hpqx)e+12\,(bf^4h^3pqx^4+4\,bf^4gh^2pqx^3+6\,bf^4g^2hpqx^2+4\,bf^4g^3pqx+4\,bf^3g^3pqe-6\,bf^2g^2hpqe^2+4\,bfgh^2pqe^3-bh^3pqe^4)\log\left(fx+e\right)+12\,(bf^4h^3x^4+4\,bf^4gh^2x^3+6\,bf^4g^2hx^2+4\,bf^4g^3x)\log\left(c\right)+12\,(bf^4h^3qx^4+4\,bf^4gh^2qx^3+6\,bf^4g^2hqx^2+4\,bf^4g^3qx)\log\left(d\right)}{48\,f^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^3*(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="fricas")
```

```
[Out] 1/48*(12*b*f*h^3*p*q*x*e^3 - 3*(b*f^4*h^3*p*q - 4*a*f^4*h^3)*x^4 - 16*(b*f^
4*g*h^2*p*q - 3*a*f^4*g*h^2)*x^3 - 36*(b*f^4*g^2*h*p*q - 2*a*f^4*g^2*h)*x^2
 - 48*(b*f^4*g^3*p*q - a*f^4*g^3)*x - 6*(b*f^2*h^3*p*q*x^2 + 8*b*f^2*g*h^2*
p*q*x)*e^2 + 4*(b*f^3*h^3*p*q*x^3 + 6*b*f^3*g*h^2*p*q*x^2 + 18*b*f^3*g^2*h*
p*q*x)*e + 12*(b*f^4*h^3*p*q*x^4 + 4*b*f^4*g*h^2*p*q*x^3 + 6*b*f^4*g^2*h*p*
q*x^2 + 4*b*f^4*g^3*p*q*x + 4*b*f^3*g^3*p*q*e - 6*b*f^2*g^2*h*p*q*e^2 + 4*b
*f*g*h^2*p*q*e^3 - b*h^3*p*q*e^4)*log(f*x + e) + 12*(b*f^4*h^3*x^4 + 4*b*f^
4*g*h^2*x^3 + 6*b*f^4*g^2*h*x^2 + 4*b*f^4*g^3*x)*log(c) + 12*(b*f^4*h^3*q*x
^4 + 4*b*f^4*g*h^2*q*x^3 + 6*b*f^4*g^2*h*q*x^2 + 4*b*f^4*g^3*q*x)*log(d))/f
^4
```

Sympy [B] Leaf count of result is larger than twice the leaf count of optimal. 457 vs. $2(139) = 278$.
time = 2.96, size = 457, normalized size = 2.89

$$\begin{cases} ag^3x+\frac{3ag^2hx^2}{2}+agh^2x^3+\frac{ah^3x^4}{4}-\frac{be^4h^3\log\left(c\left(d\left(e+fx\right)^p\right)^q\right)}{4f^4}+\frac{be^3gh^2\log\left(c\left(d\left(e+fx\right)^p\right)^q\right)}{f^3}+\frac{be^3h^3pqx}{4f^3}-\frac{3be^2g^2h\log\left(c\left(d\left(e+fx\right)^p\right)^q\right)}{2f^2}-\frac{be^2gh^2pqx}{f^2}-\frac{be^2h^3pqx^2}{8f^2}+\frac{beg^3\log\left(c\left(d\left(e+fx\right)^p\right)^q\right)}{f}+\frac{3beg^2hpqx}{2f}+\frac{begh^2pqx^2}{2f}+\frac{beh^3pqx^3}{12f}-bg^3pqx+bg^3x\log\left(c\left(d\left(e+fx\right)^p\right)^q\right)-\frac{3bg^2hpqx^2}{4}+\frac{3bg^2hx^2\log\left(c\left(d\left(e+fx\right)^p\right)^q\right)}{2}-\frac{bgh^2pqx^3}{3}+bgh^2x^3\log\left(c\left(d\left(e+fx\right)^p\right)^q\right)-\frac{bh^3pqx^4}{16}+\frac{bh^3x^4\log\left(c\left(d\left(e+fx\right)^p\right)^q\right)}{4} & \text{for}\: f \neq 0 \\ \left(a+b\log\left(c\left(de^p\right)^q\right)\right)\left(g^3x+\frac{3g^2hx^2}{2}+gh^2x^3+\frac{h^3x^4}{4}\right) & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)**3*(a+b*ln(c*(d*(f*x+e)**p)**q)),x)
```

```
[Out] Piecewise((a*g**3*x + 3*a*g**2*h*x**2/2 + a*g*h**2*x**3 + a*h**3*x**4/4 - b
*e**4*h**3*log(c*(d*(e + f*x)**p)**q)/(4*f**4) + b*e**3*g*h**2*log(c*(d*(e
+ f*x)**p)**q)/f**3 + b*e**3*h**3*p*q*x/(4*f**3) - 3*b*e**2*g**2*h*log(c*(d
*(e + f*x)**p)**q)/(2*f**2) - b*e**2*g*h**2*p*q*x/f**2 - b*e**2*h**3*p*q*x*
*2/(8*f**2) + b*e*g**3*log(c*(d*(e + f*x)**p)**q)/f + 3*b*e*g**2*h*p*q*x/(2
*f) + b*e*g*h**2*p*q*x**2/(2*f) + b*e*h**3*p*q*x**3/(12*f) - b*g**3*p*q*x +
 b*g**3*x*log(c*(d*(e + f*x)**p)**q) - 3*b*g**2*h*p*q*x**2/4 + 3*b*g**2*h*x
**2*log(c*(d*(e + f*x)**p)**q)/2 - b*g*h**2*p*q*x**3/3 + b*g*h**2*x**3*log(
c*(d*(e + f*x)**p)**q) - b*h**3*p*q*x**4/16 + b*h**3*x**4*log(c*(d*(e + f*x
)**p)**q)/4, Ne(f, 0)), ((a + b*log(c*(d*e**p)**q))*(g**3*x + 3*g**2*h*x**2
/2 + g*h**2*x**3 + h**3*x**4/4), True))
```

Giac [B] Leaf count of result is larger than twice the leaf count of optimal. 1047 vs. $2(152) = 304$.
time = 6.28, size = 1047, normalized size = 6.63

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^3*(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="giac")
```

```
[Out] (f*x + e)*b*g^3*p*q*log(f*x + e)/f + 3/2*(f*x + e)^2*b*g^2*h*p*q*log(f*x +
e)/f^2 + (f*x + e)^3*b*g*h^2*p*q*log(f*x + e)/f^3 + 1/4*(f*x + e)^4*b*h^3*p
*q*log(f*x + e)/f^4 - 3*(f*x + e)*b*g^2*h*p*q*e*log(f*x + e)/f^2 - 3*(f*x +
 e)^2*b*g*h^2*p*q*e*log(f*x + e)/f^3 - (f*x + e)^3*b*h^3*p*q*e*log(f*x + e)
/f^4 - (f*x + e)*b*g^3*p*q/f - 3/4*(f*x + e)^2*b*g^2*h*p*q/f^2 - 1/3*(f*x +
 e)^3*b*g*h^2*p*q/f^3 - 1/16*(f*x + e)^4*b*h^3*p*q/f^4 + 3*(f*x + e)*b*g^2*
h*p*q*e/f^2 + 3/2*(f*x + e)^2*b*g*h^2*p*q*e/f^3 + 1/3*(f*x + e)^3*b*h^3*p*q
*e/f^4 + 3*(f*x + e)*b*g*h^2*p*q*e^2*log(f*x + e)/f^3 + 3/2*(f*x + e)^2*b*h
^3*p*q*e^2*log(f*x + e)/f^4 + (f*x + e)*b*g^3*q*log(d)/f + 3/2*(f*x + e)^2*
b*g^2*h*q*log(d)/f^2 + (f*x + e)^3*b*g*h^2*q*log(d)/f^3 + 1/4*(f*x + e)^4*b
*h^3*q*log(d)/f^4 - 3*(f*x + e)*b*g^2*h*q*e*log(d)/f^2 - 3*(f*x + e)^2*b*g*
h^2*q*e*log(d)/f^3 - (f*x + e)^3*b*h^3*q*e*log(d)/f^4 - 3*(f*x + e)*b*g*h^2
*p*q*e^2/f^3 - 3/4*(f*x + e)^2*b*h^3*p*q*e^2/f^4 - (f*x + e)*b*h^3*p*q*e^3*
log(f*x + e)/f^4 + (f*x + e)*b*g^3*log(c)/f + 3/2*(f*x + e)^2*b*g^2*h*log(c
)/f^2 + (f*x + e)^3*b*g*h^2*log(c)/f^3 + 1/4*(f*x + e)^4*b*h^3*log(c)/f^4 -
 3*(f*x + e)*b*g^2*h*e*log(c)/f^2 - 3*(f*x + e)^2*b*g*h^2*e*log(c)/f^3 - (f
*x + e)^3*b*h^3*e*log(c)/f^4 + 3*(f*x + e)*b*g*h^2*q*e^2*log(d)/f^3 + 3/2*(
f*x + e)^2*b*h^3*q*e^2*log(d)/f^4 + (f*x + e)*a*g^3/f + 3/2*(f*x + e)^2*a*g
^2*h/f^2 + (f*x + e)^3*a*g*h^2/f^3 + 1/4*(f*x + e)^4*a*h^3/f^4 + (f*x + e)*
b*h^3*p*q*e^3/f^4 - 3*(f*x + e)*a*g^2*h*e/f^2 - 3*(f*x + e)^2*a*g*h^2*e/f^3
 - (f*x + e)^3*a*h^3*e/f^4 + 3*(f*x + e)*b*g*h^2*e^2*log(c)/f^3 + 3/2*(f*x
+ e)^2*b*h^3*e^2*log(c)/f^4 - (f*x + e)*b*h^3*q*e^3*log(d)/f^4 + 3*(f*x + e
)*a*g*h^2*e^2/f^3 + 3/2*(f*x + e)^2*a*h^3*e^2/f^4 - (f*x + e)*b*h^3*e^3*log
(c)/f^4 - (f*x + e)*a*h^3*e^3/f^4
```

Mupad [B]

time = 0.42, size = 370, normalized size = 2.34

$$\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)\,\left(b\,g^3\,x+\frac{3\,b\,g^2\,h\,x^2}{2}+b\,g\,h^2\,x^3+\frac{b\,h^3\,x^4}{4}\right)-x^2\,\left(\frac{e\,\left(\frac{h^2\,\left(a\,e\,h+3\,a\,f\,g-b\,f\,g\,p\,q\right)}{f}-\frac{e\,h^3\,\left(4\,a-b\,p\,q\right)}{4\,f}\right)}{2\,f}-\frac{3\,g\,h\,\left(2\,a\,e\,h+2\,a\,f\,g-b\,f\,g\,p\,q\right)}{4\,f}\right)+x\,\left(\frac{4\,a\,f\,g^3+12\,a\,e\,g^2\,h-4\,b\,f\,g^3\,p\,q}{4\,f}+\frac{e\,\left(\frac{e\,\left(\frac{h^2\,\left(a\,e\,h+3\,a\,f\,g-b\,f\,g\,p\,q\right)}{f}-\frac{e\,h^3\,\left(4\,a-b\,p\,q\right)}{4\,f}\right)}{f}-\frac{3\,g\,h\,\left(2\,a\,e\,h+2\,a\,f\,g-b\,f\,g\,p\,q\right)}{2\,f}\right)}{f}\right)+x^3\,\left(\frac{h^2\,\left(a\,e\,h+3\,a\,f\,g-b\,f\,g\,p\,q\right)}{3\,f}-\frac{e\,h^3\,\left(4\,a-b\,p\,q\right)}{12\,f}\right)-\frac{\ln\left(e+f\,x\right)\,\left(b\,p\,q\,e^4\,h^3-4\,b\,p\,q\,e^3\,f\,g\,h^2+6\,b\,p\,q\,e^2\,f^2\,g^2\,h-4\,b\,p\,q\,e\,f^3\,g^3\right)}{4\,f^4}+\frac{h^3\,x^4\,\left(4\,a-b\,p\,q\right)}{16}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g + h*x)^3*(a + b*log(c*(d*(e + f*x)^p)^q)),x)
```

```
[Out] log(c*(d*(e + f*x)^p)^q)*((b*h^3*x^4)/4 + b*g^3*x + (3*b*g^2*h*x^2)/2 + b*g
*h^2*x^3) - x^2*((e*((h^2*(a*e*h + 3*a*f*g - b*f*g*p*q))/f - (e*h^3*(4*a -
b*p*q))/(4*f)))/(2*f) - (3*g*h*(2*a*e*h + 2*a*f*g - b*f*g*p*q))/(4*f)) + x*
((4*a*f*g^3 + 12*a*e*g^2*h - 4*b*f*g^3*p*q)/(4*f) + (e*((e*((h^2*(a*e*h + 3
*a*f*g - b*f*g*p*q))/f - (e*h^3*(4*a - b*p*q))/(4*f)))/f - (3*g*h*(2*a*e*h
+ 2*a*f*g - b*f*g*p*q))/(2*f)))/f) + x^3*((h^2*(a*e*h + 3*a*f*g - b*f*g*p*q
))/(3*f) - (e*h^3*(4*a - b*p*q))/(12*f)) - (log(e + f*x)*(b*e^4*h^3*p*q - 4
*b*e*f^3*g^3*p*q + 6*b*e^2*f^2*g^2*h*p*q - 4*b*e^3*f*g*h^2*p*q))/(4*f^4) +
(h^3*x^4*(4*a - b*p*q))/16
```

3.421 $\int (g+hx)^2 \left(a+b\log\left(c(d(e+fx)^p)^q\right)\right) dx$

Optimal. Leaf size=128

$$-\frac{b(fg-eh)^2pqx}{3f^2}-\frac{b(fg-eh)pq(g+hx)^2}{6fh}-\frac{bpq(g+hx)^3}{9h}-\frac{b(fg-eh)^3pq\log(e+fx)}{3f^3h}+\frac{(g+hx)^3\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)}{3h}$$

```
[Out] -1/3*b*(-e*h+f*g)^2*p*q*x/f^2-1/6*b*(-e*h+f*g)*p*q*(h*x+g)^2/f/h-1/9*b*p*q*
(h*x+g)^3/h-1/3*b*(-e*h+f*g)^3*p*q*ln(f*x+e)/f^3/h+1/3*(h*x+g)^3*(a+b*ln(c*
(d*(f*x+e)^p)^q))/h
```

Rubi [A]
time = 0.10, antiderivative size = 128, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.115$, Rules used = {2442, 45, 2495}

$$\frac{(g+hx)^3\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)}{3h}-\frac{bpq(fg-eh)^3\log(e+fx)}{3f^3h}-\frac{bpqx(fg-eh)^2}{3f^2}-\frac{bpq(g+hx)^2(fg-eh)}{6fh}-\frac{bpq(g+hx)^3}{9h}$$

Antiderivative was successfully verified.

```
[In] Int[(g + h*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q]),x]
```

```
[Out] -1/3*(b*(f*g - e*h)^2*p*q*x)/f^2 - (b*(f*g - e*h)*p*q*(g + h*x)^2)/(6*f*h)
- (b*p*q*(g + h*x)^3)/(9*h) - (b*(f*g - e*h)^3*p*q*Log[e + f*x])/(3*f^3*h)
+ ((g + h*x)^3*(a + b*Log[c*(d*(e + f*x)^p)^q]))/(3*h)
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2442

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[(f + g*x)^(q + 1)*((a + b*Log[c*(d + e*x)^n])/(
g*(q + 1))), x] - Dist[b*e*(n/(g*(q + 1))), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 2495

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
```

```
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int (g+hx)^2 \left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)\,dx = \text{Subst}\left(\int (g+hx)^2 \left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)\,dx, cd^q(e+fx)\right.$$

$$= \frac{(g+hx)^3\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)}{3h} - \text{Subst}\left(\frac{(bfpq)\int \frac{(g+hx}{e+fx}}{3h}\right.$$

$$= \frac{(g+hx)^3\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)}{3h} - \text{Subst}\left(\frac{(bfpq)\int \left(\frac{h(fg}{}\right.}{}\right.$$

$$= -\frac{b(fg-eh)^2pqx}{3f^2} - \frac{b(fg-eh)pq(g+hx)^2}{6fh} - \frac{bpq(g+hx)^3}{9h} -$$

Mathematica [A]
time = 0.11, size = 157, normalized size = 1.23

$$\frac{6be(3f^2g^2-3efgh+e^2h^2)\,pq\log(e+fx)+fx(6af^2(3g^2+3ghx+h^2x^2)-bpq(6e^2h^2-3efh(6g+hx)+f^2(18g^2+9ghx+2h^2x^2))+6bf^2(3g^2+3ghx+h^2x^2)\log\left(c(d(e+fx)^p)^q\right))}{18f^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(g + h*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q]),x]
```

```
[Out] (6*b*e*(3*f^2*g^2 - 3*e*f*g*h + e^2*h^2)*p*q*Log[e + f*x] + f*x*(6*a*f^2*(3
*g^2 + 3*g*h*x + h^2*x^2) - b*p*q*(6*e^2*h^2 - 3*e*f*h*(6*g + h*x) + f^2*(1
8*g^2 + 9*g*h*x + 2*h^2*x^2)) + 6*b*f^2*(3*g^2 + 3*g*h*x + h^2*x^2)*Log[c*(
d*(e + f*x)^p)^q]))/(18*f^3)
```

Maple [F]
time = 0.18, size = 0, normalized size = 0.00

$$\int \left(hx+g\right)^{2} \left(a+b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x+g)^2*(a+b*ln(c*(d*(f*x+e)^p)^q)),x)
```

```
[Out] int((h*x+g)^2*(a+b*ln(c*(d*(f*x+e)^p)^q)),x)
```

Maxima [A]
time = 0.29, size = 207, normalized size = 1.62

$$-bfg^2pq\left(\frac{x}{f}-\frac{e\log\left(fx+e\right)}{f^2}\right)-\frac{1}{2}\,bfghpq\left(\frac{fx^2-2\,xe}{f^2}+\frac{2\,e^2\log\left(fx+e\right)}{f^3}\right)-\frac{1}{18}\,bfh^2pq\left(\frac{2\,f^2x^3-3\,fx^2e+6\,xe^2}{f^3}-\frac{6\,e^3\log\left(fx+e\right)}{f^4}\right)+\frac{1}{3}\,bh^2x^3\log\left(\left(\left(fx+e\right)^pd\right)^qc\right)+\frac{1}{3}\,ah^2x^3+bghx^2\log\left(\left(\left(fx+e\right)^pd\right)^qc\right)+aghx^2+bg^2x\log\left(\left(\left(fx+e\right)^pd\right)^qc\right)+ag^2x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^2*(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="maxima")
```

```
[Out] -b*f*g^2*p*q*(x/f - e*log(f*x + e)/f^2) - 1/2*b*f*g*h*p*q*((f*x^2 - 2*x*e)/
f^2 + 2*e^2*log(f*x + e)/f^3) - 1/18*b*f*h^2*p*q*((2*f^2*x^3 - 3*f*x^2*e +
6*x*e^2)/f^3 - 6*e^3*log(f*x + e)/f^4) + 1/3*b*h^2*x^3*log(((f*x + e)^p*d)^
q*c) + 1/3*a*h^2*x^3 + b*g*h*x^2*log(((f*x + e)^p*d)^q*c) + a*g*h*x^2 + b*g
^2*x*log(((f*x + e)^p*d)^q*c) + a*g^2*x
```

Fricas [B] Leaf count of result is larger than twice the leaf count of optimal. 275 vs. $2(123) = 246$.
time = 0.36, size = 275, normalized size = 2.15

$$-\frac{6\,bfh^{2}pqxe^{2}+2\,(bf^{3}h^{2}pq-3\,af^{3}h^{2})x^{3}+9\,(bf^{3}ghpq-2\,af^{3}gh)x^{2}+18\,(bf^{3}g^{2}pq-af^{3}g^{2})x-3\,(bf^{2}h^{2}pqx^{2}+6\,bf^{2}ghpqx)e-6\,(bf^{3}h^{2}pqx^{3}+3\,bf^{3}ghpqx^{2}+3\,bf^{3}g^{2}pqx+3\,bf^{2}g^{2}pqe-3\,bfghpqe^{2}+bh^{2}pqe^{3})\log\left(fx+e\right)-6\,(bf^{3}h^{2}x^{3}+3\,bf^{3}ghx^{2}+3\,bf^{3}g^{2}x)\log\left(c\right)-6\,(bf^{3}h^{2}qx^{3}+3\,bf^{3}ghqx^{2}+3\,bf^{3}g^{2}qx)\log\left(d\right)}{18\,f^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^2*(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="fricas")
```

```
[Out] -1/18*(6*b*f*h^2*p*q*x*e^2 + 2*(b*f^3*h^2*p*q - 3*a*f^3*h^2)*x^3 + 9*(b*f^3
*g*h*p*q - 2*a*f^3*g*h)*x^2 + 18*(b*f^3*g^2*p*q - a*f^3*g^2)*x - 3*(b*f^2*h
^2*p*q*x^2 + 6*b*f^2*g*h*p*q*x)*e - 6*(b*f^3*h^2*p*q*x^3 + 3*b*f^3*g*h*p*q*
x^2 + 3*b*f^3*g^2*p*q*x + 3*b*f^2*g^2*p*q*e - 3*b*f*g*h*p*q*e^2 + b*h^2*p*q
*e^3)*log(f*x + e) - 6*(b*f^3*h^2*x^3 + 3*b*f^3*g*h*x^2 + 3*b*f^3*g^2*x)*lo
g(c) - 6*(b*f^3*h^2*q*x^3 + 3*b*f^3*g*h*q*x^2 + 3*b*f^3*g^2*q*x)*log(d))/f^
3
```

Sympy [B] Leaf count of result is larger than twice the leaf count of optimal. 286 vs. $2(112) = 224$.
time = 1.36, size = 286, normalized size = 2.23

$$\begin{cases} ag^{2}x+aghx^{2}+\frac{ah^{2}x^{3}}{3}+\frac{be^{3}h^{2}\log\left(c\left(d\left(e+fx\right)^{p}\right)^{q}\right)}{3f^{3}}-\frac{be^{2}gh\log\left(c\left(d\left(e+fx\right)^{p}\right)^{q}\right)}{f^{2}}-\frac{be^{2}h^{2}pqx}{3f^{2}}+\frac{beg^{2}\log\left(c\left(d\left(e+fx\right)^{p}\right)^{q}\right)}{f}+\frac{beghpqx}{f}+\frac{beh^{2}pqx^{2}}{6f}-bg^{2}pqx+bg^{2}x\log\left(c\left(d\left(e+fx\right)^{p}\right)^{q}\right)-\frac{bghpqx^{2}}{2}+bghx^{2}\log\left(c\left(d\left(e+fx\right)^{p}\right)^{q}\right)-\frac{bh^{2}pqx^{3}}{9}+\frac{bh^{2}x^{3}\log\left(c\left(d\left(e+fx\right)^{p}\right)^{q}\right)}{3} & \text{for}\: f \neq 0 \\ \left(a+b\log\left(c\left(de^{p}\right)^{q}\right)\right)\left(g^{2}x+ghx^{2}+\frac{h^{2}x^{3}}{3}\right) & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)**2*(a+b*ln(c*(d*(f*x+e)**p)**q)),x)
```

```
[Out] Piecewise((a*g**2*x + a*g*h*x**2 + a*h**2*x**3/3 + b*e**3*h**2*log(c*(d*(e
+ f*x)**p)**q)/(3*f**3) - b*e**2*g*h*log(c*(d*(e + f*x)**p)**q)/f**2 - b*e*
*2*h**2*p*q*x/(3*f**2) + b*e*g**2*log(c*(d*(e + f*x)**p)**q)/f + b*e*g*h*p*
q*x/f + b*e*h**2*p*q*x**2/(6*f) - b*g**2*p*q*x + b*g**2*x*log(c*(d*(e + f*x
)**p)**q) - b*g*h*p*q*x**2/2 + b*g*h*x**2*log(c*(d*(e + f*x)**p)**q) - b*h*
*2*p*q*x**3/9 + b*h**2*x**3*log(c*(d*(e + f*x)**p)**q)/3, Ne(f, 0)), ((a +
b*log(c*(d*e**p)**q))*(g**2*x + g*h*x**2 + h**2*x**3/3), True))
```

Giac [B] Leaf count of result is larger than twice the leaf count of optimal. 585 vs. $2(123) = 246$.
time = 3.48, size = 585, normalized size = 4.57

$$\frac{(fx+e)bg^{2}pq\log\left(fx+e\right)}{f}+\frac{(fx+e)^{2}bghpq\log\left(fx+e\right)}{f^{2}}+\frac{(fx+e)^{3}bh^{2}pq\log\left(fx+e\right)}{3\,f^{3}}-\frac{2\,(fx+e)bghpqe\log\left(fx+e\right)}{f^{2}}-\frac{(fx+e)^{2}bh^{2}pqe\log\left(fx+e\right)}{f^{3}}-\frac{(fx+e)bg^{2}pq}{f}-\frac{(fx+e)^{2}bghpq}{2\,f^{2}}-\frac{(fx+e)^{3}bh^{2}pq}{9\,f^{3}}+\frac{2\,(fx+e)bghpqe}{f^{2}}+\frac{(fx+e)^{2}bh^{2}pqe}{2\,f^{3}}+\frac{(fx+e)bh^{2}pqe^{2}\log\left(fx+e\right)}{f^{3}}+\frac{(fx+e)bg^{2}q\log\left(d\right)}{f}+\frac{(fx+e)^{2}bghq\log\left(d\right)}{f^{2}}+\frac{(fx+e)^{3}bh^{2}q\log\left(d\right)}{3\,f^{3}}-\frac{2\,(fx+e)bghqe\log\left(d\right)}{f^{2}}-\frac{(fx+e)^{2}bh^{2}qe\log\left(d\right)}{f^{3}}-\frac{(fx+e)bh^{2}pqe^{2}}{f^{3}}+\frac{(fx+e)bg^{2}\log\left(c\right)}{f}+\frac{(fx+e)^{2}bgh\log\left(c\right)}{f^{2}}+\frac{(fx+e)^{3}bh^{2}\log\left(c\right)}{3\,f^{3}}-\frac{2\,(fx+e)bghe\log\left(c\right)}{f^{2}}-\frac{(fx+e)^{2}bh^{2}e\log\left(c\right)}{f^{3}}+\frac{(fx+e)bh^{2}qe^{2}\log\left(d\right)}{f^{3}}+\frac{(fx+e)ag^{2}}{f}+\frac{(fx+e)^{2}agh}{f^{2}}+\frac{(fx+e)^{3}ah^{2}}{3\,f^{3}}-\frac{2\,(fx+e)aghe}{f^{2}}-\frac{(fx+e)^{2}ah^{2}e}{f^{3}}+\frac{(fx+e)bh^{2}e^{2}\log\left(c\right)}{f^{3}}+\frac{(fx+e)ah^{2}e^{2}}{f^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^2*(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="giac")
```

```
[Out] (f*x + e)*b*g^2*p*q*log(f*x + e)/f + (f*x + e)^2*b*g*h*p*q*log(f*x + e)/f^2
 + 1/3*(f*x + e)^3*b*h^2*p*q*log(f*x + e)/f^3 - 2*(f*x + e)*b*g*h*p*q*e*log
(f*x + e)/f^2 - (f*x + e)^2*b*h^2*p*q*e*log(f*x + e)/f^3 - (f*x + e)*b*g^2*
p*q/f - 1/2*(f*x + e)^2*b*g*h*p*q/f^2 - 1/9*(f*x + e)^3*b*h^2*p*q/f^3 + 2*(
f*x + e)*b*g*h*p*q*e/f^2 + 1/2*(f*x + e)^2*b*h^2*p*q*e/f^3 + (f*x + e)*b*h^
2*p*q*e^2*log(f*x + e)/f^3 + (f*x + e)*b*g^2*q*log(d)/f + (f*x + e)^2*b*g*h
*q*log(d)/f^2 + 1/3*(f*x + e)^3*b*h^2*q*log(d)/f^3 - 2*(f*x + e)*b*g*h*q*e*
log(d)/f^2 - (f*x + e)^2*b*h^2*q*e*log(d)/f^3 - (f*x + e)*b*h^2*p*q*e^2/f^3
 + (f*x + e)*b*g^2*log(c)/f + (f*x + e)^2*b*g*h*log(c)/f^2 + 1/3*(f*x + e)^
3*b*h^2*log(c)/f^3 - 2*(f*x + e)*b*g*h*e*log(c)/f^2 - (f*x + e)^2*b*h^2*e*l
og(c)/f^3 + (f*x + e)*b*h^2*q*e^2*log(d)/f^3 + (f*x + e)*a*g^2/f + (f*x + e
)^2*a*g*h/f^2 + 1/3*(f*x + e)^3*a*h^2/f^3 - 2*(f*x + e)*a*g*h*e/f^2 - (f*x
+ e)^2*a*h^2*e/f^3 + (f*x + e)*b*h^2*e^2*log(c)/f^3 + (f*x + e)*a*h^2*e^2/f
^3
```

Mupad [B]
time = 0.35, size = 225, normalized size = 1.76

$$\ln\left(c\left(d\left(e+fx\right)^p\right)^q\right)\left(b\,g^2\,x+b\,g\,h\,x^2+\frac{b\,h^2\,x^3}{3}\right)+x^2\left(\frac{h\left(a\,e\,h+2\,a\,f\,g-b\,f\,g\,p\,q\right)}{2\,f}-\frac{e\,h^2\left(3\,a-b\,p\,q\right)}{6\,f}\right)+x\left(\frac{3\,a\,f\,g^2+6\,a\,e\,g\,h-3\,b\,f\,g^2\,p\,q}{3\,f}-\frac{e\left(\frac{h\left(a\,e\,h+2\,a\,f\,g-b\,f\,g\,p\,q\right)}{f}-\frac{e\,h^2\left(3\,a-b\,p\,q\right)}{3\,f}\right)}{f}\right)+\frac{\ln\left(e+f\,x\right)\left(b\,p\,q\,e^3\,h^2-3\,b\,p\,q\,e^2\,f\,g\,h+3\,b\,p\,q\,e\,f^2\,g^2\right)}{3\,f^3}+\frac{h^2\,x^3\left(3\,a-b\,p\,q\right)}{9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g + h*x)^2*(a + b*log(c*(d*(e + f*x)^p)^q)),x)
```

```
[Out] log(c*(d*(e + f*x)^p)^q)*((b*h^2*x^3)/3 + b*g^2*x + b*g*h*x^2) + x^2*((h*(a
*e*h + 2*a*f*g - b*f*g*p*q))/(2*f) - (e*h^2*(3*a - b*p*q))/(6*f)) + x*((3*a
*f*g^2 + 6*a*e*g*h - 3*b*f*g^2*p*q)/(3*f) - (e*((h*(a*e*h + 2*a*f*g - b*f*g
*p*q))/f - (e*h^2*(3*a - b*p*q))/(3*f)))/f) + (log(e + f*x)*(b*e^3*h^2*p*q
+ 3*b*e*f^2*g^2*p*q - 3*b*e^2*f*g*h*p*q))/(3*f^3) + (h^2*x^3*(3*a - b*p*q))
/9
```

3.422 $\int (g+hx)\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)\,dx$

Optimal. Leaf size=98

$$-\frac{b(fg-eh)pqx}{2f}-\frac{bpq(g+hx)^2}{4h}-\frac{b(fg-eh)^2pq\log(e+fx)}{2f^2h}+\frac{(g+hx)^2\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)}{2h}$$

```
[Out] -1/2*b*(-e*h+f*g)*p*q*x/f-1/4*b*p*q*(h*x+g)^2/h-1/2*b*(-e*h+f*g)^2*p*q*ln(f
*x+e)/f^2/h+1/2*(h*x+g)^2*(a+b*ln(c*(d*(f*x+e)^p)^q))/h
```

Rubi [A]
time = 0.06, antiderivative size = 98, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.125$, Rules used = {2442, 45, 2495}

$$\frac{(g+hx)^2\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)}{2h}-\frac{bpq(fg-eh)^2\log(e+fx)}{2f^2h}-\frac{bpqx(fg-eh)}{2f}-\frac{bpq(g+hx)^2}{4h}$$

Antiderivative was successfully verified.

```
[In] Int[(g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q]),x]
```

```
[Out] -1/2*(b*(f*g - e*h)*p*q*x)/f - (b*p*q*(g + h*x)^2)/(4*h) - (b*(f*g - e*h)^2
*p*q*Log[e + f*x])/(2*f^2*h) + ((g + h*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q]
))/(2*h)
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2442

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[(f + g*x)^(q + 1)*((a + b*Log[c*(d + e*x)^n])/(
g*(q + 1))), x] - Dist[b*e*(n/(g*(q + 1))), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 2495

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
```

```
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int (g+hx)(a+b\log(c(d(e+fx)^p)^q))\,dx = \text{Subst}\left(\int (g+hx)(a+b\log(cd^q(e+fx)^{pq}))\,dx, cd^q(e+fx)^{pq},\right.$$

$$= \frac{(g+hx)^2(a+b\log(c(d(e+fx)^p)^q))}{2h} - \text{Subst}\left(\frac{(bfpq)\int\frac{(g+hx)^2}{e+fx}}{2h}\right.$$

$$= \frac{(g+hx)^2(a+b\log(c(d(e+fx)^p)^q))}{2h} - \text{Subst}\left(\frac{(bfpq)\int\left(\frac{h(fg-}{f^2}\right.}{}\right.$$

$$= -\frac{b(fg-eh)pqx}{2f} - \frac{bpq(g+hx)^2}{4h} - \frac{b(fg-eh)^2pq\log(e+fx)}{2f^2h}$$

Mathematica [A]
time = 0.05, size = 113, normalized size = 1.15

$$agx - bgpqx + \frac{behpqx}{2f} + \frac{1}{2}ahx^2 - \frac{1}{4}bhpqx^2 - \frac{be^2hpq\log(e+fx)}{2f^2} + \frac{1}{2}bhx^2\log(c(d(e+fx)^p)^q) + \frac{bg(e+fx)\log(c(d(e+fx)^p)^q)}{f}$$

Antiderivative was successfully verified.

```
[In] Integrate[(g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q]),x]
[Out] a*g*x - b*g*p*q*x + (b*e*h*p*q*x)/(2*f) + (a*h*x^2)/2 - (b*h*p*q*x^2)/4 - (
b*e^2*h*p*q*Log[e + f*x])/(2*f^2) + (b*h*x^2*Log[c*(d*(e + f*x)^p)^q])/2 +
(b*g*(e + f*x)*Log[c*(d*(e + f*x)^p)^q])/f
```

Maple [F]
time = 0.05, size = 0, normalized size = 0.00

$$\int (hx+g)(a+b\ln(c(d(fx+e)^p)^q))\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x+g)*(a+b*ln(c*(d*(f*x+e)^p)^q)),x)
[Out] int((h*x+g)*(a+b*ln(c*(d*(f*x+e)^p)^q)),x)
```

Maxima [A]
time = 0.29, size = 117, normalized size = 1.19

$$-bfgpq\left(\frac{x}{f} - \frac{e\log(fx+e)}{f^2}\right) - \frac{1}{4}bfhpq\left(\frac{fx^2-2xe}{f^2} + \frac{2e^2\log(fx+e)}{f^3}\right) + \frac{1}{2}bhx^2\log(((fx+e)^pd)^qc) + \frac{1}{2}ahx^2 + bgx\log(((fx+e)^pd)^qc) + agx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)*(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="maxima")
```

```
[Out] -b*f*g*p*q*(x/f - e*log(f*x + e)/f^2) - 1/4*b*f*h*p*q*((f*x^2 - 2*x*e)/f^2
+ 2*e^2*log(f*x + e)/f^3) + 1/2*b*h*x^2*log(((f*x + e)^p*d)^q*c) + 1/2*a*h*
x^2 + b*g*x*log(((f*x + e)^p*d)^q*c) + a*g*x
```

Fricas [A]
time = 0.35, size = 150, normalized size = 1.53

$$\frac{2\,bfhpqxe - (bf^2hpq - 2\,af^2h)x^2 - 4\,(bf^2gpq - af^2g)x + 2\,(bf^2hpqx^2 + 2\,bf^2gpqx + 2\,bfgpqe - bhpqe^2)\log\left(fx + e\right) + 2\,(bf^2hx^2 + 2\,bf^2gx)\log\left(c\right) + 2\,(bf^2hqx^2 + 2\,bf^2gqx)\log\left(d\right)}{4\,f^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)*(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="fricas")
```

```
[Out] 1/4*(2*b*f*h*p*q*x*e - (b*f^2*h*p*q - 2*a*f^2*h)*x^2 - 4*(b*f^2*g*p*q - a*f
^2*g)*x + 2*(b*f^2*h*p*q*x^2 + 2*b*f^2*g*p*q*x + 2*b*f*g*p*q*e - b*h*p*q*e^
2)*log(f*x + e) + 2*(b*f^2*h*x^2 + 2*b*f^2*g*x)*log(c) + 2*(b*f^2*h*q*x^2 +
 2*b*f^2*g*q*x)*log(d))/f^2
```

Sympy [A]
time = 0.61, size = 156, normalized size = 1.59

$$\begin{cases} agx + \frac{ahx^2}{2} - \frac{be^2h\log\left(c\left(d\left(e+fx\right)^p\right)^q\right)}{2f^2} + \frac{beg\log\left(c\left(d\left(e+fx\right)^p\right)^q\right)}{f} + \frac{behpqx}{2f} - bgpqx + bgx\log\left(c\left(d\left(e+fx\right)^p\right)^q\right) - \frac{bhpqx^2}{4} + \frac{bhx^2\log\left(c\left(d\left(e+fx\right)^p\right)^q\right)}{2} & \text{for}\: f \neq 0 \\ \left(a + b\log\left(c\left(de^p\right)^q\right)\right)\left(gx + \frac{hx^2}{2}\right) & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)*(a+b*ln(c*(d*(f*x+e)**p)**q)),x)
```

```
[Out] Piecewise((a*g*x + a*h*x**2/2 - b*e**2*h*log(c*(d*(e + f*x)**p)**q)/(2*f**2
) + b*e*g*log(c*(d*(e + f*x)**p)**q)/f + b*e*h*p*q*x/(2*f) - b*g*p*q*x + b*
g*x*log(c*(d*(e + f*x)**p)**q) - b*h*p*q*x**2/4 + b*h*x**2*log(c*(d*(e + f*
x)**p)**q)/2, Ne(f, 0)), ((a + b*log(c*(d*e**p)**q))*(g*x + h*x**2/2), True
))
```

Giac [B] Leaf count of result is larger than twice the leaf count of optimal. 259 vs. 2(94) = 188.
time = 4.94, size = 259, normalized size = 2.64

$$\frac{(fx+e)bgpq\log\left(fx+e\right)}{f} + \frac{(fx+e)^2bhpq\log\left(fx+e\right)}{2\,f^2} - \frac{(fx+e)bhpqe\log\left(fx+e\right)}{f^2} - \frac{(fx+e)bgpq}{f} - \frac{(fx+e)^2bhpq}{4\,f^2} + \frac{(fx+e)bhpqe}{f^2} + \frac{(fx+e)bgq\log\left(d\right)}{f} + \frac{(fx+e)^2bhq\log\left(d\right)}{2\,f^2} - \frac{(fx+e)bhqe\log\left(d\right)}{f^2} + \frac{(fx+e)bg\log\left(c\right)}{f} + \frac{(fx+e)^2bh\log\left(c\right)}{2\,f^2} - \frac{(fx+e)bhe\log\left(c\right)}{f^2} + \frac{(fx+e)ag}{f} + \frac{(fx+e)^2ah}{2\,f^2} - \frac{(fx+e)ahe}{f^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)*(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="giac")
```

```
[Out] (f*x + e)*b*g*p*q*log(f*x + e)/f + 1/2*(f*x + e)^2*b*h*p*q*log(f*x + e)/f^2
 - (f*x + e)*b*h*p*q*e*log(f*x + e)/f^2 - (f*x + e)*b*g*p*q/f - 1/4*(f*x +
```

```
e)^2*b*h*p*q/f^2 + (f*x + e)*b*h*p*q*e/f^2 + (f*x + e)*b*g*q*log(d)/f + 1/2
*(f*x + e)^2*b*h*q*log(d)/f^2 - (f*x + e)*b*h*q*e*log(d)/f^2 + (f*x + e)*b*
g*log(c)/f + 1/2*(f*x + e)^2*b*h*log(c)/f^2 - (f*x + e)*b*h*e*log(c)/f^2 +
(f*x + e)*a*g/f + 1/2*(f*x + e)^2*a*h/f^2 - (f*x + e)*a*h*e/f^2
```

Mupad [B]
time = 0.29, size = 113, normalized size = 1.15

$$\ln\left(c\left(d\left(e+fx\right)^p\right)^q\right)\left(\frac{bhx^2}{2}+bgx\right)+x\left(\frac{2aeh+2afg-2bfgpq}{2f}-\frac{eh\left(2a-bpq\right)}{2f}\right)+\frac{hx^2\left(2a-bpq\right)}{4}-\frac{\ln\left(e+fx\right)\left(be^2hpq-2befgpq\right)}{2f^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g + h*x)*(a + b*log(c*(d*(e + f*x)^p)^q)),x)
```

```
[Out] log(c*(d*(e + f*x)^p)^q)*((b*h*x^2)/2 + b*g*x) + x*((2*a*e*h + 2*a*f*g - 2*
b*f*g*p*q)/(2*f) - (e*h*(2*a - b*p*q))/(2*f)) + (h*x^2*(2*a - b*p*q))/4 - (
log(e + f*x)*(b*e^2*h*p*q - 2*b*e*f*g*p*q))/(2*f^2)
```

3.423 $\int (a + b\log(c(d(e+fx)^p)^q))\, dx$

Optimal. Leaf size=34

$$ax - bpqx + \frac{b(e+fx)\log(c(d(e+fx)^p)^q)}{f}$$

```
[Out] a*x-b*p*q*x+b*(f*x+e)*ln(c*(d*(f*x+e)^p)^q)/f
```

Rubi [A]
time = 0.02, antiderivative size = 34, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}} = 0.167$, Rules used = {2436, 2332, 2495}

$$ax + \frac{b(e+fx)\log(c(d(e+fx)^p)^q)}{f} - bpqx$$

Antiderivative was successfully verified.

```
[In] Int[a + b*Log[c*(d*(e + f*x)^p)^q],x]
```

```
[Out] a*x - b*p*q*x + (b*(e + f*x)*Log[c*(d*(e + f*x)^p)^q])/f
```

Rule 2332

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2436

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2495

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] && !IntegerQ[n] && !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int (a+b\log(c(d(e+fx)^p)^q))\,dx = ax+b\int \log(c(d(e+fx)^p)^q)\,dx$$
$$= ax+b\text{Subst}\left(\int \log(cd^q(e+fx)^{pq})\,dx, cd^q(e+fx)^{pq}, c(d(e+fx)^p)^q\right)$$
$$= ax+b\text{Subst}\left(\frac{\text{Subst}\left(\int \log(cd^qx^{pq})\,dx, x, e+fx\right)}{f}, cd^q(e+fx)^{pq}, c(d(e+\right.$$
$$= ax-bpqx+\frac{b(e+fx)\log(c(d(e+fx)^p)^q)}{f}$$

Mathematica [A]
time = 0.01, size = 34, normalized size = 1.00

$$ax-bpqx+\frac{b(e+fx)\log(c(d(e+fx)^p)^q)}{f}$$

Antiderivative was successfully verified.

```
[In] Integrate[a + b*Log[c*(d*(e + f*x)^p)^q],x]
[Out] a*x - b*p*q*x + (b*(e + f*x)*Log[c*(d*(e + f*x)^p)^q])/f
```

Maple [A]
time = 0.08, size = 42, normalized size = 1.24

method	result	size
default	$ax+b\ln(c(d(fx+e)^p)^q)\,x-bpqx+\frac{bqpe\ln(fx+e)}{f}$	42

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(a+b*ln(c*(d*(f*x+e)^p)^q),x,method=_RETURNVERBOSE)
[Out] a*x+b*ln(c*(d*(f*x+e)^p)^q)*x-b*p*q*x+b*q*p/f*e*ln(f*x+e)
```

Maxima [A]
time = 0.28, size = 48, normalized size = 1.41

$$-bfpq\left(\frac{x}{f}-\frac{e\log(fx+e)}{f^2}\right)+bx\log(((fx+e)^pd)^q\,c)+ax$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(a+b*log(c*(d*(f*x+e)^p)^q),x, algorithm="maxima")
[Out] -b*f*p*q*(x/f - e*log(f*x + e)/f^2) + b*x*log(((f*x + e)^p*d)^q*c) + a*x
```

Fricas [A]
time = 0.35, size = 52, normalized size = 1.53

$$\frac{bfqx\log(d)+bfx\log(c)-(bfpq-af)x+(bfpqx+bpqe)\log(fx+e)}{f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(a+b*log(c*(d*(f*x+e)^p)^q),x, algorithm="fricas")
```

```
[Out] (b*f*q*x*log(d) + b*f*x*log(c) - (b*f*p*q - a*f)*x + (b*f*p*q*x + b*p*q*e)*
log(f*x + e))/f
```

Sympy [A]
time = 0.21, size = 53, normalized size = 1.56

$$ax+b\left(\begin{cases}\frac{e\log(c(d(e+fx)^p)^q)}{f}-pqx+x\log(c(d(e+fx)^p)^q) & \text{for } f\neq 0\\ x\log(c(de^p)^q) & \text{otherwise}\end{cases}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(a+b*ln(c*(d*(f*x+e)**p)**q),x)
```

```
[Out] a*x + b*Piecewise((e*log(c*(d*(e + f*x)**p)**q)/f - p*q*x + x*log(c*(d*(e +
 f*x)**p)**q), Ne(f, 0)), (x*log(c*(d*e**p)**q), True))
```

Giac [A]
time = 4.99, size = 64, normalized size = 1.88

$$\left(\frac{(fx+e)pq\log(fx+e)}{f}-\frac{(fx+e)pq}{f}+\frac{(fx+e)q\log(d)}{f}+\frac{(fx+e)\log(c)}{f}\right)b+ax$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(a+b*log(c*(d*(f*x+e)^p)^q),x, algorithm="giac")
```

```
[Out] ((f*x + e)*p*q*log(f*x + e)/f - (f*x + e)*p*q/f + (f*x + e)*q*log(d)/f + (f
*x + e)*log(c)/f)*b + a*x
```

Mupad [B]
time = 0.22, size = 41, normalized size = 1.21

$$x\,(a-b\,p\,q)+b\,x\,\ln\left(c\,{\left(d\,{(e+f\,x)}^p\right)}^q\right)+\frac{b\,e\,p\,q\,\ln(e+f\,x)}{f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(a + b*log(c*(d*(e + f*x)^p)^q),x)
```

```
[Out] x*(a - b*p*q) + b*x*log(c*(d*(e + f*x)^p)^q) + (b*e*p*q*log(e + f*x))/f
```

3.424 $\int \frac{a+b\log(c(d(e+fx)^p)^q)}{g+hx}\,dx$

Optimal. Leaf size=68

$$\frac{(a+b\log\left(c(d(e+fx)^p)^q\right))\log\left(\frac{f(g+hx)}{fg-eh}\right)}{h}+\frac{bpq\text{Li}_2\left(-\frac{h(e+fx)}{fg-eh}\right)}{h}$$

```
[Out] (a+b*ln(c*(d*(f*x+e)^p)^q))*ln(f*(h*x+g)/(-e*h+f*g))/h+b*p*q*polylog(2,-h*(
f*x+e)/(-e*h+f*g))/h
```

Rubi [A]
time = 0.08, antiderivative size = 68, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.154$, Rules used = {2441, 2440, 2438, 2495}

$$\frac{bpq\text{PolyLog}\left(2,-\frac{h(e+fx)}{fg-eh}\right)}{h}+\frac{\log\left(\frac{f(g+hx)}{fg-eh}\right)\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)}{h}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])/(g + h*x),x]
```

```
[Out] ((a + b*Log[c*(d*(e + f*x)^p)^q])*Log[(f*(g + h*x))/(f*g - e*h)])/h + (b*p*
q*PolyLog[2, -((h*(e + f*x))/(f*g - e*h))])/h
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + c*e*(x/g)])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2441

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d + e*x
)^n])/g), x] - Dist[b*e*(n/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2495

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{a+b\log\left(c(d(e+fx)^p)^q\right)}{g+hx}\,dx = \text{Subst}\left(\int \frac{a+b\log\left(cd^q(e+fx)^{pq}\right)}{g+hx}\,dx, cd^q(e+fx)^{pq}, c(d(e+fx)^p)^q\right)$$

$$= \frac{\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)\log\left(\frac{f(g+hx)}{fg-eh}\right)}{h} - \text{Subst}\left(\frac{(bfpq)\int \frac{\log\left(\frac{f(g+hx)}{fg-eh}\right)}{e+fx}}{h}\right.$$

$$= \frac{\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)\log\left(\frac{f(g+hx)}{fg-eh}\right)}{h} - \text{Subst}\left(\frac{(bpq)\text{Subst}\left(\int \frac{\log(1+}{}\right.}{}\right.$$

$$= \frac{\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)\log\left(\frac{f(g+hx)}{fg-eh}\right)}{h} + \frac{bpq\text{Li}_2\left(-\frac{h(e+fx)}{fg-eh}\right)}{h}$$

Mathematica [**A**]
time = 0.01, size = 67, normalized size = 0.99

$$\frac{\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)\log\left(\frac{f(g+hx)}{fg-eh}\right)}{h} + \frac{bpq\text{Li}_2\left(\frac{h(e+fx)}{-fg+eh}\right)}{h}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])/(g + h*x),x]
```

```
[Out] ((a + b*Log[c*(d*(e + f*x)^p)^q])*Log[(f*(g + h*x))/(f*g - e*h)])/h + (b*p*
q*PolyLog[2, (h*(e + f*x))/(-(f*g) + e*h)])/h
```

Maple [**F**]
time = 0.21, size = 0, normalized size = 0.00

$$\int \frac{a+b\ln\left(c(d(fx+e)^p)^q\right)}{hx+g}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(d*(f*x+e)^p)^q))/(h*x+g),x)
```

```
[Out] int((a+b*ln(c*(d*(f*x+e)^p)^q))/(h*x+g),x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g),x, algorithm="maxima")
[Out] b*integrate((q*log(d) + log(((f*x + e)^p)^q) + log(c))/(h*x + g), x) + a*lo
g(h*x + g)/h
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g),x, algorithm="fricas")
[Out] integral((b*log(((f*x + e)^p*d)^q*c) + a)/(h*x + g), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{a + b\log\left(c(d(e + fx)^{p})^{q}\right)}{g + hx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))/(h*x+g),x)
[Out] Integral((a + b*log(c*(d*(e + f*x)**p)**q))/(g + h*x), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g),x, algorithm="giac")
[Out] integrate((b*log(((f*x + e)^p*d)^q*c) + a)/(h*x + g), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{a + b\,\ln\left(c\,{\left(d\,{\left(e + f\,x\right)}^{p}\right)}^{q}\right)}{g + h\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d*(e + f*x)^p)^q))/(g + h*x),x)
[Out] int((a + b*log(c*(d*(e + f*x)^p)^q))/(g + h*x), x)
```

3.425 $\int \frac{a+b\log(c(d(e+fx)^p)^q)}{(g+hx)^2}\,dx$

Optimal. Leaf size=80

$$\frac{bfpq\log(e+fx)}{h(fg-eh)}-\frac{a+b\log\left(c(d(e+fx)^p)^q\right)}{h(g+hx)}-\frac{bfpq\log(g+hx)}{h(fg-eh)}$$

```
[Out] b*f*p*q*ln(f*x+e)/h/(-e*h+f*g)+(-a-b*ln(c*(d*(f*x+e)^p)^q))/h/(h*x+g)-b*f*p
*q*ln(h*x+g)/h/(-e*h+f*g)
```

Rubi [A]
time = 0.06, antiderivative size = 80, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.154, Rules used = {2442, 36, 31, 2495}

$$-\frac{a+b\log\left(c(d(e+fx)^p)^q\right)}{h(g+hx)}+\frac{bfpq\log(e+fx)}{h(fg-eh)}-\frac{bfpq\log(g+hx)}{h(fg-eh)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])/(g + h*x)^2,x]
```

```
[Out] (b*f*p*q*Log[e + f*x])/(h*(f*g - e*h)) - (a + b*Log[c*(d*(e + f*x)^p)^q])/(
h*(g + h*x)) - (b*f*p*q*Log[g + h*x])/(h*(f*g - e*h))
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 36

```
Int[1/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))), x_Symbol] :> Dist[b/(b*c
 - a*d), Int[1/(a + b*x), x], x] - Dist[d/(b*c - a*d), Int[1/(c + d*x), x],
 x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0]
```

Rule 2442

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[(f + g*x)^(q + 1)*((a + b*Log[c*(d + e*x)^n])/(
g*(q + 1))), x] - Dist[b*e*(n/(g*(q + 1))), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 2495

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
```

```
c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{a+b\log\left(c(d(e+fx)^p)^q\right)}{(g+hx)^2}\,dx = \text{Subst}\left(\int \frac{a+b\log\left(cd^q(e+fx)^{pq}\right)}{(g+hx)^2}\,dx, cd^q(e+fx)^{pq}, c(d(e+fx)^p)^q\right)$$
$$= -\frac{a+b\log\left(c(d(e+fx)^p)^q\right)}{h(g+hx)} + \text{Subst}\left(\frac{(bfpq)\int \frac{1}{(e+fx)(g+hx)}\,dx}{h}, cd^q(e+fx\right.$$
$$= -\frac{a+b\log\left(c(d(e+fx)^p)^q\right)}{h(g+hx)} - \text{Subst}\left(\frac{(bfpq)\int \frac{1}{g+hx}\,dx}{fg-eh}, cd^q(e+fx)^{pq}, c(d\right.$$
$$= \frac{bfpq\log(e+fx)}{h(fg-eh)} - \frac{a+b\log\left(c(d(e+fx)^p)^q\right)}{h(g+hx)} - \frac{bfpq\log(g+hx)}{h(fg-eh)}$$

Mathematica [A]
time = 0.06, size = 97, normalized size = 1.21

$$\frac{afg-aeh-bfpq(g+hx)\log(e+fx)+b(fg-eh)\log\left(c(d(e+fx)^p)^q\right)+bfgpq\log(g+hx)+bfhpqx\log(g+hx)}{h(-fg+eh)(g+hx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])/(g + h*x)^2,x]
```

```
[Out] (a*f*g - a*e*h - b*f*p*q*(g + h*x)*Log[e + f*x] + b*(f*g - e*h)*Log[c*(d*(e
 + f*x)^p)^q] + b*f*g*p*q*Log[g + h*x] + b*f*h*p*q*x*Log[g + h*x])/(h*(-(f*
g) + e*h)*(g + h*x))
```

Maple [F]
time = 0.22, size = 0, normalized size = 0.00

$$\int \frac{a+b\ln\left(c(d(fx+e)^p)^q\right)}{(hx+g)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(d*(f*x+e)^p)^q))/(h*x+g)^2,x)
```

```
[Out] int((a+b*ln(c*(d*(f*x+e)^p)^q))/(h*x+g)^2,x)
```

Maxima [A]
time = 0.29, size = 94, normalized size = 1.18

$$bfpq\left(\frac{\log(fx+e)}{fgh-h^2e} - \frac{\log(hx+g)}{fgh-h^2e}\right) - \frac{b\log\left(((fx+e)^p d)^q c\right)}{h^2x+gh} - \frac{a}{h^2x+gh}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g)^2,x, algorithm="maxima")
```

```
[Out] b*f*p*q*(log(f*x + e)/(f*g*h - h^2*e) - log(h*x + g)/(f*g*h - h^2*e)) - b*l
og(((f*x + e)^p*d)^q*c)/(h^2*x + g*h) - a/(h^2*x + g*h)
```

Fricas [A]
time = 0.40, size = 119, normalized size = 1.49

$$-\frac{afg - ahe - (bfhpqx + bhpqe)\log(fx+e) + (bfhpqx + bfgpq)\log(hx+g) + (bfg - bhe)\log(c) + (bfgq - bhqe)\log(d)}{fgh^2x + fg^2h - (h^3x + gh^2)e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g)^2,x, algorithm="fricas")
```

```
[Out] -(a*f*g - a*h*e - (b*f*h*p*q*x + b*h*p*q*e)*log(f*x + e) + (b*f*h*p*q*x + b
*f*g*p*q)*log(h*x + g) + (b*f*g - b*h*e)*log(c) + (b*f*g*q - b*h*q*e)*log(d
))/(f*g*h^2*x + f*g^2*h - (h^3*x + g*h^2)*e)
```

Sympy [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: NotImplementedError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))/(h*x+g)**2,x)
```

```
[Out] Exception raised: NotImplementedError >> no valid subset found
```

Giac [A]
time = 6.06, size = 129, normalized size = 1.61

$$\frac{bfhpqx\log(fx+e) - bfhpqx\log(hx+g) + bhpqe\log(fx+e) - bfgpq\log(hx+g) - bfgq\log(d) + bhqe\log(d) - bfg\log(c) + bhe\log(c) - afg + ahe}{fgh^2x - h^3xe + fg^2h - gh^2e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g)^2,x, algorithm="giac")
```

```
[Out] (b*f*h*p*q*x*log(f*x + e) - b*f*h*p*q*x*log(h*x + g) + b*h*p*q*e*log(f*x +
e) - b*f*g*p*q*log(h*x + g) - b*f*g*q*log(d) + b*h*q*e*log(d) - b*f*g*log(c
) + b*h*e*log(c) - a*f*g + a*h*e)/(f*g*h^2*x - h^3*x*e + f*g^2*h - g*h^2*e)
```

Mupad [B]
time = 2.04, size = 89, normalized size = 1.11

$$-\frac{a}{x\,h^2+g\,h}-\frac{b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)}{h\,\left(g+h\,x\right)}+\frac{b\,f\,p\,q\,\mathrm{atan}\left(\frac{f\,g\,2{}\mathrm{i}+f\,h\,x\,2{}\mathrm{i}}{e\,h-f\,g}+1{}\mathrm{i}\right)\,2{}\mathrm{i}}{h\,\left(e\,h-f\,g\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d*(e + f*x)^p)^q))/(g + h*x)^2,x)
```

```
[Out] (b*f*p*q*atan((f*g*2i + f*h*x*2i)/(e*h - f*g) + 1i)*2i)/(h*(e*h - f*g)) - (
b*log(c*(d*(e + f*x)^p)^q))/(h*(g + h*x)) - a/(g*h + h^2*x)
```

3.426 $\int \frac{a+b\log(c(d(e+fx)^p)^q)}{(g+hx)^3}\,dx$

Optimal. Leaf size=119

$$\frac{bfpq}{2h(fg-eh)(g+hx)}+\frac{bf^2pq\log(e+fx)}{2h(fg-eh)^2}-\frac{a+b\log\left(c(d(e+fx)^p)^q\right)}{2h(g+hx)^2}-\frac{bf^2pq\log(g+hx)}{2h(fg-eh)^2}$$

```
[Out] 1/2*b*f*p*q/h/(-e*h+f*g)/(h*x+g)+1/2*b*f^2*p*q*ln(f*x+e)/h/(-e*h+f*g)^2+1/2
*(-a-b*ln(c*(d*(f*x+e)^p)^q))/h/(h*x+g)^2-1/2*b*f^2*p*q*ln(h*x+g)/h/(-e*h+f
*g)^2
```

Rubi [A]
time = 0.10, antiderivative size = 119, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.115$, Rules used = {2442, 46, 2495}

$$-\frac{a+b\log\left(c(d(e+fx)^p)^q\right)}{2h(g+hx)^2}+\frac{bf^2pq\log(e+fx)}{2h(fg-eh)^2}-\frac{bf^2pq\log(g+hx)}{2h(fg-eh)^2}+\frac{bfpq}{2h(g+hx)(fg-eh)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])/(g + h*x)^3,x]
```

```
[Out] (b*f*p*q)/(2*h*(f*g - e*h)*(g + h*x)) + (b*f^2*p*q*Log[e + f*x])/(2*h*(f*g
- e*h)^2) - (a + b*Log[c*(d*(e + f*x)^p)^q])/(2*h*(g + h*x)^2) - (b*f^2*p*q
*Log[g + h*x])/(2*h*(f*g - e*h)^2)
```

Rule 46

```
Int[((a_) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[E
xpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m +
 n + 2, 0])
```

Rule 2442

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[(f + g*x)^(q + 1)*((a + b*Log[c*(d + e*x)^n])/(
g*(q + 1))), x] - Dist[b*e*(n/(g*(q + 1))), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 2495

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
```

```
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\begin{aligned}\int \frac{a+b\log\left(c(d(e+fx)^p)^q\right)}{(g+hx)^3}\,dx &= \text{Subst}\left(\int \frac{a+b\log\left(cd^q(e+fx)^{pq}\right)}{(g+hx)^3}\,dx, cd^q(e+fx)^{pq}, c(d(e+fx)^p)^q\right)\\ &= -\frac{a+b\log\left(c(d(e+fx)^p)^q\right)}{2h(g+hx)^2}+\text{Subst}\left(\frac{(bfpq)\int \frac{1}{(e+fx)(g+hx)^2}\,dx}{2h}, cd^q(e+\right.\\ &= -\frac{a+b\log\left(c(d(e+fx)^p)^q\right)}{2h(g+hx)^2}+\text{Subst}\left(\frac{(bfpq)\int \left(\frac{f^2}{(fg-eh)^2(e+fx)}-\frac{h}{(fg-eh)(}\right.}{2h}\right.\\ &= \frac{bfpq}{2h(fg-eh)(g+hx)}+\frac{bf^2pq\log(e+fx)}{2h(fg-eh)^2}-\frac{a+b\log\left(c(d(e+fx)^p)^q\right)}{2h(g+hx)^2}\end{aligned}$$

Mathematica [A]
time = 0.09, size = 187, normalized size = 1.57

$$-\frac{af^2g^2-2aefgh+ae^2h^2-bf^2g^2pq+befghpq-bf^2ghpqx+befh^2pqx-bf^2pq(g+hx)^2\log(e+fx)+b(fg-eh)^2\log\left(c(d(e+fx)^p)^q\right)+bf^2g^2pq\log(g+hx)+2bf^2ghpqx\log(g+hx)+bf^2h^2pqx^2\log(g+hx)}{2h(fg-eh)^2(g+hx)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])/(g + h*x)^3,x]
```

```
[Out] -1/2*(a*f^2*g^2 - 2*a*e*f*g*h + a*e^2*h^2 - b*f^2*g^2*p*q + b*e*f*g*h*p*q -
 b*f^2*g*h*p*q*x + b*e*f*h^2*p*q*x - b*f^2*p*q*(g + h*x)^2*Log[e + f*x] + b
*(f*g - e*h)^2*Log[c*(d*(e + f*x)^p)^q] + b*f^2*g^2*p*q*Log[g + h*x] + 2*b*
f^2*g*h*p*q*x*Log[g + h*x] + b*f^2*h^2*p*q*x^2*Log[g + h*x])/(h*(f*g - e*h)
^2*(g + h*x)^2)
```

Maple [F]
time = 0.21, size = 0, normalized size = 0.00

$$\int \frac{a+b\ln\left(c\left(d(fx+e)^p\right)^q\right)}{(hx+g)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(d*(f*x+e)^p)^q))/(h*x+g)^3,x)
```

```
[Out] int((a+b*ln(c*(d*(f*x+e)^p)^q))/(h*x+g)^3,x)
```

Maxima [A]
time = 0.30, size = 176, normalized size = 1.48

$$\frac{1}{2}\,bfpq\left(\frac{f\log\left(fx+e\right)}{f^2g^2h-2\,fgh^2e+h^3e^2}-\frac{f\log\left(hx+g\right)}{f^2g^2h-2\,fgh^2e+h^3e^2}+\frac{1}{fg^2h-gh^2e+(fgh^2-h^3e)x}\right)-\frac{b\log\left(\left(\left(fx+e\right)^pd\right)^qc\right)}{2\left(h^3x^2+2\,gh^2x+g^2h\right)}-\frac{a}{2\left(h^3x^2+2\,gh^2x+g^2h\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g)^3,x, algorithm="maxima")
```

```
[Out] 1/2*b*f*p*q*(f*log(f*x + e)/(f^2*g^2*h - 2*f*g*h^2*e + h^3*e^2) - f*log(h*x
 + g)/(f^2*g^2*h - 2*f*g*h^2*e + h^3*e^2) + 1/(f*g^2*h - g*h^2*e + (f*g*h^2
 - h^3*e)*x)) - 1/2*b*log(((f*x + e)^p*d)^q*c)/(h^3*x^2 + 2*g*h^2*x + g^2*h
) - 1/2*a/(h^3*x^2 + 2*g*h^2*x + g^2*h)
```

Fricas [B] Leaf count of result is larger than twice the leaf count of optimal. 315 vs. 2(116) = 232.
time = 0.39, size = 315, normalized size = 2.65

$$\frac{bf^2ghpqx+bf^2g^2pq-af^2g^2-ah^2e^2-(bfh^2pqx+bfghpq-2\,afgh)e+(bf^2h^2pqx^2+2\,bf^2ghpqx+2\,bfghpqe-bh^2pqe^2)\log\left(fx+e\right)-(bf^2h^2pqx^2+2\,bf^2ghpqx+bf^2g^2pq)\log\left(hx+g\right)-(bf^2g^2-2\,bfghe+bh^2e^2)\log\left(c\right)-(bf^2g^2q-2\,bfghqe+bh^2qe^2)\log\left(d\right)}{2\left(f^2g^2h^3x^2+2\,f^2g^3h^2x+f^2g^4h+(h^5x^2+2\,gh^4x+g^2h^3)e^2-2\left(fgh^4x^2+2\,fg^2h^3x+fg^3h^2\right)e\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g)^3,x, algorithm="fricas")
```

```
[Out] 1/2*(b*f^2*g*h*p*q*x + b*f^2*g^2*p*q - a*f^2*g^2 - a*h^2*e^2 - (b*f*h^2*p*q
*x + b*f*g*h*p*q - 2*a*f*g*h)*e + (b*f^2*h^2*p*q*x^2 + 2*b*f^2*g*h*p*q*x +
2*b*f*g*h*p*q*e - b*h^2*p*q*e^2)*log(f*x + e) - (b*f^2*h^2*p*q*x^2 + 2*b*f^
2*g*h*p*q*x + b*f^2*g^2*p*q)*log(h*x + g) - (b*f^2*g^2 - 2*b*f*g*h*e + b*h^
2*e^2)*log(c) - (b*f^2*g^2*q - 2*b*f*g*h*q*e + b*h^2*q*e^2)*log(d))/(f^2*g^
2*h^3*x^2 + 2*f^2*g^3*h^2*x + f^2*g^4*h + (h^5*x^2 + 2*g*h^4*x + g^2*h^3)*e
^2 - 2*(f*g*h^4*x^2 + 2*f*g^2*h^3*x + f*g^3*h^2)*e)
```

Sympy [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: NotImplementedError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))/(h*x+g)**3,x)
```

```
[Out] Exception raised: NotImplementedError >> no valid subset found
```

Giac [B] Leaf count of result is larger than twice the leaf count of optimal. 359 vs. 2(116) = 232.
time = 3.18, size = 359, normalized size = 3.02

$$\frac{bf^2h^2pqx^2\log\left(fx+e\right)-bf^2h^2pqx^2\log\left(hx+g\right)+2\,bf^2ghpqx\log\left(fx+e\right)-2\,bf^2ghpqx\log\left(hx+g\right)+bf^2ghpqx-bfh^2pqxe+2\,bfghpqe\log\left(fx+e\right)-bf^2g^2pq\log\left(hx+g\right)+bf^2g^2pq-bfghpqe-bh^2pqe^2\log\left(fx+e\right)-bf^2g^2q\log\left(d\right)+2\,bfghqe\log\left(d\right)-bf^2g^2\log\left(c\right)+2\,bfghe\log\left(c\right)-bh^2qe^2\log\left(d\right)-af^2g^2+2\,afghe-bh^2e^2\log\left(c\right)-ah^2e^2}{2\left(f^2g^2h^3x^2-2\,fgh^4x^2e+2\,f^2g^3h^2x+h^5x^2e^2-4\,fg^2h^3xe+f^2g^4h+2\,gh^4xe^2-2\,fg^3h^2e+g^2h^3e^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g)^3,x, algorithm="giac")
```

```
[Out] 1/2*(b*f^2*h^2*p*q*x^2*log(f*x + e) - b*f^2*h^2*p*q*x^2*log(h*x + g) + 2*b*
f^2*g*h*p*q*x*log(f*x + e) - 2*b*f^2*g*h*p*q*x*log(h*x + g) + b*f^2*g*h*p*q
*x - b*f*h^2*p*q*x*e + 2*b*f*g*h*p*q*e*log(f*x + e) - b*f^2*g^2*p*q*log(h*x
 + g) + b*f^2*g^2*p*q - b*f*g*h*p*q*e - b*h^2*p*q*e^2*log(f*x + e) - b*f^2*
g^2*q*log(d) + 2*b*f*g*h*q*e*log(d) - b*f^2*g^2*log(c) + 2*b*f*g*h*e*log(c)
 - b*h^2*q*e^2*log(d) - a*f^2*g^2 + 2*a*f*g*h*e - b*h^2*e^2*log(c) - a*h^2*
e^2)/(f^2*g^2*h^3*x^2 - 2*f*g*h^4*x^2*e + 2*f^2*g^3*h^2*x + h^5*x^2*e^2 - 4
*f*g^2*h^3*x*e + f^2*g^4*h + 2*g*h^4*x*e^2 - 2*f*g^3*h^2*e + g^2*h^3*e^2)
```

Mupad [B]
time = 2.26, size = 180, normalized size = 1.51

$$\frac{b\,f^2\,p\,q\,\mathrm{atanh}\left(\frac{2\,e^2\,h^3-2\,f^2\,g^2\,h}{2\,h\,(e\,h-f\,g)^2}+\frac{2\,f\,h\,x}{e\,h-f\,g}\right)}{h\,(e\,h-f\,g)^2}-\frac{b\,\ln\left(c\,\left(d\,(e+f\,x)^p\right)^q\right)}{2\,h\,\left(g^2+2\,g\,h\,x+h^2\,x^2\right)}-\frac{\frac{a\,e\,h-a\,f\,g+b\,f\,g\,p\,q}{e\,h-f\,g}+\frac{b\,f\,h\,p\,q\,x}{e\,h-f\,g}}{2\,g^2\,h+4\,g\,h^2\,x+2\,h^3\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d*(e + f*x)^p)^q))/(g + h*x)^3,x)
```

```
[Out] (b*f^2*p*q*atanh((2*e^2*h^3 - 2*f^2*g^2*h)/(2*h*(e*h - f*g)^2) + (2*f*h*x)/
(e*h - f*g)))/(h*(e*h - f*g)^2) - (b*log(c*(d*(e + f*x)^p)^q))/(2*h*(g^2 +
h^2*x^2 + 2*g*h*x)) - ((a*e*h - a*f*g + b*f*g*p*q)/(e*h - f*g) + (b*f*h*p*q
*x)/(e*h - f*g))/(2*g^2*h + 2*h^3*x^2 + 4*g*h^2*x)
```

3.427 $\int \frac{a+b\log(c(d(e+fx)^p)^q)}{(g+hx)^4} dx$

Optimal. Leaf size=149

$$\frac{bfpq}{6h(fg-eh)(g+hx)^2}+\frac{bf^2pq}{3h(fg-eh)^2(g+hx)}+\frac{bf^3pq\log(e+fx)}{3h(fg-eh)^3}-\frac{a+b\log\left(c(d(e+fx)^p)^q\right)}{3h(g+hx)^3}-\frac{bf^3pq\log(g+\ldots}{3h(fg-e\ldots}$$

```
[Out] 1/6*b*f*p*q/h/(-e*h+f*g)/(h*x+g)^2+1/3*b*f^2*p*q/h/(-e*h+f*g)^2/(h*x+g)+1/3
*b*f^3*p*q*ln(f*x+e)/h/(-e*h+f*g)^3+1/3*(-a-b*ln(c*(d*(f*x+e)^p)^q))/h/(h*x
+g)^3-1/3*b*f^3*p*q*ln(h*x+g)/h/(-e*h+f*g)^3
```

Rubi [A]

time = 0.12, antiderivative size = 149, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.115$, Rules used = {2442, 46, 2495}

$$-\frac{a+b\log\left(c(d(e+fx)^p)^q\right)}{3h(g+hx)^3}+\frac{bf^3pq\log(e+fx)}{3h(fg-eh)^3}-\frac{bf^3pq\log(g+hx)}{3h(fg-eh)^3}+\frac{bf^2pq}{3h(g+hx)(fg-eh)^2}+\frac{bfpq}{6h(g+hx)^2(fg-eh)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])/(g + h*x)^4,x]
```

```
[Out] (b*f*p*q)/(6*h*(f*g - e*h)*(g + h*x)^2) + (b*f^2*p*q)/(3*h*(f*g - e*h)^2*(g
 + h*x)) + (b*f^3*p*q*Log[e + f*x])/(3*h*(f*g - e*h)^3) - (a + b*Log[c*(d*(
e + f*x)^p)^q])/(3*h*(g + h*x)^3) - (b*f^3*p*q*Log[g + h*x])/(3*h*(f*g - e*
h)^3)
```

Rule 46

```
Int[((a_) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[E
xpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m +
 n + 2, 0])
```

Rule 2442

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[(f + g*x)^(q + 1)*((a + b*Log[c*(d + e*x)^n])/(
g*(q + 1))), x] - Dist[b*e*(n/(g*(q + 1))), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 2495

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
```

```
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\begin{aligned}\int \frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{(g+hx)^4}\,dx &= \text{Subst}\left(\int \frac{a+b\log\left(cd^q(e+fx)^{pq}\right)}{(g+hx)^4}\,dx, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right)\\ &= -\frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{3h(g+hx)^3}+\text{Subst}\left(\frac{(bfpq)\int \frac{1}{(e+fx)(g+hx)^3}\,dx}{3h}, cd^q(e+\right.\\ &= -\frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{3h(g+hx)^3}+\text{Subst}\left(\frac{(bfpq)\int \left(\frac{f^3}{(fg-eh)^3(e+fx)}-\frac{h}{(fg-eh)(}\right.}{}\right.\\ &= \frac{bfpq}{6h(fg-eh)(g+hx)^2}+\frac{bf^2pq}{3h(fg-eh)^2(g+hx)}+\frac{bf^3pq\log(e+fx)}{3h(fg-eh)^3}-\end{aligned}$$

Mathematica [A]
time = 0.10, size = 297, normalized size = 1.99

$$\frac{2af^3g^3-6aef^2g^2h+6ae^2fgh^2-2ae^3h^3-3bf^3g^3pq+4bef^2g^2hpq-be^2fgh^2pq-5bf^3g^2hpqx+6bef^2gh^2pqx-be^2fh^3pqx-2bf^3gh^2pqx^2+2bef^2h^3pqx^2-2bf^3pq(g+hx)^3\log(e+fx)+2b(fg-eh)^3\log\left(c\left(d(e+fx)^p\right)^q\right)+2bf^3g^3pq\log(g+hx)+6bf^3g^2hpqx\log(g+hx)+6bf^3gh^2pqx^2\log(g+hx)+2bf^3h^3pqx^3\log(g+hx)}{6h(-fg+eh)^3(g+hx)^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])/(g + h*x)^4,x]
```

```
[Out] (2*a*f^3*g^3 - 6*a*e*f^2*g^2*h + 6*a*e^2*f*g*h^2 - 2*a*e^3*h^3 - 3*b*f^3*g^
3*p*q + 4*b*e*f^2*g^2*h*p*q - b*e^2*f*g*h^2*p*q - 5*b*f^3*g^2*h*p*q*x + 6*b
*e*f^2*g*h^2*p*q*x - b*e^2*f*h^3*p*q*x - 2*b*f^3*g*h^2*p*q*x^2 + 2*b*e*f^2*
h^3*p*q*x^2 - 2*b*f^3*p*q*(g + h*x)^3*Log[e + f*x] + 2*b*(f*g - e*h)^3*Log[
c*(d*(e + f*x)^p)^q] + 2*b*f^3*g^3*p*q*Log[g + h*x] + 6*b*f^3*g^2*h*p*q*x*L
og[g + h*x] + 6*b*f^3*g*h^2*p*q*x^2*Log[g + h*x] + 2*b*f^3*h^3*p*q*x^3*Log[
g + h*x])/(6*h*(-(f*g) + e*h)^3*(g + h*x)^3)
```

Maple [F]
time = 0.20, size = 0, normalized size = 0.00

$$\int \frac{a+b\ln\left(c\left(d(fx+e)^{p}\right)^{q}\right)}{(hx+g)^{4}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(d*(f*x+e)^p)^q))/(h*x+g)^4,x)
```

```
[Out] int((a+b*ln(c*(d*(f*x+e)^p)^q))/(h*x+g)^4,x)
```

Maxima [**B**] Leaf count of result is larger than twice the leaf count of optimal. 307 vs. $2(145) = 290$.
time = 0.30, size = 307, normalized size = 2.06

$$\frac{1}{6}\left(\frac{2\,f^2\log\left(fx+e\right)}{f^3g^3h-3\,f^2g^2h^2e+3\,fgh^3e^2-h^4e^3}-\frac{2\,f^2\log\left(hx+g\right)}{f^3g^3h-3\,f^2g^2h^2e+3\,fgh^3e^2-h^4e^3}+\frac{2\,fhx+3\,fg-he}{f^2g^4h-2\,fg^3h^2e+g^2h^3e^2+\left(f^2g^2h^3-2\,fgh^4e+h^5e^2\right)x^2+2\,\left(f^2g^3h^2-2\,fg^2h^3e+gh^4e^2\right)x}\right)bfpq-\frac{b\log\left(\left(\left(fx+e\right)^pd\right)^q c\right)}{3\,\left(h^4x^3+3\,gh^3x^2+3\,g^2h^2x+g^3h\right)}-\frac{a}{3\,\left(h^4x^3+3\,gh^3x^2+3\,g^2h^2x+g^3h\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g)^4,x, algorithm="maxima")
```

```
[Out] 1/6*(2*f^2*log(f*x + e)/(f^3*g^3*h - 3*f^2*g^2*h^2*e + 3*f*g*h^3*e^2 - h^4*
e^3) - 2*f^2*log(h*x + g)/(f^3*g^3*h - 3*f^2*g^2*h^2*e + 3*f*g*h^3*e^2 - h^
4*e^3) + (2*f*h*x + 3*f*g - h*e)/(f^2*g^4*h - 2*f*g^3*h^2*e + g^2*h^3*e^2 +
 (f^2*g^2*h^3 - 2*f*g*h^4*e + h^5*e^2)*x^2 + 2*(f^2*g^3*h^2 - 2*f*g^2*h^3*e
 + g*h^4*e^2)*x))*b*f*p*q - 1/3*b*log(((f*x + e)^p*d)^q*c)/(h^4*x^3 + 3*g*h
^3*x^2 + 3*g^2*h^2*x + g^3*h) - 1/3*a/(h^4*x^3 + 3*g*h^3*x^2 + 3*g^2*h^2*x
+ g^3*h)
```

Fricas [**B**] Leaf count of result is larger than twice the leaf count of optimal. 563 vs. $2(145) = 290$.
time = 0.40, size = 563, normalized size = 3.78

$$\frac{2\,bf^3gh^2pqx^2+5\,bf^3g^2hpqx+3\,bf^3g^3pq-2\,af^3g^3+2\,ah^3e^3+\left(bfh^3pqx+bfgh^2pq-6\,afgh^2\right)e^2-2\,\left(bf^2h^3pqx^2+3\,bf^2gh^2pqx+2\,bf^2g^2hpq-3\,af^2g^2h\right)e+2\,\left(bf^3h^3pqx^3+3\,bf^3gh^2pqx^2+3\,bf^3g^2hpqx+3\,bf^2g^2hpqe-3\,bfgh^2pqe^2+bh^3pqe^3\right)\log\left(fx+e\right)-2\,\left(bf^3h^3pqx^3+3\,bf^3gh^2pqx^2+3\,bf^3g^2hpqx+bf^3g^3pq\right)\log\left(hx+g\right)-2\,\left(bf^3g^3-3\,bf^2g^2he+3\,bfgh^2e^2-bh^3e^3\right)\log\left(c\right)-2\,\left(bf^3g^3q-3\,bf^2g^2hqe+3\,bfgh^2qe^2-bh^3qe^3\right)\log\left(d\right)}{6\,\left(f^3g^3h^4x^3+3\,f^3g^4h^3x^2+3\,f^3g^5h^2x+f^3g^6h-\left(h^7x^3+3\,gh^6x^2+3\,g^2h^5x+g^3h^4\right)e^3+3\,\left(fgh^6x^3+3\,fg^2h^5x^2+3\,fg^3h^4x+fg^4h^3\right)e^2-3\,\left(f^2g^2h^5x^3+3\,f^2g^3h^4x^2+3\,f^2g^4h^3x+f^2g^5h^2\right)e\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g)^4,x, algorithm="fricas")
```

```
[Out] 1/6*(2*b*f^3*g*h^2*p*q*x^2 + 5*b*f^3*g^2*h*p*q*x + 3*b*f^3*g^3*p*q - 2*a*f^
3*g^3 + 2*a*h^3*e^3 + (b*f*h^3*p*q*x + b*f*g*h^2*p*q - 6*a*f*g*h^2)*e^2 - 2
*(b*f^2*h^3*p*q*x^2 + 3*b*f^2*g*h^2*p*q*x + 2*b*f^2*g^2*h*p*q - 3*a*f^2*g^2
*h)*e + 2*(b*f^3*h^3*p*q*x^3 + 3*b*f^3*g*h^2*p*q*x^2 + 3*b*f^3*g^2*h*p*q*x
+ 3*b*f^2*g^2*h*p*q*e - 3*b*f*g*h^2*p*q*e^2 + b*h^3*p*q*e^3)*log(f*x + e) -
 2*(b*f^3*h^3*p*q*x^3 + 3*b*f^3*g*h^2*p*q*x^2 + 3*b*f^3*g^2*h*p*q*x + b*f^3
*g^3*p*q)*log(h*x + g) - 2*(b*f^3*g^3 - 3*b*f^2*g^2*h*e + 3*b*f*g*h^2*e^2 -
 b*h^3*e^3)*log(c) - 2*(b*f^3*g^3*q - 3*b*f^2*g^2*h*q*e + 3*b*f*g*h^2*q*e^2
 - b*h^3*q*e^3)*log(d))/(f^3*g^3*h^4*x^3 + 3*f^3*g^4*h^3*x^2 + 3*f^3*g^5*h^
2*x + f^3*g^6*h - (h^7*x^3 + 3*g*h^6*x^2 + 3*g^2*h^5*x + g^3*h^4)*e^3 + 3*(
f*g*h^6*x^3 + 3*f*g^2*h^5*x^2 + 3*f*g^3*h^4*x + f*g^4*h^3)*e^2 - 3*(f^2*g^2
*h^5*x^3 + 3*f^2*g^3*h^4*x^2 + 3*f^2*g^4*h^3*x + f^2*g^5*h^2)*e)
```

Sympy [**B**] Leaf count of result is larger than twice the leaf count of optimal. 5673 vs. $2(133) = 266$.
time = 72.23, size = 5673, normalized size = 38.07

Too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))/(h*x+g)**4,x)
```

```
[Out] Piecewise(((a*x + b*e*log(c*(d*(e + f*x)**p)**q)/f - b*p*q*x + b*x*log(c*(d
*(e + f*x)**p)**q))/g**4, Eq(h, 0)), (-3*a/(9*g**3*h + 27*g**2*h**2*x + 27*
g*h**3*x**2 + 9*h**4*x**3) - b*p*q/(9*g**3*h + 27*g**2*h**2*x + 27*g*h**3*x
**2 + 9*h**4*x**3) - 3*b*log(c*(d*(f*g/h + f*x)**p)**q)/(9*g**3*h + 27*g**2
*h**2*x + 27*g*h**3*x**2 + 9*h**4*x**3), Eq(e, f*g/h)), (-2*a*e**3*h**3/(6*
e**3*g**3*h**4 + 18*e**3*g**2*h**5*x + 18*e**3*g*h**6*x**2 + 6*e**3*h**7*x*
*3 - 18*e**2*f*g**4*h**3 - 54*e**2*f*g**3*h**4*x - 54*e**2*f*g**2*h**5*x**2
 - 18*e**2*f*g*h**6*x**3 + 18*e*f**2*g**5*h**2 + 54*e*f**2*g**4*h**3*x + 54
*e*f**2*g**3*h**4*x**2 + 18*e*f**2*g**2*h**5*x**3 - 6*f**3*g**6*h - 18*f**3
*g**5*h**2*x - 18*f**3*g**4*h**3*x**2 - 6*f**3*g**3*h**4*x**3) + 6*a*e**2*f
*g*h**2/(6*e**3*g**3*h**4 + 18*e**3*g**2*h**5*x + 18*e**3*g*h**6*x**2 + 6*e
**3*h**7*x**3 - 18*e**2*f*g**4*h**3 - 54*e**2*f*g**3*h**4*x - 54*e**2*f*g**
2*h**5*x**2 - 18*e**2*f*g*h**6*x**3 + 18*e*f**2*g**5*h**2 + 54*e*f**2*g**4*
h**3*x + 54*e*f**2*g**3*h**4*x**2 + 18*e*f**2*g**2*h**5*x**3 - 6*f**3*g**6*
h - 18*f**3*g**5*h**2*x - 18*f**3*g**4*h**3*x**2 - 6*f**3*g**3*h**4*x**3) -
 6*a*e*f**2*g**2*h/(6*e**3*g**3*h**4 + 18*e**3*g**2*h**5*x + 18*e**3*g*h**6
*x**2 + 6*e**3*h**7*x**3 - 18*e**2*f*g**4*h**3 - 54*e**2*f*g**3*h**4*x - 54
*e**2*f*g**2*h**5*x**2 - 18*e**2*f*g*h**6*x**3 + 18*e*f**2*g**5*h**2 + 54*e
*f**2*g**4*h**3*x + 54*e*f**2*g**3*h**4*x**2 + 18*e*f**2*g**2*h**5*x**3 - 6
*f**3*g**6*h - 18*f**3*g**5*h**2*x - 18*f**3*g**4*h**3*x**2 - 6*f**3*g**3*h
**4*x**3) + 2*a*f**3*g**3/(6*e**3*g**3*h**4 + 18*e**3*g**2*h**5*x + 18*e**3
*g*h**6*x**2 + 6*e**3*h**7*x**3 - 18*e**2*f*g**4*h**3 - 54*e**2*f*g**3*h**4
*x - 54*e**2*f*g**2*h**5*x**2 - 18*e**2*f*g*h**6*x**3 + 18*e*f**2*g**5*h**2
 + 54*e*f**2*g**4*h**3*x + 54*e*f**2*g**3*h**4*x**2 + 18*e*f**2*g**2*h**5*x
**3 - 6*f**3*g**6*h - 18*f**3*g**5*h**2*x - 18*f**3*g**4*h**3*x**2 - 6*f**3
*g**3*h**4*x**3) - 2*b*e**3*h**3*log(c*(d*(e + f*x)**p)**q)/(6*e**3*g**3*h*
*4 + 18*e**3*g**2*h**5*x + 18*e**3*g*h**6*x**2 + 6*e**3*h**7*x**3 - 18*e**2
*f*g**4*h**3 - 54*e**2*f*g**3*h**4*x - 54*e**2*f*g**2*h**5*x**2 - 18*e**2*f
*g*h**6*x**3 + 18*e*f**2*g**5*h**2 + 54*e*f**2*g**4*h**3*x + 54*e*f**2*g**3
*h**4*x**2 + 18*e*f**2*g**2*h**5*x**3 - 6*f**3*g**6*h - 18*f**3*g**5*h**2*x
 - 18*f**3*g**4*h**3*x**2 - 6*f**3*g**3*h**4*x**3) - b*e**2*f*g*h**2*p*q/(6
*e**3*g**3*h**4 + 18*e**3*g**2*h**5*x + 18*e**3*g*h**6*x**2 + 6*e**3*h**7*x
**3 - 18*e**2*f*g**4*h**3 - 54*e**2*f*g**3*h**4*x - 54*e**2*f*g**2*h**5*x**
2 - 18*e**2*f*g*h**6*x**3 + 18*e*f**2*g**5*h**2 + 54*e*f**2*g**4*h**3*x + 5
4*e*f**2*g**3*h**4*x**2 + 18*e*f**2*g**2*h**5*x**3 - 6*f**3*g**6*h - 18*f**
3*g**5*h**2*x - 18*f**3*g**4*h**3*x**2 - 6*f**3*g**3*h**4*x**3) + 6*b*e**2*
f*g*h**2*log(c*(d*(e + f*x)**p)**q)/(6*e**3*g**3*h**4 + 18*e**3*g**2*h**5*x
 + 18*e**3*g*h**6*x**2 + 6*e**3*h**7*x**3 - 18*e**2*f*g**4*h**3 - 54*e**2*f
*g**3*h**4*x - 54*e**2*f*g**2*h**5*x**2 - 18*e**2*f*g*h**6*x**3 + 18*e*f**2
*g**5*h**2 + 54*e*f**2*g**4*h**3*x + 54*e*f**2*g**3*h**4*x**2 + 18*e*f**2*g
**2*h**5*x**3 - 6*f**3*g**6*h - 18*f**3*g**5*h**2*x - 18*f**3*g**4*h**3*x**
2 - 6*f**3*g**3*h**4*x**3) - b*e**2*f*h**3*p*q*x/(6*e**3*g**3*h**4 + 18*e**
3*g**2*h**5*x + 18*e**3*g*h**6*x**2 + 6*e**3*h**7*x**3 - 18*e**2*f*g**4*h**
```

```
3 - 54*e**2*f*g**3*h**4*x - 54*e**2*f*g**2*h**5*x**2 - 18*e**2*f*g*h**6*x**
3 + 18*e*f**2*g**5*h**2 + 54*e*f**2*g**4*h**3*x + 54*e*f**2*g**3*h**4*x**2
+ 18*e*f**2*g**2*h**5*x**3 - 6*f**3*g**6*h - 18*f**3*g**5*h**2*x - 18*f**3*
g**4*h**3*x**2 - 6*f**3*g**3*h**4*x**3) + 4*b*e*f**2*g**2*h*p*q/(6*e**3*g**
3*h**4 + 18*e**3*g**2*h**5*x + 18*e**3*g*h**6*x**2 + 6*e**3*h**7*x**3 - 18*
e**2*f*g**4*h**3 - 54*e**2*f*g**3*h**4*x - 54*e**2*f*g**2*h**5*x**2 - 18*e*
*2*f*g*h**6*x**3 + 18*e*f**2*g**5*h**2 + 54*e*f**2*g**4*h**3*x + 54*e*f**2*
g**3*h**4*x**2 + 18*e*f**2*g**2*h**5*x**3 - 6*f**3*g**6*h - 18*f**3*g**5*h*
*2*x - 18*f**3*g**4*h**3*x**2 - 6*f**3*g**3*h**4*x**3) - 6*b*e*f**2*g**2*h*
log(c*(d*(e + f*x)**p)**q)/(6*e**3*g**3*h**4 + 18*e**3*g**2*h**5*x + 18*e**
3*g*h**6*x**2 + 6*e**3*h**7*x**3 - 18*e**2*f*g**4*h**3 - 54*e**2*f*g**3*h**
4*x - 54*e**2*f*g**2*h**5*x**2 - 18*e**2*f*g*h**6*x**3 + 18*e*f**2*g**5*h**
2 + 54*e*f**2*g**4*h**3*x + 54*e*f**2*g**3*h**4*x**2 + 18*e*f**2*g**2*h**5*
x**3 - 6*f**3*g**6*h - 18*f**3*g**5*h**2*x - 18*f**3*g**4*h**3*x**2 - 6*f**
3*g**3*h**4*x**3) + 6*b*e*f**2*g*h**2*p*q*x/(6*e**3*g**3*h**4 + 18*e**3*g**
2*h**5*x + 18*e**3*g*h**6*x**2 + 6*e**3*h**7*x**3 - 18*e**2*f*g**4*h**3 - 5
4*e**2*f*g**3*h**4*x - 54*e**2*f*g**2*h**5*x**2 - 18*e**2*f*g*h**6*x**3 + 1
8*e*f**2*g**5*h**2 + 54*e*f**2*g**4*h**3*x + 54*e*f**2*g**3*h**4*x**2 + 18*
e*f**2*g**2*h**5*x**3 - 6*f**3*g**6*h - 18*f**3*g**5*h**2*x - 18*f**3*g**4*
h**3*x**2 - 6*f**3*g**3*h**4*x**3) + 2*b*e*f**2*h**3*p*q*x**2/(6*e**3*g**3*
h**4 + 18*e**3*g**2*h**5*x + 18*e**3*g*h**6*x**2 + 6*e**3*h**7*x**3 - 18*e*
*2*f*g**4*h**3 - 54*e**2*f*g**3*h**4*x - 54*e**2*f*g**2*h**5*x**2 - 18*e**2
*f*g*h**6*x**3 + 18*e*f**2*g**5*h**2 + 54*e*f**2*g**4*h**3*x + 54*e*f**2*g*
*3*h**4*x**2 + 18*e*f**2*g**2*h**5*x**3 - 6*f**...
```

Giac [B] Leaf count of result is larger than twice the leaf count of optimal. 643 vs. $2(145) = 290$.
time = 6.19, size = 643, normalized size = 4.32

$$\frac{2bf^3h^3pqx^3\log(fx+e) - 2bf^3h^3pqx^3\log(hx+g) + 6bf^3gh^2pqx^2\log(fx+e) - 6bf^3gh^2pqx^2\log(hx+g) + 2bf^3gh^2pqx^2 - 2bf^2h^3pqx^2e + 6bf^3g^2hpqx\log(fx+e) - 6bf^3g^2hpqx\log(hx+g) + 5bf^3g^2hpqx - 6bf^2gh^2pqxe + 6bf^2g^2hpqe\log(fx+e) - 2bf^3g^3pq\log(hx+g) + 3bf^3g^3pq + bfh^3pqxe^2 - 4bf^2g^2hpqe - 6bfgh^2pqe^2\log(fx+e) - 2bf^3g^3q\log(d) + 6bf^2g^2hqe\log(d) + bfgh^2pqe^2 + 2bh^3pqe^3\log(fx+e) - 2bf^3g^3\log(c) + 6bf^2g^2he\log(c) - 6bfgh^2qe^2\log(d) - 2af^3g^3 + 6af^2g^2he - 6bfgh^2e^2\log(c) + 2bh^3qe^3\log(d) - 6afgh^2e^2 + 2bh^3e^3\log(c) + 2ah^3e^3}{6(f^3g^3h^4x^3 - 3f^2g^2h^5x^3e + 3f^3g^4h^3x^2 + 3fgh^6x^3e^2 - 9f^2g^3h^4x^2e + 3f^3g^5h^2x - h^7x^3e^3 + 9fg^2h^5x^2e^2 - 9f^2g^4h^3xe + f^3g^6h - 3gh^6x^2e^3 + 9fg^3h^4xe^2 - 3f^2g^5h^2e - 3g^2h^5xe^3 + 3fg^4h^3e^2 - g^3h^4e^3)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g)^4,x, algorithm="giac")
```

```
[Out] 1/6*(2*b*f^3*h^3*p*q*x^3*log(f*x + e) - 2*b*f^3*h^3*p*q*x^3*log(h*x + g) +
6*b*f^3*g*h^2*p*q*x^2*log(f*x + e) - 6*b*f^3*g*h^2*p*q*x^2*log(h*x + g) + 2
*b*f^3*g*h^2*p*q*x^2 - 2*b*f^2*h^3*p*q*x^2*e + 6*b*f^3*g^2*h*p*q*x*log(f*x
+ e) - 6*b*f^3*g^2*h*p*q*x*log(h*x + g) + 5*b*f^3*g^2*h*p*q*x - 6*b*f^2*g*h
^2*p*q*x*e + 6*b*f^2*g^2*h*p*q*e*log(f*x + e) - 2*b*f^3*g^3*p*q*log(h*x + g
) + 3*b*f^3*g^3*p*q + b*f*h^3*p*q*x*e^2 - 4*b*f^2*g^2*h*p*q*e - 6*b*f*g*h^2
*p*q*e^2*log(f*x + e) - 2*b*f^3*g^3*q*log(d) + 6*b*f^2*g^2*h*q*e*log(d) + b
*f*g*h^2*p*q*e^2 + 2*b*h^3*p*q*e^3*log(f*x + e) - 2*b*f^3*g^3*log(c) + 6*b*
f^2*g^2*h*e*log(c) - 6*b*f*g*h^2*q*e^2*log(d) - 2*a*f^3*g^3 + 6*a*f^2*g^2*h
*e - 6*b*f*g*h^2*e^2*log(c) + 2*b*h^3*q*e^3*log(d) - 6*a*f*g*h^2*e^2 + 2*b*
h^3*e^3*log(c) + 2*a*h^3*e^3)/(f^3*g^3*h^4*x^3 - 3*f^2*g^2*h^5*x^3*e + 3*f^
```

```
3*g^4*h^3*x^2 + 3*f*g*h^6*x^3*e^2 - 9*f^2*g^3*h^4*x^2*e + 3*f^3*g^5*h^2*x -
 h^7*x^3*e^3 + 9*f*g^2*h^5*x^2*e^2 - 9*f^2*g^4*h^3*x*e + f^3*g^6*h - 3*g*h^
6*x^2*e^3 + 9*f*g^3*h^4*x*e^2 - 3*f^2*g^5*h^2*e - 3*g^2*h^5*x*e^3 + 3*f*g^4
*h^3*e^2 - g^3*h^4*e^3)
```

Mupad [B]
time = 2.48, size = 293, normalized size = 1.97

$$\frac{2\,a\,e\,f\,g}{3\,{\left(g+h\,x\right)}^3\,{\left(e\,h-f\,g\right)}^2}-\frac{a\,e^2\,h}{3\,{\left(g+h\,x\right)}^3\,{\left(e\,h-f\,g\right)}^2}-\frac{b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)}{3\,h\,{\left(g+h\,x\right)}^3}-\frac{a\,f^2\,g^2}{3\,h\,{\left(g+h\,x\right)}^3\,{\left(e\,h-f\,g\right)}^2}+\frac{b\,f^2\,h\,p\,q\,x^2}{3\,{\left(g+h\,x\right)}^3\,{\left(e\,h-f\,g\right)}^2}-\frac{b\,e\,f\,g\,p\,q}{6\,{\left(g+h\,x\right)}^3\,{\left(e\,h-f\,g\right)}^2}+\frac{b\,f^2\,g^2\,p\,q}{2\,h\,{\left(g+h\,x\right)}^3\,{\left(e\,h-f\,g\right)}^2}+\frac{5\,b\,f^2\,g\,p\,q\,x}{6\,{\left(g+h\,x\right)}^3\,{\left(e\,h-f\,g\right)}^2}-\frac{b\,e\,f\,h\,p\,q\,x}{6\,{\left(g+h\,x\right)}^3\,{\left(e\,h-f\,g\right)}^2}+\frac{b\,f^3\,p\,q\,\mathrm{atan}\left(\frac{e\,h\,1{}\mathrm{i}+f\,g\,1{}\mathrm{i}+f\,h\,x\,2{}\mathrm{i}}{e\,h-f\,g}\right)\,2{}\mathrm{i}}{3\,h\,{\left(e\,h-f\,g\right)}^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d*(e + f*x)^p)^q))/(g + h*x)^4,x)
```

```
[Out] (2*a*e*f*g)/(3*(g + h*x)^3*(e*h - f*g)^2) - (a*e^2*h)/(3*(g + h*x)^3*(e*h -
 f*g)^2) - (b*log(c*(d*(e + f*x)^p)^q))/(3*h*(g + h*x)^3) - (a*f^2*g^2)/(3*
h*(g + h*x)^3*(e*h - f*g)^2) + (b*f^3*p*q*atan((e*h*1i + f*g*1i + f*h*x*2i)
/(e*h - f*g))*2i)/(3*h*(e*h - f*g)^3) + (b*f^2*h*p*q*x^2)/(3*(g + h*x)^3*(e
*h - f*g)^2) - (b*e*f*g*p*q)/(6*(g + h*x)^3*(e*h - f*g)^2) + (b*f^2*g^2*p*q
)/(2*h*(g + h*x)^3*(e*h - f*g)^2) + (5*b*f^2*g*p*q*x)/(6*(g + h*x)^3*(e*h -
 f*g)^2) - (b*e*f*h*p*q*x)/(6*(g + h*x)^3*(e*h - f*g)^2)
```

3.428 $\int (g+hx)^3 \left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)^2 \, dx$

Optimal. Leaf size=409

$$\frac{2b^2(fg-eh)^3p^2q^2x}{f^3}+\frac{3b^2h(fg-eh)^2p^2q^2(e+fx)^2}{4f^4}+\frac{2b^2h^2(fg-eh)p^2q^2(e+fx)^3}{9f^4}+\frac{b^2h^3p^2q^2(e+fx)^4}{32f^4}+b^2(\ldots$$

```
[Out] 2*b^2*(-e*h+f*g)^3*p^2*q^2*x/f^3+3/4*b^2*h*(-e*h+f*g)^2*p^2*q^2*(f*x+e)^2/f
^4+2/9*b^2*h^2*(-e*h+f*g)*p^2*q^2*(f*x+e)^3/f^4+1/32*b^2*h^3*p^2*q^2*(f*x+e
)^4/f^4+1/4*b^2*(-e*h+f*g)^4*p^2*q^2*ln(f*x+e)^2/f^4/h-2*b*(-e*h+f*g)^3*p*q
*(f*x+e)*(a+b*ln(c*(d*(f*x+e)^p)^q))/f^4-3/2*b*h*(-e*h+f*g)^2*p*q*(f*x+e)^2
*(a+b*ln(c*(d*(f*x+e)^p)^q))/f^4-2/3*b*h^2*(-e*h+f*g)*p*q*(f*x+e)^3*(a+b*ln
(c*(d*(f*x+e)^p)^q))/f^4-1/8*b*h^3*p*q*(f*x+e)^4*(a+b*ln(c*(d*(f*x+e)^p)^q)
)/f^4-1/2*b*(-e*h+f*g)^4*p*q*ln(f*x+e)*(a+b*ln(c*(d*(f*x+e)^p)^q))/f^4/h+1/
4*(h*x+g)^4*(a+b*ln(c*(d*(f*x+e)^p)^q))^2/h
```

Rubi [A]

time = 0.71, antiderivative size = 409, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 7, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}} = 0.250$, Rules used = {2445, 2458, 45, 2372, 12, 2338, 2495}

$$-\frac{2bh^2pq(e+fx)^3(fg-eh)\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)}{3f^4}-\frac{bpq(fg-eh)^4\log(e+fx)\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)}{2f^4h}-\frac{2bpq(e+fx)(fg-eh)^3\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)}{f^4}-\frac{3bhpq(e+fx)^2(fg-eh)^2\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)}{2f^4}-\frac{bh^3pq(e+fx)^4\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)}{8f^4}+\frac{(g+hx)^4\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)^2}{4h}+\frac{2b^2h^2p^2q^2(e+fx)^3(fg-eh)}{9f^4}+\frac{3b^2hp^2q^2(e+fx)^2(fg-eh)^2}{4f^4}+\frac{b^2p^2q^2(fg-eh)^4\log^2(e+fx)}{4f^4h}+\frac{b^2h^3p^2q^2(e+fx)^4}{32f^4}+\frac{2b^2p^2q^2x(fg-eh)^3}{f^3}$$

Antiderivative was successfully verified.

```
[In] Int[(g + h*x)^3*(a + b*Log[c*(d*(e + f*x)^p)^q])^2,x]
```

```
[Out] (2*b^2*(f*g - e*h)^3*p^2*q^2*x)/f^3 + (3*b^2*h*(f*g - e*h)^2*p^2*q^2*(e + f
*x)^2)/(4*f^4) + (2*b^2*h^2*(f*g - e*h)*p^2*q^2*(e + f*x)^3)/(9*f^4) + (b^2
*h^3*p^2*q^2*(e + f*x)^4)/(32*f^4) + (b^2*(f*g - e*h)^4*p^2*q^2*Log[e + f*x
]^2)/(4*f^4*h) - (2*b*(f*g - e*h)^3*p*q*(e + f*x)*(a + b*Log[c*(d*(e + f*x)
^p)^q]))/f^4 - (3*b*h*(f*g - e*h)^2*p*q*(e + f*x)^2*(a + b*Log[c*(d*(e + f*
x)^p)^q]))/(2*f^4) - (2*b*h^2*(f*g - e*h)*p*q*(e + f*x)^3*(a + b*Log[c*(d*(
e + f*x)^p)^q]))/(3*f^4) - (b*h^3*p*q*(e + f*x)^4*(a + b*Log[c*(d*(e + f*x)
^p)^q]))/(8*f^4) - (b*(f*g - e*h)^4*p*q*Log[e + f*x]*(a + b*Log[c*(d*(e + f
*x)^p)^q]))/(2*f^4*h) + ((g + h*x)^4*(a + b*Log[c*(d*(e + f*x)^p)^q])^2)/(4
*h)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
```

```
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2338

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2372

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*(x_)^(m_.)*((d_) + (e_.)*(x_)^(r_
.))^(q_.), x_Symbol] :> With[{u = IntHide[x^m*(d + e*x^r)^q, x]}, Dist[a +
b*Log[c*x^n], u, x] - Dist[b*n, Int[SimplifyIntegrand[u/x, x], x], x]] /; F
reeQ[{a, b, c, d, e, n, r}, x] && IGtQ[q, 0] && IntegerQ[m] &&  !(EqQ[q, 1]
 && EqQ[m, -1])
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[(f + g*x)^(q + 1)*((a + b*Log[c*(d + e*x)^
n])^p/(g*(q + 1))), x] - Dist[b*e*n*(p/(g*(q + 1))), Int[(f + g*x)^(q + 1)*
((a + b*Log[c*(d + e*x)^n])^(p - 1)/(d + e*x)), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && GtQ[p, 0] && NeQ[q, -1] && Int
egersQ[2*p, 2*q] && ( !IGtQ[q, 0] || (EqQ[p, 2] && NeQ[q, 1]))
```

Rule 2458

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[(g*(x/e))^q*((e*h - d*i)/e + i*(x/e))^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2495

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int (g+hx)^3 \left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)^2 \, dx = \text{Subst}\left(\int (g+hx)^3 \left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^2 \, dx, cd^q(e+f$$

$$= \frac{(g+hx)^4 \left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)^2}{4h} - \text{Subst}\left(\frac{(bfpq)\int \frac{(g+}{}}{}$$

$$= \frac{(g+hx)^4 \left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)^2}{4h} - \text{Subst}\left(\frac{(bpq)\text{Subst}\left(\right.}{}\right.$$

$$= -\frac{bpq\left(\frac{48h(fg-eh)^3(e+fx)}{f^4} + \frac{36h^2(fg-eh)^2(e+fx)^2}{f^4} + \frac{16h^3(fg-eh)(e+fx)^3}{f^4}\right.}{2}$$

$$= -\frac{bpq\left(\frac{48h(fg-eh)^3(e+fx)}{f^4} + \frac{36h^2(fg-eh)^2(e+fx)^2}{f^4} + \frac{16h^3(fg-eh)(e+fx)^3}{f^4}\right.}{2}$$

$$= \frac{2b^2(fg-eh)^3p^2q^2x}{f^3} + \frac{3b^2h(fg-eh)^2p^2q^2(e+fx)^2}{4f^4} + \frac{2b^2h^2(}{}$$

$$= \frac{2b^2(fg-eh)^3p^2q^2x}{f^3} + \frac{3b^2h(fg-eh)^2p^2q^2(e+fx)^2}{4f^4} + \frac{2b^2h^2(}{}$$

Mathematica [A]
time = 0.47, size = 634, normalized size = 1.55

[illegible]

Antiderivative was successfully verified.

```
[In] Integrate[(g + h*x)^3*(a + b*Log[c*(d*(e + f*x)^p)^q])^2,x]
```

```
[Out] (72*b^2*e*(-4*f^3*g^3 + 6*e*f^2*g^2*h - 4*e^2*f*g*h^2 + e^3*h^3)*p^2*q^2*Lo
g[e + f*x]^2 - 12*b*e*p*q*Log[e + f*x]*(-12*a*(4*f^3*g^3 - 6*e*f^2*g^2*h +
4*e^2*f*g*h^2 - e^3*h^3) + b*(48*f^3*g^3 - 108*e*f^2*g^2*h + 88*e^2*f*g*h^2
 - 25*e^3*h^3)*p*q - 12*b*(4*f^3*g^3 - 6*e*f^2*g^2*h + 4*e^2*f*g*h^2 - e^3*
h^3)*Log[c*(d*(e + f*x)^p)^q]) + f*x*(72*a^2*f^3*(4*g^3 + 6*g^2*h*x + 4*g*h
^2*x^2 + h^3*x^3) - 12*a*b*p*q*(-12*e^3*h^3 + 6*e^2*f*h^2*(8*g + h*x) - 4*e
*f^2*h*(18*g^2 + 6*g*h*x + h^2*x^2) + f^3*(48*g^3 + 36*g^2*h*x + 16*g*h^2*x
^2 + 3*h^3*x^3)) + b^2*p^2*q^2*(-300*e^3*h^3 + 6*e^2*f*h^2*(176*g + 13*h*x)
 - 4*e*f^2*h*(324*g^2 + 60*g*h*x + 7*h^2*x^2) + f^3*(576*g^3 + 216*g^2*h*x
```

```
+ 64*g*h^2*x^2 + 9*h^3*x^3)) + 12*b*(12*a*f^3*(4*g^3 + 6*g^2*h*x + 4*g*h^2*
x^2 + h^3*x^3) - b*p*q*(-12*e^3*h^3 + 6*e^2*f*h^2*(8*g + h*x) - 4*e*f^2*h*(
18*g^2 + 6*g*h*x + h^2*x^2) + f^3*(48*g^3 + 36*g^2*h*x + 16*g*h^2*x^2 + 3*h
^3*x^3)))*Log[c*(d*(e + f*x)^p)^q] + 72*b^2*f^3*(4*g^3 + 6*g^2*h*x + 4*g*h^
2*x^2 + h^3*x^3)*Log[c*(d*(e + f*x)^p)^q]^2))/(288*f^4)
```

Maple [F]
time = 0.22, size = 0, normalized size = 0.00

$$\int \left(hx+g\right)^{3} \left(a+b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)\right)^{2} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x+g)^3*(a+b*ln(c*(d*(f*x+e)^p)^q))^2,x)
```

```
[Out] int((h*x+g)^3*(a+b*ln(c*(d*(f*x+e)^p)^q))^2,x)
```

Maxima [B] Leaf count of result is larger than twice the leaf count of optimal. 914 vs. $2(414) = 828$.
time = 0.31, size = 914, normalized size = 2.23

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^3*(a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="maxima")
```

```
[Out] 1/4*b^2*h^3*x^4*log(((f*x + e)^p*d)^q*c)^2 + 1/2*a*b*h^3*x^4*log(((f*x + e)
^p*d)^q*c) + b^2*g*h^2*x^3*log(((f*x + e)^p*d)^q*c)^2 + 1/4*a^2*h^3*x^4 - 2
*a*b*f*g^3*p*q*(x/f - e*log(f*x + e)/f^2) - 3/2*a*b*f*g^2*h*p*q*((f*x^2 - 2
*x*e)/f^2 + 2*e^2*log(f*x + e)/f^3) - 1/3*a*b*f*g*h^2*p*q*((2*f^2*x^3 - 3*f
*x^2*e + 6*x*e^2)/f^3 - 6*e^3*log(f*x + e)/f^4) - 1/24*a*b*f*h^3*p*q*((3*f^
3*x^4 - 4*f^2*x^3*e + 6*f*x^2*e^2 - 12*x*e^3)/f^4 + 12*e^4*log(f*x + e)/f^5
) + 2*a*b*g*h^2*x^3*log(((f*x + e)^p*d)^q*c) + 3/2*b^2*g^2*h*x^2*log(((f*x
+ e)^p*d)^q*c)^2 + a^2*g*h^2*x^3 + 3*a*b*g^2*h*x^2*log(((f*x + e)^p*d)^q*c)
 + b^2*g^3*x*log(((f*x + e)^p*d)^q*c)^2 + 3/2*a^2*g^2*h*x^2 + 2*a*b*g^3*x*l
og(((f*x + e)^p*d)^q*c) - (2*f*p*q*(x/f - e*log(f*x + e)/f^2)*log(((f*x + e
)^p*d)^q*c) + (e*log(f*x + e)^2 - 2*f*x + 2*e*log(f*x + e))*p^2*q^2/f)*b^2*
g^3 - 3/4*(2*f*p*q*((f*x^2 - 2*x*e)/f^2 + 2*e^2*log(f*x + e)/f^3)*log(((f*x
 + e)^p*d)^q*c) - (f^2*x^2 - 6*f*x*e + 2*e^2*log(f*x + e)^2 + 6*e^2*log(f*x
 + e))*p^2*q^2/f^2)*b^2*g^2*h - 1/18*(6*f*p*q*((2*f^2*x^3 - 3*f*x^2*e + 6*x
*e^2)/f^3 - 6*e^3*log(f*x + e)/f^4)*log(((f*x + e)^p*d)^q*c) - (4*f^3*x^3 -
 15*f^2*x^2*e + 66*f*x*e^2 - 18*e^3*log(f*x + e)^2 - 66*e^3*log(f*x + e))*p
^2*q^2/f^3)*b^2*g*h^2 - 1/288*(12*f*p*q*((3*f^3*x^4 - 4*f^2*x^3*e + 6*f*x^2
*e^2 - 12*x*e^3)/f^4 + 12*e^4*log(f*x + e)/f^5)*log(((f*x + e)^p*d)^q*c) -
(9*f^4*x^4 - 28*f^3*x^3*e + 78*f^2*x^2*e^2 - 300*f*x*e^3 + 72*e^4*log(f*x +
 e)^2 + 300*e^4*log(f*x + e))*p^2*q^2/f^4)*b^2*h^3 + a^2*g^3*x
```

Fricas [B] Leaf count of result is larger than twice the leaf count of optimal. 1892 vs. $2(414) = 828$.

time = 0.39, size = 1892, normalized size = 4.63

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^3*(a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="fricas")
```

```
[Out] 1/288*(9*(b^2*f^4*h^3*p^2*q^2 - 4*a*b*f^4*h^3*p*q + 8*a^2*f^4*h^3)*x^4 + 32
*(2*b^2*f^4*g*h^2*p^2*q^2 - 6*a*b*f^4*g*h^2*p*q + 9*a^2*f^4*g*h^2)*x^3 + 21
6*(b^2*f^4*g^2*h*p^2*q^2 - 2*a*b*f^4*g^2*h*p*q + 2*a^2*f^4*g^2*h)*x^2 - 12*
(25*b^2*f*h^3*p^2*q^2 - 12*a*b*f*h^3*p*q)*x*e^3 + 72*(b^2*f^4*h^3*p^2*q^2*x
^4 + 4*b^2*f^4*g*h^2*p^2*q^2*x^3 + 6*b^2*f^4*g^2*h*p^2*q^2*x^2 + 4*b^2*f^4*
g^3*p^2*q^2*x + 4*b^2*f^3*g^3*p^2*q^2*e - 6*b^2*f^2*g^2*h*p^2*q^2*e^2 + 4*b
^2*f*g*h^2*p^2*q^2*e^3 - b^2*h^3*p^2*q^2*e^4)*log(f*x + e)^2 + 72*(b^2*f^4*
h^3*x^4 + 4*b^2*f^4*g*h^2*x^3 + 6*b^2*f^4*g^2*h*x^2 + 4*b^2*f^4*g^3*x)*log(
c)^2 + 72*(b^2*f^4*h^3*q^2*x^4 + 4*b^2*f^4*g*h^2*q^2*x^3 + 6*b^2*f^4*g^2*h*
q^2*x^2 + 4*b^2*f^4*g^3*q^2*x)*log(d)^2 + 288*(2*b^2*f^4*g^3*p^2*q^2 - 2*a*
b*f^4*g^3*p*q + a^2*f^4*g^3)*x + 6*((13*b^2*f^2*h^3*p^2*q^2 - 12*a*b*f^2*h^
3*p*q)*x^2 + 16*(11*b^2*f^2*g*h^2*p^2*q^2 - 6*a*b*f^2*g*h^2*p*q)*x)*e^2 - 4
*((7*b^2*f^3*h^3*p^2*q^2 - 12*a*b*f^3*h^3*p*q)*x^3 + 12*(5*b^2*f^3*g*h^2*p^
2*q^2 - 6*a*b*f^3*g*h^2*p*q)*x^2 + 108*(3*b^2*f^3*g^2*h*p^2*q^2 - 2*a*b*f^3
*g^2*h*p*q)*x)*e - 12*(3*(b^2*f^4*h^3*p^2*q^2 - 4*a*b*f^4*h^3*p*q)*x^4 + 16
*(b^2*f^4*g*h^2*p^2*q^2 - 3*a*b*f^4*g*h^2*p*q)*x^3 + 36*(b^2*f^4*g^2*h*p^2*
q^2 - 2*a*b*f^4*g^2*h*p*q)*x^2 + 48*(b^2*f^4*g^3*p^2*q^2 - a*b*f^4*g^3*p*q)
*x - (25*b^2*h^3*p^2*q^2 - 12*a*b*h^3*p*q)*e^4 - 4*(3*b^2*f*h^3*p^2*q^2*x -
 22*b^2*f*g*h^2*p^2*q^2 + 12*a*b*f*g*h^2*p*q)*e^3 + 6*(b^2*f^2*h^3*p^2*q^2*
x^2 + 8*b^2*f^2*g*h^2*p^2*q^2*x - 18*b^2*f^2*g^2*h*p^2*q^2 + 12*a*b*f^2*g^2
*h*p*q)*e^2 - 4*(b^2*f^3*h^3*p^2*q^2*x^3 + 6*b^2*f^3*g*h^2*p^2*q^2*x^2 + 18
*b^2*f^3*g^2*h*p^2*q^2*x - 12*b^2*f^3*g^3*p^2*q^2 + 12*a*b*f^3*g^3*p*q)*e -
 12*(b^2*f^4*h^3*p*q*x^4 + 4*b^2*f^4*g*h^2*p*q*x^3 + 6*b^2*f^4*g^2*h*p*q*x^
2 + 4*b^2*f^4*g^3*p*q*x + 4*b^2*f^3*g^3*p*q*e - 6*b^2*f^2*g^2*h*p*q*e^2 + 4
*b^2*f*g*h^2*p*q*e^3 - b^2*h^3*p*q*e^4)*log(c) - 12*(b^2*f^4*h^3*p*q^2*x^4
+ 4*b^2*f^4*g*h^2*p*q^2*x^3 + 6*b^2*f^4*g^2*h*p*q^2*x^2 + 4*b^2*f^4*g^3*p*q
^2*x + 4*b^2*f^3*g^3*p*q^2*e - 6*b^2*f^2*g^2*h*p*q^2*e^2 + 4*b^2*f*g*h^2*p*
q^2*e^3 - b^2*h^3*p*q^2*e^4)*log(d))*log(f*x + e) + 12*(12*b^2*f*h^3*p*q*x*
e^3 - 3*(b^2*f^4*h^3*p*q - 4*a*b*f^4*h^3)*x^4 - 16*(b^2*f^4*g*h^2*p*q - 3*a
*b*f^4*g*h^2)*x^3 - 36*(b^2*f^4*g^2*h*p*q - 2*a*b*f^4*g^2*h)*x^2 - 48*(b^2*
f^4*g^3*p*q - a*b*f^4*g^3)*x - 6*(b^2*f^2*h^3*p*q*x^2 + 8*b^2*f^2*g*h^2*p*q
*x)*e^2 + 4*(b^2*f^3*h^3*p*q*x^3 + 6*b^2*f^3*g*h^2*p*q*x^2 + 18*b^2*f^3*g^2
*h*p*q*x)*e)*log(c) + 12*(12*b^2*f*h^3*p*q^2*x*e^3 - 3*(b^2*f^4*h^3*p*q^2 -
 4*a*b*f^4*h^3*q)*x^4 - 16*(b^2*f^4*g*h^2*p*q^2 - 3*a*b*f^4*g*h^2*q)*x^3 -
36*(b^2*f^4*g^2*h*p*q^2 - 2*a*b*f^4*g^2*h*q)*x^2 - 48*(b^2*f^4*g^3*p*q^2 -
a*b*f^4*g^3*q)*x - 6*(b^2*f^2*h^3*p*q^2*x^2 + 8*b^2*f^2*g*h^2*p*q^2*x)*e^2
```

```
+ 4*(b^2*f^3*h^3*p*q^2*x^3 + 6*b^2*f^3*g*h^2*p*q^2*x^2 + 18*b^2*f^3*g^2*h*p
*q^2*x)*e + 12*(b^2*f^4*h^3*q*x^4 + 4*b^2*f^4*g*h^2*q*x^3 + 6*b^2*f^4*g^2*h
*q*x^2 + 4*b^2*f^4*g^3*q*x)*log(c))*log(d))/f^4
```

Sympy [B] Leaf count of result is larger than twice the leaf count of optimal. 1421 vs. $2(394) = 788$.
time = 6.70, size = 1421, normalized size = 3.47

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)**3*(a+b*ln(c*(d*(f*x+e)**p)**q))**2,x)
```

```
[Out] Piecewise((a**2*g**3*x + 3*a**2*g**2*h*x**2/2 + a**2*g*h**2*x**3 + a**2*h**
3*x**4/4 - a*b*e**4*h**3*log(c*(d*(e + f*x)**p)**q)/(2*f**4) + 2*a*b*e**3*g
*h**2*log(c*(d*(e + f*x)**p)**q)/f**3 + a*b*e**3*h**3*p*q*x/(2*f**3) - 3*a*
b*e**2*g**2*h*log(c*(d*(e + f*x)**p)**q)/f**2 - 2*a*b*e**2*g*h**2*p*q*x/f**
2 - a*b*e**2*h**3*p*q*x**2/(4*f**2) + 2*a*b*e*g**3*log(c*(d*(e + f*x)**p)**
q)/f + 3*a*b*e*g**2*h*p*q*x/f + a*b*e*g*h**2*p*q*x**2/f + a*b*e*h**3*p*q*x*
*3/(6*f) - 2*a*b*g**3*p*q*x + 2*a*b*g**3*x*log(c*(d*(e + f*x)**p)**q) - 3*a
*b*g**2*h*p*q*x**2/2 + 3*a*b*g**2*h*x**2*log(c*(d*(e + f*x)**p)**q) - 2*a*b
*g*h**2*p*q*x**3/3 + 2*a*b*g*h**2*x**3*log(c*(d*(e + f*x)**p)**q) - a*b*h**
3*p*q*x**4/8 + a*b*h**3*x**4*log(c*(d*(e + f*x)**p)**q)/2 + 25*b**2*e**4*h*
*3*p*q*log(c*(d*(e + f*x)**p)**q)/(24*f**4) - b**2*e**4*h**3*log(c*(d*(e +
f*x)**p)**q)**2/(4*f**4) - 11*b**2*e**3*g*h**2*p*q*log(c*(d*(e + f*x)**p)**
q)/(3*f**3) + b**2*e**3*g*h**2*log(c*(d*(e + f*x)**p)**q)**2/f**3 - 25*b**2
*e**3*h**3*p**2*q**2*x/(24*f**3) + b**2*e**3*h**3*p*q*x*log(c*(d*(e + f*x)*
*p)**q)/(2*f**3) + 9*b**2*e**2*g**2*h*p*q*log(c*(d*(e + f*x)**p)**q)/(2*f**
2) - 3*b**2*e**2*g**2*h*log(c*(d*(e + f*x)**p)**q)**2/(2*f**2) + 11*b**2*e*
*2*g*h**2*p**2*q**2*x/(3*f**2) - 2*b**2*e**2*g*h**2*p*q*x*log(c*(d*(e + f*x
)**p)**q)/f**2 + 13*b**2*e**2*h**3*p**2*q**2*x**2/(48*f**2) - b**2*e**2*h**
3*p*q*x**2*log(c*(d*(e + f*x)**p)**q)/(4*f**2) - 2*b**2*e*g**3*p*q*log(c*(d
*(e + f*x)**p)**q)/f + b**2*e*g**3*log(c*(d*(e + f*x)**p)**q)**2/f - 9*b**2
*e*g**2*h*p**2*q**2*x/(2*f) + 3*b**2*e*g**2*h*p*q*x*log(c*(d*(e + f*x)**p)*
*q)/f - 5*b**2*e*g*h**2*p**2*q**2*x**2/(6*f) + b**2*e*g*h**2*p*q*x**2*log(c
*(d*(e + f*x)**p)**q)/f - 7*b**2*e*h**3*p**2*q**2*x**3/(72*f) + b**2*e*h**3
*p*q*x**3*log(c*(d*(e + f*x)**p)**q)/(6*f) + 2*b**2*g**3*p**2*q**2*x - 2*b*
*2*g**3*p*q*x*log(c*(d*(e + f*x)**p)**q) + b**2*g**3*x*log(c*(d*(e + f*x)**
p)**q)**2 + 3*b**2*g**2*h*p**2*q**2*x**2/4 - 3*b**2*g**2*h*p*q*x**2*log(c*(
d*(e + f*x)**p)**q)/2 + 3*b**2*g**2*h*x**2*log(c*(d*(e + f*x)**p)**q)**2/2
+ 2*b**2*g*h**2*p**2*q**2*x**3/9 - 2*b**2*g*h**2*p*q*x**3*log(c*(d*(e + f*x
)**p)**q)/3 + b**2*g*h**2*x**3*log(c*(d*(e + f*x)**p)**q)**2 + b**2*h**3*p*
*2*q**2*x**4/32 - b**2*h**3*p*q*x**4*log(c*(d*(e + f*x)**p)**q)/8 + b**2*h*
*3*x**4*log(c*(d*(e + f*x)**p)**q)**2/4, Ne(f, 0)), ((a + b*log(c*(d*e**p)*
*q))**2*(g**3*x + 3*g**2*h*x**2/2 + g*h**2*x**3 + h**3*x**4/4), True))
```

Giac [B] Leaf count of result is larger than twice the leaf count of optimal. 3938 vs. $2(414) = 828$.
time = 2.69, size = 3938, normalized size = 9.63

Too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^3*(a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="giac")
```

```
[Out] (f*x + e)*b^2*g^3*p^2*q^2*log(f*x + e)^2/f + 3/2*(f*x + e)^2*b^2*g^2*h*p^2*
q^2*log(f*x + e)^2/f^2 + (f*x + e)^3*b^2*g*h^2*p^2*q^2*log(f*x + e)^2/f^3 +
 1/4*(f*x + e)^4*b^2*h^3*p^2*q^2*log(f*x + e)^2/f^4 - 3*(f*x + e)*b^2*g^2*h
*p^2*q^2*e*log(f*x + e)^2/f^2 - 3*(f*x + e)^2*b^2*g*h^2*p^2*q^2*e*log(f*x +
 e)^2/f^3 - (f*x + e)^3*b^2*h^3*p^2*q^2*e*log(f*x + e)^2/f^4 - 2*(f*x + e)*
b^2*g^3*p^2*q^2*log(f*x + e)/f - 3/2*(f*x + e)^2*b^2*g^2*h*p^2*q^2*log(f*x
+ e)/f^2 - 2/3*(f*x + e)^3*b^2*g*h^2*p^2*q^2*log(f*x + e)/f^3 - 1/8*(f*x +
e)^4*b^2*h^3*p^2*q^2*log(f*x + e)/f^4 + 6*(f*x + e)*b^2*g^2*h*p^2*q^2*e*log
(f*x + e)/f^2 + 3*(f*x + e)^2*b^2*g*h^2*p^2*q^2*e*log(f*x + e)/f^3 + 2/3*(f
*x + e)^3*b^2*h^3*p^2*q^2*e*log(f*x + e)/f^4 + 3*(f*x + e)*b^2*g*h^2*p^2*q^
2*e^2*log(f*x + e)^2/f^3 + 3/2*(f*x + e)^2*b^2*h^3*p^2*q^2*e^2*log(f*x + e)
^2/f^4 + 2*(f*x + e)*b^2*g^3*p*q^2*log(f*x + e)*log(d)/f + 3*(f*x + e)^2*b^
2*g^2*h*p*q^2*log(f*x + e)*log(d)/f^2 + 2*(f*x + e)^3*b^2*g*h^2*p*q^2*log(f
*x + e)*log(d)/f^3 + 1/2*(f*x + e)^4*b^2*h^3*p*q^2*log(f*x + e)*log(d)/f^4
- 6*(f*x + e)*b^2*g^2*h*p*q^2*e*log(f*x + e)*log(d)/f^2 - 6*(f*x + e)^2*b^2
*g*h^2*p*q^2*e*log(f*x + e)*log(d)/f^3 - 2*(f*x + e)^3*b^2*h^3*p*q^2*e*log(
f*x + e)*log(d)/f^4 + 2*(f*x + e)*b^2*g^3*p^2*q^2/f + 3/4*(f*x + e)^2*b^2*g
^2*h*p^2*q^2/f^2 + 2/9*(f*x + e)^3*b^2*g*h^2*p^2*q^2/f^3 + 1/32*(f*x + e)^4
*b^2*h^3*p^2*q^2/f^4 - 6*(f*x + e)*b^2*g^2*h*p^2*q^2*e/f^2 - 3/2*(f*x + e)^
2*b^2*g*h^2*p^2*q^2*e/f^3 - 2/9*(f*x + e)^3*b^2*h^3*p^2*q^2*e/f^4 - 6*(f*x
+ e)*b^2*g*h^2*p^2*q^2*e^2*log(f*x + e)/f^3 - 3/2*(f*x + e)^2*b^2*h^3*p^2*q
^2*e^2*log(f*x + e)/f^4 - (f*x + e)*b^2*h^3*p^2*q^2*e^3*log(f*x + e)^2/f^4
+ 2*(f*x + e)*b^2*g^3*p*q*log(f*x + e)*log(c)/f + 3*(f*x + e)^2*b^2*g^2*h*p
*q*log(f*x + e)*log(c)/f^2 + 2*(f*x + e)^3*b^2*g*h^2*p*q*log(f*x + e)*log(c
)/f^3 + 1/2*(f*x + e)^4*b^2*h^3*p*q*log(f*x + e)*log(c)/f^4 - 6*(f*x + e)*b
^2*g^2*h*p*q*e*log(f*x + e)*log(c)/f^2 - 6*(f*x + e)^2*b^2*g*h^2*p*q*e*log(
f*x + e)*log(c)/f^3 - 2*(f*x + e)^3*b^2*h^3*p*q*e*log(f*x + e)*log(c)/f^4 -
 2*(f*x + e)*b^2*g^3*p*q^2*log(d)/f - 3/2*(f*x + e)^2*b^2*g^2*h*p*q^2*log(d
)/f^2 - 2/3*(f*x + e)^3*b^2*g*h^2*p*q^2*log(d)/f^3 - 1/8*(f*x + e)^4*b^2*h^
3*p*q^2*log(d)/f^4 + 6*(f*x + e)*b^2*g^2*h*p*q^2*e*log(d)/f^2 + 3*(f*x + e)
^2*b^2*g*h^2*p*q^2*e*log(d)/f^3 + 2/3*(f*x + e)^3*b^2*h^3*p*q^2*e*log(d)/f^
4 + 6*(f*x + e)*b^2*g*h^2*p*q^2*e^2*log(f*x + e)*log(d)/f^3 + 3*(f*x + e)^2
*b^2*h^3*p*q^2*e^2*log(f*x + e)*log(d)/f^4 + (f*x + e)*b^2*g^3*q^2*log(d)^2
/f + 3/2*(f*x + e)^2*b^2*g^2*h*q^2*log(d)^2/f^2 + (f*x + e)^3*b^2*g*h^2*q^2
*log(d)^2/f^3 + 1/4*(f*x + e)^4*b^2*h^3*q^2*log(d)^2/f^4 - 3*(f*x + e)*b^2*
g^2*h*q^2*e*log(d)^2/f^2 - 3*(f*x + e)^2*b^2*g*h^2*q^2*e*log(d)^2/f^3 - (f*
```

```
x + e)^3*b^2*h^3*q^2*e*log(d)^2/f^4 + 6*(f*x + e)*b^2*g*h^2*p^2*q^2*e^2/f^3
 + 3/4*(f*x + e)^2*b^2*h^3*p^2*q^2*e^2/f^4 + 2*(f*x + e)*a*b*g^3*p*q*log(f*
x + e)/f + 3*(f*x + e)^2*a*b*g^2*h*p*q*log(f*x + e)/f^2 + 2*(f*x + e)^3*a*b
*g*h^2*p*q*log(f*x + e)/f^3 + 1/2*(f*x + e)^4*a*b*h^3*p*q*log(f*x + e)/f^4
+ 2*(f*x + e)*b^2*h^3*p^2*q^2*e^3*log(f*x + e)/f^4 - 6*(f*x + e)*a*b*g^2*h*
p*q*e*log(f*x + e)/f^2 - 6*(f*x + e)^2*a*b*g*h^2*p*q*e*log(f*x + e)/f^3 - 2
*(f*x + e)^3*a*b*h^3*p*q*e*log(f*x + e)/f^4 - 2*(f*x + e)*b^2*g^3*p*q*log(c
)/f - 3/2*(f*x + e)^2*b^2*g^2*h*p*q*log(c)/f^2 - 2/3*(f*x + e)^3*b^2*g*h^2*
p*q*log(c)/f^3 - 1/8*(f*x + e)^4*b^2*h^3*p*q*log(c)/f^4 + 6*(f*x + e)*b^2*g
^2*h*p*q*e*log(c)/f^2 + 3*(f*x + e)^2*b^2*g*h^2*p*q*e*log(c)/f^3 + 2/3*(f*x
 + e)^3*b^2*h^3*p*q*e*log(c)/f^4 + 6*(f*x + e)*b^2*g*h^2*p*q*e^2*log(f*x +
e)*log(c)/f^3 + 3*(f*x + e)^2*b^2*h^3*p*q*e^2*log(f*x + e)*log(c)/f^4 - 6*(
f*x + e)*b^2*g*h^2*p*q^2*e^2*log(d)/f^3 - 3/2*(f*x + e)^2*b^2*h^3*p*q^2*e^2
*log(d)/f^4 - 2*(f*x + e)*b^2*h^3*p*q^2*e^3*log(f*x + e)*log(d)/f^4 + 2*(f*
x + e)*b^2*g^3*q*log(c)*log(d)/f + 3*(f*x + e)^2*b^2*g^2*h*q*log(c)*log(d)/
f^2 + 2*(f*x + e)^3*b^2*g*h^2*q*log(c)*log(d)/f^3 + 1/2*(f*x + e)^4*b^2*h^3
*q*log(c)*log(d)/f^4 - 6*(f*x + e)*b^2*g^2*h*q*e*log(c)*log(d)/f^2 - 6*(f*x
 + e)^2*b^2*g*h^2*q*e*log(c)*log(d)/f^3 - 2*(f*x + e)^3*b^2*h^3*q*e*log(c)*
log(d)/f^4 + 3*(f*x + e)*b^2*g*h^2*q^2*e^2*log(d)^2/f^3 + 3/2*(f*x + e)^2*b
^2*h^3*q^2*e^2*log(d)^2/f^4 - 2*(f*x + e)*a*b*g^3*p*q/f - 3/2*(f*x + e)^2*a
*b*g^2*h*p*q/f^2 - 2/3*(f*x + e)^3*a*b*g*h^2*p*q/f^3 - 1/8*(f*x + e)^4*a*b*
h^3*p*q/f^4 - 2*(f*x + e)*b^2*h^3*p^2*q^2*e^3/f^4 + 6*(f*x + e)*a*b*g^2*h*p
*q*e/f^2 + 3*(f*x + e)^2*a*b*g*h^2*p*q*e/f^3 + 2/3*(f*x + e)^3*a*b*h^3*p*q*
e/f^4 + 6*(f*x + e)*a*b*g*h^2*p*q*e^2*log(f*x + e)/f^3 + 3*(f*x + e)^2*a*b*
h^3*p*q*e^2*log(f*x + e)/f^4 - 6*(f*x + e)*b^2*g*h^2*p*q*e^2*log(c)/f^3 - 3
/2*(f*x + e)^2*b^2*h^3*p*q*e^2*log(c)/f^4 - 2*(f*x + e)*b^2*h^3*p*q*e^3*log
(f*x + e)*log(c)/f^4 + (f*x + e)*b^2*g^3*log(c)^2/f + 3/2*(f*x + e)^2*b^2*g
^2*h*log(c)^2/f^2 + (f*x + e)^3*b^2*g*h^2*log(c)^2/f^3 + 1/4*(f*x + e)^4*b^
2*h^3*log(c)^2/f^4 - 3*(f*x + e)*b^2*g^2*h*e*log(c)^2/f^2 - 3*(f*x + e)^2*b
^2*g*h^2*e*log(c)^2/f^3 - (f*x + e)^3*b^2*h^3*e*log(c)^2/f^4 + 2*(f*x + e)*
a*b*g^3*q*log(d)/f + 3*(f*x + e)^2*a*b*g^2*h*q*...
```

Mupad [B]
time = 0.92, size = 1154, normalized size = 2.82

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g + h*x)^3*(a + b*log(c*(d*(e + f*x)^p)^q))^2,x)
```

```
[Out] x^3*((h^2*(6*a^2*e*h + 18*a^2*f*g - b^2*e*h*p^2*q^2 + 4*b^2*f*g*p^2*q^2 - 1
2*a*b*f*g*p*q))/(18*f) - (e*h^3*(8*a^2 + b^2*p^2*q^2 - 4*a*b*p*q))/(24*f))
+ log(c*(d*(e + f*x)^p)^q)*((x*((e*((e*((4*b*h^2*(a*e*h + 3*a*f*g - b*f*g*p
*q))/f - (b*e*h^3*(4*a - b*p*q))/f))/f - (6*b*g*h*(2*a*e*h + 2*a*f*g - b*f*
g*p*q))/f))/f + (4*b*g^2*(3*a*e*h + a*f*g - b*f*g*p*q))/f))/2 + (x^3*((4*b*
```

```
h^2*(a*e*h + 3*a*f*g - b*f*g*p*q))/(3*f) - (b*e*h^3*(4*a - b*p*q))/(3*f)))/
2 - (x^2*((e*((4*b*h^2*(a*e*h + 3*a*f*g - b*f*g*p*q))/f - (b*e*h^3*(4*a - b
*p*q))/f))/(2*f) - (3*b*g*h*(2*a*e*h + 2*a*f*g - b*f*g*p*q))/f))/2 + (b*h^3
*x^4*(4*a - b*p*q))/8) + log(c*(d*(e + f*x)^p)^q)^2*(b^2*g^3*x - (e*(b^2*e^
3*h^3 - 4*b^2*f^3*g^3 + 6*b^2*e*f^2*g^2*h - 4*b^2*e^2*f*g*h^2))/(4*f^4) + (
b^2*h^3*x^4)/4 + (3*b^2*g^2*h*x^2)/2 + b^2*g*h^2*x^3) + x*((24*a^2*f^3*g^3
- 12*b^2*e^3*h^3*p^2*q^2 + 48*b^2*f^3*g^3*p^2*q^2 + 72*a^2*e*f^2*g^2*h - 48
*a*b*f^3*g^3*p*q - 72*b^2*e*f^2*g^2*h*p^2*q^2 + 48*b^2*e^2*f*g*h^2*p^2*q^2)
/(24*f^3) + (e*((e*((h^2*(6*a^2*e*h + 18*a^2*f*g - b^2*e*h*p^2*q^2 + 4*b^2*
f*g*p^2*q^2 - 12*a*b*f*g*p*q))/(6*f) - (e*h^3*(8*a^2 + b^2*p^2*q^2 - 4*a*b*
p*q))/(8*f)))/f - (h*(12*a^2*f^2*g^2 + b^2*e^2*h^2*p^2*q^2 + 6*b^2*f^2*g^2*
p^2*q^2 + 12*a^2*e*f*g*h - 12*a*b*f^2*g^2*p*q - 4*b^2*e*f*g*h*p^2*q^2))/(4*
f^2)))/f) - x^2*((e*((h^2*(6*a^2*e*h + 18*a^2*f*g - b^2*e*h*p^2*q^2 + 4*b^2
*f*g*p^2*q^2 - 12*a*b*f*g*p*q))/(6*f) - (e*h^3*(8*a^2 + b^2*p^2*q^2 - 4*a*b
*p*q))/(8*f)))/(2*f) - (h*(12*a^2*f^2*g^2 + b^2*e^2*h^2*p^2*q^2 + 6*b^2*f^2
*g^2*p^2*q^2 + 12*a^2*e*f*g*h - 12*a*b*f^2*g^2*p*q - 4*b^2*e*f*g*h*p^2*q^2)
)/(8*f^2)) + (log(e + f*x)*(25*b^2*e^4*h^3*p^2*q^2 - 12*a*b*e^4*h^3*p*q - 4
8*b^2*e*f^3*g^3*p^2*q^2 - 88*b^2*e^3*f*g*h^2*p^2*q^2 + 108*b^2*e^2*f^2*g^2*
h*p^2*q^2 + 48*a*b*e*f^3*g^3*p*q + 48*a*b*e^3*f*g*h^2*p*q - 72*a*b*e^2*f^2*
g^2*h*p*q))/(24*f^4) + (h^3*x^4*(8*a^2 + b^2*p^2*q^2 - 4*a*b*p*q))/32
```

3.429 $\int (g+hx)^2 \left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)^2 dx$

Optimal. Leaf size=323

$$\frac{2b^2(fg-eh)^2p^2q^2x}{f^2}+\frac{b^2h(fg-eh)p^2q^2(e+fx)^2}{2f^3}+\frac{2b^2h^2p^2q^2(e+fx)^3}{27f^3}+\frac{b^2(fg-eh)^3p^2q^2\log^2(e+fx)}{3f^3h}-\frac{2b}{}$$

```
[Out] 2*b^2*(-e*h+f*g)^2*p^2*q^2*x/f^2+1/2*b^2*h*(-e*h+f*g)*p^2*q^2*(f*x+e)^2/f^3
+2/27*b^2*h^2*p^2*q^2*(f*x+e)^3/f^3+1/3*b^2*(-e*h+f*g)^3*p^2*q^2*ln(f*x+e)^
2/f^3/h-2*b*(-e*h+f*g)^2*p*q*(f*x+e)*(a+b*ln(c*(d*(f*x+e)^p)^q))/f^3-b*h*(-
e*h+f*g)*p*q*(f*x+e)^2*(a+b*ln(c*(d*(f*x+e)^p)^q))/f^3-2/9*b*h^2*p*q*(f*x+e
)^3*(a+b*ln(c*(d*(f*x+e)^p)^q))/f^3-2/3*b*(-e*h+f*g)^3*p*q*ln(f*x+e)*(a+b*l
n(c*(d*(f*x+e)^p)^q))/f^3/h+1/3*(h*x+g)^3*(a+b*ln(c*(d*(f*x+e)^p)^q))^2/h
```

Rubi [A]
time = 0.57, antiderivative size = 323, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 8, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}} = 0.286$, Rules used = {2445, 2458, 45, 2372, 12, 14, 2338, 2495}

$$-\frac{2bpq(fg-eh)^3\log(e+fx)\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)}{3f^3h}-\frac{2bpq(e+fx)(fg-eh)^2\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)}{f^3}-\frac{bhpq(e+fx)^2(fg-eh)\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)}{f^3}-\frac{2bh^2pq(e+fx)^3\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)}{9f^3}+\frac{(g+hx)^3\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)^2}{3h}+\frac{b^2hp^2q^2(e+fx)^2(fg-eh)}{2f^3}+\frac{b^2p^2q^2(fg-eh)^3\log^2(e+fx)}{3f^3h}+\frac{2b^2h^2p^2q^2(e+fx)^3}{27f^3}+\frac{2b^2p^2q^2x(fg-eh)^2}{f^2}$$

Antiderivative was successfully verified.

```
[In] Int[(g + h*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])^2,x]
```

```
[Out] (2*b^2*(f*g - e*h)^2*p^2*q^2*x)/f^2 + (b^2*h*(f*g - e*h)*p^2*q^2*(e + f*x)^
2)/(2*f^3) + (2*b^2*h^2*p^2*q^2*(e + f*x)^3)/(27*f^3) + (b^2*(f*g - e*h)^3*
p^2*q^2*Log[e + f*x]^2)/(3*f^3*h) - (2*b*(f*g - e*h)^2*p*q*(e + f*x)*(a + b
*Log[c*(d*(e + f*x)^p)^q]))/f^3 - (b*h*(f*g - e*h)*p*q*(e + f*x)^2*(a + b*L
og[c*(d*(e + f*x)^p)^q]))/f^3 - (2*b*h^2*p*q*(e + f*x)^3*(a + b*Log[c*(d*(e
 + f*x)^p)^q]))/(9*f^3) - (2*b*(f*g - e*h)^3*p*q*Log[e + f*x]*(a + b*Log[c*
(d*(e + f*x)^p)^q]))/(3*f^3*h) + ((g + h*x)^3*(a + b*Log[c*(d*(e + f*x)^p)^
q])^2)/(3*h)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] &&  !LinearQ[u, x] &&  !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2338

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2372

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*(x_)^(m_.)*((d_) + (e_.)*(x_)^(r_
.))^(q_.), x_Symbol] :> With[{u = IntHide[x^m*(d + e*x^r)^q, x]}, Dist[a +
b*Log[c*x^n], u, x] - Dist[b*n, Int[SimplifyIntegrand[u/x, x], x], x]] /; F
reeQ[{a, b, c, d, e, n, r}, x] && IGtQ[q, 0] && IntegerQ[m] &&  !(EqQ[q, 1]
 && EqQ[m, -1])
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[(f + g*x)^(q + 1)*((a + b*Log[c*(d + e*x)^
n])^p/(g*(q + 1))), x] - Dist[b*e*n*(p/(g*(q + 1))), Int[(f + g*x)^(q + 1)*
((a + b*Log[c*(d + e*x)^n])^(p - 1)/(d + e*x)), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && GtQ[p, 0] && NeQ[q, -1] && Int
egersQ[2*p, 2*q] && ( !IGtQ[q, 0] || (EqQ[p, 2] && NeQ[q, 1]))
```

Rule 2458

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[(g*(x/e))^q*((e*h - d*i)/e + i*(x/e))^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2495

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int (g+hx)^2 \left(a+b\log \left(c(d(e+fx)^p)^q\right)\right)^2 \, dx = \text{Subst}\left(\int (g+hx)^2 \left(a+b\log \left(cd^q(e+fx)^{pq}\right)\right)^2 \, dx, cd^q(e+$$

$$= \frac{(g+hx)^3 \left(a+b\log \left(c(d(e+fx)^p)^q\right)\right)^2}{3h} - \text{Subst}\left(\frac{(2bfpq)\int}{}\right.$$

$$= \frac{(g+hx)^3 \left(a+b\log \left(c(d(e+fx)^p)^q\right)\right)^2}{3h} - \text{Subst}\left(\frac{(2bpq)\text{Subs}}{}\right.$$

$$= -\frac{bpq\left(\frac{18h(fg-eh)^2(e+fx)}{f^3} + \frac{9h^2(fg-eh)(e+fx)^2}{f^3} + \frac{2h^3(e+fx)^3}{f^3} + \frac{6(fg}{}\right.}{9h}$$

$$= -\frac{bpq\left(\frac{18h(fg-eh)^2(e+fx)}{f^3} + \frac{9h^2(fg-eh)(e+fx)^2}{f^3} + \frac{2h^3(e+fx)^3}{f^3} + \frac{6(fg}{}\right.}{9h}$$

$$= -\frac{bpq\left(\frac{18h(fg-eh)^2(e+fx)}{f^3} + \frac{9h^2(fg-eh)(e+fx)^2}{f^3} + \frac{2h^3(e+fx)^3}{f^3} + \frac{6(fg}{}\right.}{9h}$$

$$= -\frac{bpq\left(\frac{18h(fg-eh)^2(e+fx)}{f^3} + \frac{9h^2(fg-eh)(e+fx)^2}{f^3} + \frac{2h^3(e+fx)^3}{f^3} + \frac{6(fg}{}\right.}{9h}$$

$$= \frac{2b^2(fg-eh)^2p^2q^2x}{f^2} + \frac{b^2h(fg-eh)p^2q^2(e+fx)^2}{2f^3} + \frac{2b^2h^2p}{}$$

Mathematica [A]
time = 0.33, size = 422, normalized size = 1.31

$$\frac{-18b^2e(3f^2g^2-3efgh+e^2h^2)p^2q^2\log^2(e+fx)+6bepq\log(e+fx)\left(6a(3f^2g^2-3efgh+e^2h^2)+b(-18f^2g^2+27efgh-11e^2h^2)pq+6b(3f^2g^2-3efgh+e^2h^2)\log\left(c(d(e+fx)^p)^q\right)\right)+fx\left(18a^2f^2(3g^2+3ghx+h^2x^2)-6abpq(6e^2h^2-3efh(6g+hx)+f^2(18g^2+9ghx+2h^2x^2))+b^2p^2q^2(66e^2h^2-3efh(54g+5hx)+f^2(108g^2+27ghx+4h^2x^2))+6b(6af^2(3g^2+3ghx+h^2x^2)-bpq(6e^2h^2-3efh(6g+hx)+f^2(18g^2+9ghx+2h^2x^2)))\log\left(c(d(e+fx)^p)^q\right)+18b^2f^2(3g^2+3ghx+h^2x^2)\log^2\left(c(d(e+fx)^p)^q\right)\right)}{54f^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(g + h*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])^2,x]
```

```
[Out] (-18*b^2*e*(3*f^2*g^2 - 3*e*f*g*h + e^2*h^2)*p^2*q^2*Log[e + f*x]^2 + 6*b*e
*p*q*Log[e + f*x]*(6*a*(3*f^2*g^2 - 3*e*f*g*h + e^2*h^2) + b*(-18*f^2*g^2 +
 27*e*f*g*h - 11*e^2*h^2)*p*q + 6*b*(3*f^2*g^2 - 3*e*f*g*h + e^2*h^2)*Log[c
*(d*(e + f*x)^p)^q]) + f*x*(18*a^2*f^2*(3*g^2 + 3*g*h*x + h^2*x^2) - 6*a*b*
p*q*(6*e^2*h^2 - 3*e*f*h*(6*g + h*x) + f^2*(18*g^2 + 9*g*h*x + 2*h^2*x^2))
+ b^2*p^2*q^2*(66*e^2*h^2 - 3*e*f*h*(54*g + 5*h*x) + f^2*(108*g^2 + 27*g*h*
```

```
x + 4*h^2*x^2)) + 6*b*(6*a*f^2*(3*g^2 + 3*g*h*x + h^2*x^2) - b*p*q*(6*e^2*h
^2 - 3*e*f*h*(6*g + h*x) + f^2*(18*g^2 + 9*g*h*x + 2*h^2*x^2)))*Log[c*(d*(e
 + f*x)^p)^q] + 18*b^2*f^2*(3*g^2 + 3*g*h*x + h^2*x^2)*Log[c*(d*(e + f*x)^p
)^q]^2))/(54*f^3)
```

Maple [F]
time = 0.21, size = 0, normalized size = 0.00

$$\int (hx+g)^2 \left(a+b\ln \left(c(d(fx+e)^p)^q\right)\right)^2 \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x+g)^2*(a+b*ln(c*(d*(f*x+e)^p)^q))^2,x)
```

```
[Out] int((h*x+g)^2*(a+b*ln(c*(d*(f*x+e)^p)^q))^2,x)
```

Maxima [A]
time = 0.30, size = 624, normalized size = 1.93

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^2*(a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="maxima")
```

```
[Out] 1/3*b^2*h^2*x^3*log(((f*x + e)^p*d)^q*c)^2 - 2*a*b*f*g^2*p*q*(x/f - e*log(f
*x + e)/f^2) - a*b*f*g*h*p*q*((f*x^2 - 2*x*e)/f^2 + 2*e^2*log(f*x + e)/f^3)
 - 1/9*a*b*f*h^2*p*q*((2*f^2*x^3 - 3*f*x^2*e + 6*x*e^2)/f^3 - 6*e^3*log(f*x
 + e)/f^4) + 2/3*a*b*h^2*x^3*log(((f*x + e)^p*d)^q*c) + b^2*g*h*x^2*log(((f
*x + e)^p*d)^q*c)^2 + 1/3*a^2*h^2*x^3 + 2*a*b*g*h*x^2*log(((f*x + e)^p*d)^q
*c) + b^2*g^2*x*log(((f*x + e)^p*d)^q*c)^2 + a^2*g*h*x^2 + 2*a*b*g^2*x*log(
((f*x + e)^p*d)^q*c) - (2*f*p*q*(x/f - e*log(f*x + e)/f^2)*log(((f*x + e)^p
*d)^q*c) + (e*log(f*x + e)^2 - 2*f*x + 2*e*log(f*x + e))*p^2*q^2/f)*b^2*g^2
 - 1/2*(2*f*p*q*((f*x^2 - 2*x*e)/f^2 + 2*e^2*log(f*x + e)/f^3)*log(((f*x +
e)^p*d)^q*c) - (f^2*x^2 - 6*f*x*e + 2*e^2*log(f*x + e)^2 + 6*e^2*log(f*x +
e))*p^2*q^2/f^2)*b^2*g*h - 1/54*(6*f*p*q*((2*f^2*x^3 - 3*f*x^2*e + 6*x*e^2)
/f^3 - 6*e^3*log(f*x + e)/f^4)*log(((f*x + e)^p*d)^q*c) - (4*f^3*x^3 - 15*f
^2*x^2*e + 66*f*x*e^2 - 18*e^3*log(f*x + e)^2 - 66*e^3*log(f*x + e))*p^2*q^
2/f^3)*b^2*h^2 + a^2*g^2*x
```

Fricas [B] Leaf count of result is larger than twice the leaf count of optimal. 1215 vs. 2(329) = 658.
time = 0.39, size = 1215, normalized size = 3.76

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^2*(a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="fricas")
```

```
[Out] 1/54*(2*(2*b^2*f^3*h^2*p^2*q^2 - 6*a*b*f^3*h^2*p*q + 9*a^2*f^3*h^2)*x^3 + 2
7*(b^2*f^3*g*h*p^2*q^2 - 2*a*b*f^3*g*h*p*q + 2*a^2*f^3*g*h)*x^2 + 6*(11*b^2
*f*h^2*p^2*q^2 - 6*a*b*f*h^2*p*q)*x*e^2 + 18*(b^2*f^3*h^2*p^2*q^2*x^3 + 3*b
^2*f^3*g*h*p^2*q^2*x^2 + 3*b^2*f^3*g^2*p^2*q^2*x + 3*b^2*f^2*g^2*p^2*q^2*e
- 3*b^2*f*g*h*p^2*q^2*e^2 + b^2*h^2*p^2*q^2*e^3)*log(f*x + e)^2 + 18*(b^2*f
^3*h^2*x^3 + 3*b^2*f^3*g*h*x^2 + 3*b^2*f^3*g^2*x)*log(c)^2 + 18*(b^2*f^3*h^
2*q^2*x^3 + 3*b^2*f^3*g*h*q^2*x^2 + 3*b^2*f^3*g^2*q^2*x)*log(d)^2 + 54*(2*b
^2*f^3*g^2*p^2*q^2 - 2*a*b*f^3*g^2*p*q + a^2*f^3*g^2)*x - 3*((5*b^2*f^2*h^2
*p^2*q^2 - 6*a*b*f^2*h^2*p*q)*x^2 + 18*(3*b^2*f^2*g*h*p^2*q^2 - 2*a*b*f^2*g
*h*p*q)*x)*e - 6*(2*(b^2*f^3*h^2*p^2*q^2 - 3*a*b*f^3*h^2*p*q)*x^3 + 9*(b^2*
f^3*g*h*p^2*q^2 - 2*a*b*f^3*g*h*p*q)*x^2 + 18*(b^2*f^3*g^2*p^2*q^2 - a*b*f^
3*g^2*p*q)*x + (11*b^2*h^2*p^2*q^2 - 6*a*b*h^2*p*q)*e^3 + 3*(2*b^2*f*h^2*p^
2*q^2*x - 9*b^2*f*g*h*p^2*q^2 + 6*a*b*f*g*h*p*q)*e^2 - 3*(b^2*f^2*h^2*p^2*q
^2*x^2 + 6*b^2*f^2*g*h*p^2*q^2*x - 6*b^2*f^2*g^2*p^2*q^2 + 6*a*b*f^2*g^2*p*
q)*e - 6*(b^2*f^3*h^2*p*q*x^3 + 3*b^2*f^3*g*h*p*q*x^2 + 3*b^2*f^3*g^2*p*q*x
 + 3*b^2*f^2*g^2*p*q*e - 3*b^2*f*g*h*p*q*e^2 + b^2*h^2*p*q*e^3)*log(c) - 6*
(b^2*f^3*h^2*p*q^2*x^3 + 3*b^2*f^3*g*h*p*q^2*x^2 + 3*b^2*f^3*g^2*p*q^2*x +
3*b^2*f^2*g^2*p*q^2*e - 3*b^2*f*g*h*p*q^2*e^2 + b^2*h^2*p*q^2*e^3)*log(d))*
log(f*x + e) - 6*(6*b^2*f*h^2*p*q*x*e^2 + 2*(b^2*f^3*h^2*p*q - 3*a*b*f^3*h^
2)*x^3 + 9*(b^2*f^3*g*h*p*q - 2*a*b*f^3*g*h)*x^2 + 18*(b^2*f^3*g^2*p*q - a*
b*f^3*g^2)*x - 3*(b^2*f^2*h^2*p*q*x^2 + 6*b^2*f^2*g*h*p*q*x)*e)*log(c) - 6*
(6*b^2*f*h^2*p*q^2*x*e^2 + 2*(b^2*f^3*h^2*p*q^2 - 3*a*b*f^3*h^2*q)*x^3 + 9*
(b^2*f^3*g*h*p*q^2 - 2*a*b*f^3*g*h*q)*x^2 + 18*(b^2*f^3*g^2*p*q^2 - a*b*f^3
*g^2*q)*x - 3*(b^2*f^2*h^2*p*q^2*x^2 + 6*b^2*f^2*g*h*p*q^2*x)*e - 6*(b^2*f^
3*h^2*q*x^3 + 3*b^2*f^3*g*h*q*x^2 + 3*b^2*f^3*g^2*q*x)*log(c))*log(d))/f^3
```

Sympy [**B**] Leaf count of result is larger than twice the leaf count of optimal. 894 vs. $2(311) = 622$.
time = 3.10, size = 894, normalized size = 2.77

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)**2*(a+b*ln(c*(d*(f*x+e)**p)**q))**2,x)
```

```
[Out] Piecewise((a**2*g**2*x + a**2*g*h*x**2 + a**2*h**2*x**3/3 + 2*a*b*e**3*h**2
*log(c*(d*(e + f*x)**p)**q)/(3*f**3) - 2*a*b*e**2*g*h*log(c*(d*(e + f*x)**p
)**q)/f**2 - 2*a*b*e**2*h**2*p*q*x/(3*f**2) + 2*a*b*e*g**2*log(c*(d*(e + f*
x)**p)**q)/f + 2*a*b*e*g*h*p*q*x/f + a*b*e*h**2*p*q*x**2/(3*f) - 2*a*b*g**2
*p*q*x + 2*a*b*g**2*x*log(c*(d*(e + f*x)**p)**q) - a*b*g*h*p*q*x**2 + 2*a*b
*g*h*x**2*log(c*(d*(e + f*x)**p)**q) - 2*a*b*h**2*p*q*x**3/9 + 2*a*b*h**2*x
**3*log(c*(d*(e + f*x)**p)**q)/3 - 11*b**2*e**3*h**2*p*q*log(c*(d*(e + f*x)
**p)**q)/(9*f**3) + b**2*e**3*h**2*log(c*(d*(e + f*x)**p)**q)**2/(3*f**3) +
 3*b**2*e**2*g*h*p*q*log(c*(d*(e + f*x)**p)**q)/f**2 - b**2*e**2*g*h*log(c*
```

```
(d*(e + f*x)**p)**q)**2/f**2 + 11*b**2*e**2*h**2*p**2*q**2*x/(9*f**2) - 2*b
**2*e**2*h**2*p*q*x*log(c*(d*(e + f*x)**p)**q)/(3*f**2) - 2*b**2*e*g**2*p*q
*log(c*(d*(e + f*x)**p)**q)/f + b**2*e*g**2*log(c*(d*(e + f*x)**p)**q)**2/f
 - 3*b**2*e*g*h*p**2*q**2*x/f + 2*b**2*e*g*h*p*q*x*log(c*(d*(e + f*x)**p)**
q)/f - 5*b**2*e*h**2*p**2*q**2*x**2/(18*f) + b**2*e*h**2*p*q*x**2*log(c*(d*
(e + f*x)**p)**q)/(3*f) + 2*b**2*g**2*p**2*q**2*x - 2*b**2*g**2*p*q*x*log(c
*(d*(e + f*x)**p)**q) + b**2*g**2*x*log(c*(d*(e + f*x)**p)**q)**2 + b**2*g*
h*p**2*q**2*x**2/2 - b**2*g*h*p*q*x**2*log(c*(d*(e + f*x)**p)**q) + b**2*g*
h*x**2*log(c*(d*(e + f*x)**p)**q)**2 + 2*b**2*h**2*p**2*q**2*x**3/27 - 2*b*
*2*h**2*p*q*x**3*log(c*(d*(e + f*x)**p)**q)/9 + b**2*h**2*x**3*log(c*(d*(e
+ f*x)**p)**q)**2/3, Ne(f, 0)), ((a + b*log(c*(d*e**p)**q))**2*(g**2*x + g*
h*x**2 + h**2*x**3/3), True))
```

Giac [B] Leaf count of result is larger than twice the leaf count of optimal. 2241 vs. $2(329) = 658$.
time = 3.88, size = 2241, normalized size = 6.94

Too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^2*(a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="giac")
```

```
[Out] (f*x + e)*b^2*g^2*p^2*q^2*log(f*x + e)^2/f + (f*x + e)^2*b^2*g*h*p^2*q^2*lo
g(f*x + e)^2/f^2 + 1/3*(f*x + e)^3*b^2*h^2*p^2*q^2*log(f*x + e)^2/f^3 - 2*(
f*x + e)*b^2*g*h*p^2*q^2*e*log(f*x + e)^2/f^2 - (f*x + e)^2*b^2*h^2*p^2*q^2
*e*log(f*x + e)^2/f^3 - 2*(f*x + e)*b^2*g^2*p^2*q^2*log(f*x + e)/f - (f*x +
 e)^2*b^2*g*h*p^2*q^2*log(f*x + e)/f^2 - 2/9*(f*x + e)^3*b^2*h^2*p^2*q^2*lo
g(f*x + e)/f^3 + 4*(f*x + e)*b^2*g*h*p^2*q^2*e*log(f*x + e)/f^2 + (f*x + e)
^2*b^2*h^2*p^2*q^2*e*log(f*x + e)/f^3 + (f*x + e)*b^2*h^2*p^2*q^2*e^2*log(f
*x + e)^2/f^3 + 2*(f*x + e)*b^2*g^2*p*q^2*log(f*x + e)*log(d)/f + 2*(f*x +
e)^2*b^2*g*h*p*q^2*log(f*x + e)*log(d)/f^2 + 2/3*(f*x + e)^3*b^2*h^2*p*q^2*
log(f*x + e)*log(d)/f^3 - 4*(f*x + e)*b^2*g*h*p*q^2*e*log(f*x + e)*log(d)/f
^2 - 2*(f*x + e)^2*b^2*h^2*p*q^2*e*log(f*x + e)*log(d)/f^3 + 2*(f*x + e)*b^
2*g^2*p^2*q^2/f + 1/2*(f*x + e)^2*b^2*g*h*p^2*q^2/f^2 + 2/27*(f*x + e)^3*b^
2*h^2*p^2*q^2/f^3 - 4*(f*x + e)*b^2*g*h*p^2*q^2*e/f^2 - 1/2*(f*x + e)^2*b^2
*h^2*p^2*q^2*e/f^3 - 2*(f*x + e)*b^2*h^2*p^2*q^2*e^2*log(f*x + e)/f^3 + 2*(
f*x + e)*b^2*g^2*p*q*log(f*x + e)*log(c)/f + 2*(f*x + e)^2*b^2*g*h*p*q*log(
f*x + e)*log(c)/f^2 + 2/3*(f*x + e)^3*b^2*h^2*p*q*log(f*x + e)*log(c)/f^3 -
 4*(f*x + e)*b^2*g*h*p*q*e*log(f*x + e)*log(c)/f^2 - 2*(f*x + e)^2*b^2*h^2*
p*q*e*log(f*x + e)*log(c)/f^3 - 2*(f*x + e)*b^2*g^2*p*q^2*log(d)/f - (f*x +
 e)^2*b^2*g*h*p*q^2*log(d)/f^2 - 2/9*(f*x + e)^3*b^2*h^2*p*q^2*log(d)/f^3 +
 4*(f*x + e)*b^2*g*h*p*q^2*e*log(d)/f^2 + (f*x + e)^2*b^2*h^2*p*q^2*e*log(d
)/f^3 + 2*(f*x + e)*b^2*h^2*p*q^2*e^2*log(f*x + e)*log(d)/f^3 + (f*x + e)*b
^2*g^2*q^2*log(d)^2/f + (f*x + e)^2*b^2*g*h*q^2*log(d)^2/f^2 + 1/3*(f*x + e
)^3*b^2*h^2*q^2*log(d)^2/f^3 - 2*(f*x + e)*b^2*g*h*q^2*e*log(d)^2/f^2 - (f*
```

```
x + e)^2*b^2*h^2*q^2*e*log(d)^2/f^3 + 2*(f*x + e)*b^2*h^2*p^2*q^2*e^2/f^3 +
 2*(f*x + e)*a*b*g^2*p*q*log(f*x + e)/f + 2*(f*x + e)^2*a*b*g*h*p*q*log(f*x
 + e)/f^2 + 2/3*(f*x + e)^3*a*b*h^2*p*q*log(f*x + e)/f^3 - 4*(f*x + e)*a*b*
g*h*p*q*e*log(f*x + e)/f^2 - 2*(f*x + e)^2*a*b*h^2*p*q*e*log(f*x + e)/f^3 -
 2*(f*x + e)*b^2*g^2*p*q*log(c)/f - (f*x + e)^2*b^2*g*h*p*q*log(c)/f^2 - 2/
9*(f*x + e)^3*b^2*h^2*p*q*log(c)/f^3 + 4*(f*x + e)*b^2*g*h*p*q*e*log(c)/f^2
 + (f*x + e)^2*b^2*h^2*p*q*e*log(c)/f^3 + 2*(f*x + e)*b^2*h^2*p*q*e^2*log(f
*x + e)*log(c)/f^3 - 2*(f*x + e)*b^2*h^2*p*q^2*e^2*log(d)/f^3 + 2*(f*x + e)
*b^2*g^2*q*log(c)*log(d)/f + 2*(f*x + e)^2*b^2*g*h*q*log(c)*log(d)/f^2 + 2/
3*(f*x + e)^3*b^2*h^2*q*log(c)*log(d)/f^3 - 4*(f*x + e)*b^2*g*h*q*e*log(c)*
log(d)/f^2 - 2*(f*x + e)^2*b^2*h^2*q*e*log(c)*log(d)/f^3 + (f*x + e)*b^2*h^
2*q^2*e^2*log(d)^2/f^3 - 2*(f*x + e)*a*b*g^2*p*q/f - (f*x + e)^2*a*b*g*h*p*
q/f^2 - 2/9*(f*x + e)^3*a*b*h^2*p*q/f^3 + 4*(f*x + e)*a*b*g*h*p*q*e/f^2 + (
f*x + e)^2*a*b*h^2*p*q*e/f^3 + 2*(f*x + e)*a*b*h^2*p*q*e^2*log(f*x + e)/f^3
 - 2*(f*x + e)*b^2*h^2*p*q*e^2*log(c)/f^3 + (f*x + e)*b^2*g^2*log(c)^2/f +
(f*x + e)^2*b^2*g*h*log(c)^2/f^2 + 1/3*(f*x + e)^3*b^2*h^2*log(c)^2/f^3 - 2
*(f*x + e)*b^2*g*h*e*log(c)^2/f^2 - (f*x + e)^2*b^2*h^2*e*log(c)^2/f^3 + 2*
(f*x + e)*a*b*g^2*q*log(d)/f + 2*(f*x + e)^2*a*b*g*h*q*log(d)/f^2 + 2/3*(f*
x + e)^3*a*b*h^2*q*log(d)/f^3 - 4*(f*x + e)*a*b*g*h*q*e*log(d)/f^2 - 2*(f*x
 + e)^2*a*b*h^2*q*e*log(d)/f^3 + 2*(f*x + e)*b^2*h^2*q*e^2*log(c)*log(d)/f^
3 - 2*(f*x + e)*a*b*h^2*p*q*e^2/f^3 + 2*(f*x + e)*a*b*g^2*log(c)/f + 2*(f*x
 + e)^2*a*b*g*h*log(c)/f^2 + 2/3*(f*x + e)^3*a*b*h^2*log(c)/f^3 - 4*(f*x +
e)*a*b*g*h*e*log(c)/f^2 - 2*(f*x + e)^2*a*b*h^2*e*log(c)/f^3 + (f*x + e)*b^
2*h^2*e^2*log(c)^2/f^3 + 2*(f*x + e)*a*b*h^2*q*e^2*log(d)/f^3 + (f*x + e)*a
^2*g^2/f + (f*x + e)^2*a^2*g*h/f^2 + 1/3*(f*x + e)^3*a^2*h^2/f^3 - 2*(f*x +
 e)*a^2*g*h*e/f^2 - (f*x + e)^2*a^2*h^2*e/f^3 + 2*(f*x + e)*a*b*h^2*e^2*log
(c)/f^3 + (f*x + e)*a^2*h^2*e^2/f^3
```

Mupad [**B**]
time = 0.69, size = 652, normalized size = 2.02

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g + h*x)^2*(a + b*log(c*(d*(e + f*x)^p)^q))^2,x)
```

```
[Out] log(c*(d*(e + f*x)^p)^q)^2*(b^2*g^2*x + (b^2*h^2*x^3)/3 + (e*(b^2*e^2*h^2 +
 3*b^2*f^2*g^2 - 3*b^2*e*f*g*h))/(3*f^3) + b^2*g*h*x^2) + log(c*(d*(e + f*x
)^p)^q)*((x^2*((3*b*h*(a*e*h + 2*a*f*g - b*f*g*p*q))/f - (b*e*h^2*(3*a - b*
p*q))/f))/3 - (x*((e*((6*b*h*(a*e*h + 2*a*f*g - b*f*g*p*q))/f - (2*b*e*h^2*
(3*a - b*p*q))/f))/f - (6*b*g*(2*a*e*h + a*f*g - b*f*g*p*q))/f))/3 + (2*b*h
^2*x^3*(3*a - b*p*q))/9) + x*((9*a^2*f^2*g^2 + 6*b^2*e^2*h^2*p^2*q^2 + 18*b
^2*f^2*g^2*p^2*q^2 + 18*a^2*e*f*g*h - 18*a*b*f^2*g^2*p*q - 18*b^2*e*f*g*h*p
^2*q^2)/(9*f^2) - (e*((h*(3*a^2*e*h + 6*a^2*f*g - b^2*e*h*p^2*q^2 + 3*b^2*f
*g*p^2*q^2 - 6*a*b*f*g*p*q))/(3*f) - (e*h^2*(9*a^2 + 2*b^2*p^2*q^2 - 6*a*b*
```

```
p*q))/(9*f)))/f) + x^2*((h*(3*a^2*e*h + 6*a^2*f*g - b^2*e*h*p^2*q^2 + 3*b^2
*f*g*p^2*q^2 - 6*a*b*f*g*p*q))/(6*f) - (e*h^2*(9*a^2 + 2*b^2*p^2*q^2 - 6*a*
b*p*q))/(18*f)) - (log(e + f*x)*(11*b^2*e^3*h^2*p^2*q^2 - 6*a*b*e^3*h^2*p*q
 + 18*b^2*e*f^2*g^2*p^2*q^2 - 27*b^2*e^2*f*g*h*p^2*q^2 - 18*a*b*e*f^2*g^2*p
*q + 18*a*b*e^2*f*g*h*p*q))/(9*f^3) + (h^2*x^3*(9*a^2 + 2*b^2*p^2*q^2 - 6*a
*b*p*q))/27
```

3.430 $\int (g+hx) \left(a+b\log \left(c(d(e+fx)^p)^q\right)\right)^2 \, dx$

Optimal. Leaf size=211

$$-\frac{2ab(fg-eh)pqx}{f}+\frac{2b^2(fg-eh)p^2q^2x}{f}+\frac{b^2hp^2q^2(e+fx)^2}{4f^2}-\frac{2b^2(fg-eh)pq(e+fx)\log \left(c(d(e+fx)^p)^q\right)}{f^2}-$$

```
[Out] -2*a*b*(-e*h+f*g)*p*q*x/f+2*b^2*(-e*h+f*g)*p^2*q^2*x/f+1/4*b^2*h*p^2*q^2*(f
*x+e)^2/f^2-2*b^2*(-e*h+f*g)*p*q*(f*x+e)*ln(c*(d*(f*x+e)^p)^q)/f^2-1/2*b*h*
p*q*(f*x+e)^2*(a+b*ln(c*(d*(f*x+e)^p)^q))/f^2+(-e*h+f*g)*(f*x+e)*(a+b*ln(c*
(d*(f*x+e)^p)^q))^2/f^2+1/2*h*(f*x+e)^2*(a+b*ln(c*(d*(f*x+e)^p)^q))^2/f^2
```

Rubi [A]
time = 0.28, antiderivative size = 211, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 8, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.308$, Rules used = {2448, 2436, 2333, 2332, 2437, 2342, 2341, 2495}

$$\frac{(e+fx)(fg-eh)\left(a+b\log \left(c(d(e+fx)^p)^q\right)\right)^2}{f^2}-\frac{bhpq(e+fx)^2\left(a+b\log \left(c(d(e+fx)^p)^q\right)\right)}{2f^2}+\frac{h(e+fx)^2\left(a+b\log \left(c(d(e+fx)^p)^q\right)\right)^2}{2f^2}-\frac{2abpqx(fg-eh)}{f}-\frac{2b^2pq(e+fx)(fg-eh)\log \left(c(d(e+fx)^p)^q\right)}{f^2}+\frac{b^2hp^2q^2(e+fx)^2}{4f^2}+\frac{2b^2p^2q^2x(fg-eh)}{f}$$

Antiderivative was successfully verified.

```
[In] Int[(g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^2,x]
```

```
[Out] (-2*a*b*(f*g - e*h)*p*q*x)/f + (2*b^2*(f*g - e*h)*p^2*q^2*x)/f + (b^2*h*p^2
*q^2*(e + f*x)^2)/(4*f^2) - (2*b^2*(f*g - e*h)*p*q*(e + f*x)*Log[c*(d*(e +
f*x)^p)^q])/f^2 - (b*h*p*q*(e + f*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q]))/(2
*f^2) + ((f*g - e*h)*(e + f*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^2)/f^2 + (h
*(e + f*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])^2)/(2*f^2)
```

Rule 2332

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2333

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2341

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_.)*(x_))^(m_.), x_Symbol] :>
Simp[(d*x)^(m + 1)*((a + b*Log[c*x^n])/(d*(m + 1))), x] - Simp[b*n*((d*x)^(
m + 1)/(d*(m + 1)^2)), x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[m, -1]
```

Rule 2342

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_.)*(x_))^(m_.), x_Symbo
l] :> Simp[(d*x)^(m + 1)*((a + b*Log[c*x^n])^p/(d*(m + 1))), x] - Dist[b*n*
(p/(m + 1)), Int[(d*x)^m*(a + b*Log[c*x^n])^(p - 1), x], x] /; FreeQ[{a, b,
 c, d, m, n}, x] && NeQ[m, -1] && GtQ[p, 0]
```

Rule 2436

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2437

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[(f*(x/d))^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2448

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q*(a + b*Log[c*(d
 + e*x)^n])^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f -
 d*g, 0] && IGtQ[q, 0]
```

Rule 2495

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int (g+hx)\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)^2\,dx = \text{Subst}\left(\int (g+hx)\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^2\,dx, cd^q(e+fx\right.$$

$$= \text{Subst}\left(\int \left(\frac{(fg-eh)\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^2}{f} + \frac{h(e+f\right.\right.$$

$$= \text{Subst}\left(\frac{h\int (e+fx)\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^2\,dx}{f}, cd^q(e+f\right.$$

$$= \text{Subst}\left(\frac{h\text{Subst}\left(\int x\left(a+b\log\left(cd^q x^{pq}\right)\right)^2\,dx, x, e+fx\right)}{f^2}, cd^q(e\right.$$

$$= \frac{(fg-eh)(e+fx)\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)^2}{f^2} + \frac{h(e+fx)^2}{}$$

$$= -\frac{2ab(fg-eh)pqx}{f} + \frac{b^2hp^2q^2(e+fx)^2}{4f^2} - \frac{bhpq(e+fx)^2(a+}{}$$

$$= -\frac{2ab(fg-eh)pqx}{f} + \frac{2b^2(fg-eh)p^2q^2x}{f} + \frac{b^2hp^2q^2(e+fx)^2}{4f^2}$$

Mathematica [A]
time = 0.07, size = 164, normalized size = 0.78

$$\frac{4(fg-eh)(e+fx)\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)^2+2h(e+fx)^2\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)^2-8b(fg-eh)pq\left(f(a-bpq)x+b(e+fx)\log\left(c(d(e+fx)^p)^q\right)\right)+bhpq\left(bfpqx(2e+fx)-2(e+fx)^2\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)\right)}{4f^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^2,x]
```

```
[Out] (4*(f*g - e*h)*(e + f*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^2 + 2*h*(e + f*x)
^2*(a + b*Log[c*(d*(e + f*x)^p)^q])^2 - 8*b*(f*g - e*h)*p*q*(f*(a - b*p*q)*
x + b*(e + f*x)*Log[c*(d*(e + f*x)^p)^q]) + b*h*p*q*(b*f*p*q*x*(2*e + f*x)
- 2*(e + f*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])))/(4*f^2)
```

Maple [F]
time = 0.05, size = 0, normalized size = 0.00

$$\int (hx+g)\left(a+b\ln\left(c(d(fx+e)^p)^q\right)\right)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x+g)*(a+b*ln(c*(d*(f*x+e)^p)^q))^2,x)
```

```
[Out] int((h*x+g)*(a+b*ln(c*(d*(f*x+e)^p)^q))^2,x)
```

Maxima [A]
time = 0.29, size = 365, normalized size = 1.73

$$-2\,abfgpq\left(\frac{x}{f}-\frac{e\log\left(fx+e\right)}{f^2}\right)-\frac{1}{2}\,abfhpq\left(\frac{fx^2-2\,xe}{f^2}+\frac{2\,e^2\log\left(fx+e\right)}{f^3}\right)+\frac{1}{2}\,b^2hx^2\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)^2+abhx^2\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)+b^2gx\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)^2+\frac{1}{2}\,a^2hx^2+2\,abgx\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)-\left(2\,fpq\left(\frac{x}{f}-\frac{e\log\left(fx+e\right)}{f^2}\right)\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)+\frac{\left(e\log\left(fx+e\right)^2-2\,fx+2\,e\log\left(fx+e\right)\right)p^2q^2}{f}\right)b^2g-\frac{1}{4}\left(2\,fpq\left(\frac{fx^2-2\,xe}{f^2}+\frac{2\,e^2\log\left(fx+e\right)}{f^3}\right)\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)-\frac{\left(f^2x^2-6\,fxe+2\,e^2\log\left(fx+e\right)^2+6\,e^2\log\left(fx+e\right)\right)p^2q^2}{f^2}\right)b^2h+a^2gx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)*(a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="maxima")
```

```
[Out] -2*a*b*f*g*p*q*(x/f - e*log(f*x + e)/f^2) - 1/2*a*b*f*h*p*q*((f*x^2 - 2*x*e
)/f^2 + 2*e^2*log(f*x + e)/f^3) + 1/2*b^2*h*x^2*log(((f*x + e)^p*d)^q*c)^2
+ a*b*h*x^2*log(((f*x + e)^p*d)^q*c) + b^2*g*x*log(((f*x + e)^p*d)^q*c)^2 +
 1/2*a^2*h*x^2 + 2*a*b*g*x*log(((f*x + e)^p*d)^q*c) - (2*f*p*q*(x/f - e*log
(f*x + e)/f^2)*log(((f*x + e)^p*d)^q*c) + (e*log(f*x + e)^2 - 2*f*x + 2*e*l
og(f*x + e))*p^2*q^2/f)*b^2*g - 1/4*(2*f*p*q*((f*x^2 - 2*x*e)/f^2 + 2*e^2*l
og(f*x + e)/f^3)*log(((f*x + e)^p*d)^q*c) - (f^2*x^2 - 6*f*x*e + 2*e^2*log(
f*x + e)^2 + 6*e^2*log(f*x + e))*p^2*q^2/f^2)*b^2*h + a^2*g*x
```

Fricas [B] Leaf count of result is larger than twice the leaf count of optimal. 646 vs. 2(218) = 436.
time = 0.37, size = 646, normalized size = 3.06

$$\frac{\left(b^2f^2hp^2q^2-2\,abf^2hpq+2\,a^2f^2h\right)x^2-2\left(3\,b^2fhp^2q^2-2\,abfhpq\right)xe+2\left(b^2f^2hp^2q^2x^2+2\,b^2f^2gp^2q^2x+2\,b^2fgp^2q^2e-b^2hp^2q^2e^2\right)\log\left(fx+e\right)^2+2\left(b^2f^2hx^2+2\,b^2f^2gx\right)\log\left(c\right)^2+2\left(b^2f^2hq^2x^2+2\,b^2f^2gq^2x\right)\log\left(d\right)^2+4\left(2\,b^2f^2gp^2q^2-2\,abf^2gpq+a^2f^2g\right)x-2\left(\left(b^2f^2hp^2q^2-2\,abf^2hpq\right)x^2+4\left(b^2f^2gp^2q^2-abf^2gpq\right)x-\left(3\,b^2hp^2q^2-2\,abhpq\right)e^2-2\left(b^2fhp^2q^2x-2\,b^2fgp^2q^2+2\,abfgpq\right)e-2\left(b^2f^2hpqx^2+2\,b^2f^2gpqx+2\,b^2fgpqe-b^2hpqe^2\right)\log\left(c\right)-2\left(b^2f^2hpq^2x^2+2\,b^2f^2gpq^2x+2\,b^2fgpq^2e-b^2hpq^2e^2\right)\log\left(d\right)\right)\log\left(fx+e\right)+2\left(2\,b^2fhpqxe-\left(b^2f^2hpq-2\,abf^2h\right)x^2-4\left(b^2f^2gpq-abf^2g\right)x\right)\log\left(c\right)+2\left(2\,b^2fhpq^2xe-\left(b^2f^2hpq^2-2\,abf^2hq\right)x^2-4\left(b^2f^2gpq^2-abf^2gq\right)x+2\left(b^2f^2hqx^2+2\,b^2f^2gqx\right)\log\left(c\right)\right)\log\left(d\right)}{4\,f^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)*(a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="fricas")
```

```
[Out] 1/4*((b^2*f^2*h*p^2*q^2 - 2*a*b*f^2*h*p*q + 2*a^2*f^2*h)*x^2 - 2*(3*b^2*f*h
*p^2*q^2 - 2*a*b*f*h*p*q)*x*e + 2*(b^2*f^2*h*p^2*q^2*x^2 + 2*b^2*f^2*g*p^2*
q^2*x + 2*b^2*f*g*p^2*q^2*e - b^2*h*p^2*q^2*e^2)*log(f*x + e)^2 + 2*(b^2*f^
2*h*x^2 + 2*b^2*f^2*g*x)*log(c)^2 + 2*(b^2*f^2*h*q^2*x^2 + 2*b^2*f^2*g*q^2*
x)*log(d)^2 + 4*(2*b^2*f^2*g*p^2*q^2 - 2*a*b*f^2*g*p*q + a^2*f^2*g)*x - 2*(
(b^2*f^2*h*p^2*q^2 - 2*a*b*f^2*h*p*q)*x^2 + 4*(b^2*f^2*g*p^2*q^2 - a*b*f^2*
g*p*q)*x - (3*b^2*h*p^2*q^2 - 2*a*b*h*p*q)*e^2 - 2*(b^2*f*h*p^2*q^2*x - 2*b
^2*f*g*p^2*q^2 + 2*a*b*f*g*p*q)*e - 2*(b^2*f^2*h*p*q*x^2 + 2*b^2*f^2*g*p*q*
x + 2*b^2*f*g*p*q*e - b^2*h*p*q*e^2)*log(c) - 2*(b^2*f^2*h*p*q^2*x^2 + 2*b^
2*f^2*g*p*q^2*x + 2*b^2*f*g*p*q^2*e - b^2*h*p*q^2*e^2)*log(d))*log(f*x + e)
 + 2*(2*b^2*f*h*p*q*x*e - (b^2*f^2*h*p*q - 2*a*b*f^2*h)*x^2 - 4*(b^2*f^2*g*
p*q - a*b*f^2*g)*x)*log(c) + 2*(2*b^2*f*h*p*q^2*x*e - (b^2*f^2*h*p*q^2 - 2*
a*b*f^2*h*q)*x^2 - 4*(b^2*f^2*g*p*q^2 - a*b*f^2*g*q)*x + 2*(b^2*f^2*h*q*x^2
 + 2*b^2*f^2*g*q*x)*log(c))*log(d))/f^2
```

Sympy [B] Leaf count of result is larger than twice the leaf count of optimal. 466 vs. 2(202) = 404.
time = 1.41, size = 466, normalized size = 2.21

$$\begin{cases} a^2gx+\frac{a^2hx^2}{2}-\frac{abe^2h\log\left(c\left(d\left(e+fx\right)^p\right)^q\right)}{f^2}+\frac{2abeg\log\left(c\left(d\left(e+fx\right)^p\right)^q\right)}{f}+\frac{abehpqx}{f}-2abgpqx+2abgx\log\left(c\left(d\left(e+fx\right)^p\right)^q\right)-\frac{abhpqx^2}{2}+abhx^2\log\left(c\left(d\left(e+fx\right)^p\right)^q\right)+\frac{3b^2e^2hpq\log\left(c\left(d\left(e+fx\right)^p\right)^q\right)}{2f^2}-\frac{b^2e^2h\log\left(c\left(d\left(e+fx\right)^p\right)^q\right)^2}{2f^2}-\frac{2b^2egpq\log\left(c\left(d\left(e+fx\right)^p\right)^q\right)}{f}+\frac{b^2eg\log\left(c\left(d\left(e+fx\right)^p\right)^q\right)^2}{f}-\frac{3b^2ehp^2q^2x}{2f}+\frac{b^2ehpqx\log\left(c\left(d\left(e+fx\right)^p\right)^q\right)}{f}+2b^2gp^2q^2x-2b^2gpqx\log\left(c\left(d\left(e+fx\right)^p\right)^q\right)+b^2gx\log\left(c\left(d\left(e+fx\right)^p\right)^q\right)^2+\frac{b^2hp^2q^2x^2}{4}-\frac{b^2hpqx^2\log\left(c\left(d\left(e+fx\right)^p\right)^q\right)}{2}+\frac{b^2hx^2\log\left(c\left(d\left(e+fx\right)^p\right)^q\right)^2}{2} & \text{for}\: f \neq 0 \\ \left(a+b\log\left(c\left(de^p\right)^q\right)\right)^2\left(gx+\frac{hx^2}{2}\right) & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)*(a+b*ln(c*(d*(f*x+e)**p)**q))**2,x)
```

```
[Out] Piecewise((a**2*g*x + a**2*h*x**2/2 - a*b*e**2*h*log(c*(d*(e + f*x)**p)**q)
/f**2 + 2*a*b*e*g*log(c*(d*(e + f*x)**p)**q)/f + a*b*e*h*p*q*x/f - 2*a*b*g*
p*q*x + 2*a*b*g*x*log(c*(d*(e + f*x)**p)**q) - a*b*h*p*q*x**2/2 + a*b*h*x**
2*log(c*(d*(e + f*x)**p)**q) + 3*b**2*e**2*h*p*q*log(c*(d*(e + f*x)**p)**q)
/(2*f**2) - b**2*e**2*h*log(c*(d*(e + f*x)**p)**q)**2/(2*f**2) - 2*b**2*e*g
*p*q*log(c*(d*(e + f*x)**p)**q)/f + b**2*e*g*log(c*(d*(e + f*x)**p)**q)**2/
f - 3*b**2*e*h*p**2*q**2*x/(2*f) + b**2*e*h*p*q*x*log(c*(d*(e + f*x)**p)**q
)/f + 2*b**2*g*p**2*q**2*x - 2*b**2*g*p*q*x*log(c*(d*(e + f*x)**p)**q) + b*
*2*g*x*log(c*(d*(e + f*x)**p)**q)**2 + b**2*h*p**2*q**2*x**2/4 - b**2*h*p*q
*x**2*log(c*(d*(e + f*x)**p)**q)/2 + b**2*h*x**2*log(c*(d*(e + f*x)**p)**q)
**2/2, Ne(f, 0)), ((a + b*log(c*(d*e**p)**q))**2*(g*x + h*x**2/2), True))
```

Giac [**B**] Leaf count of result is larger than twice the leaf count of optimal. 1014 vs. $2(218) = 436$.
time = 4.94, size = 1014, normalized size = 4.81

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)*(a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="giac")
```

```
[Out] (f*x + e)*b^2*g*p^2*q^2*log(f*x + e)^2/f + 1/2*(f*x + e)^2*b^2*h*p^2*q^2*lo
g(f*x + e)^2/f^2 - (f*x + e)*b^2*h*p^2*q^2*e*log(f*x + e)^2/f^2 - 2*(f*x +
e)*b^2*g*p^2*q^2*log(f*x + e)/f - 1/2*(f*x + e)^2*b^2*h*p^2*q^2*log(f*x + e
)/f^2 + 2*(f*x + e)*b^2*h*p^2*q^2*e*log(f*x + e)/f^2 + 2*(f*x + e)*b^2*g*p*
q^2*log(f*x + e)*log(d)/f + (f*x + e)^2*b^2*h*p*q^2*log(f*x + e)*log(d)/f^2
 - 2*(f*x + e)*b^2*h*p*q^2*e*log(f*x + e)*log(d)/f^2 + 2*(f*x + e)*b^2*g*p^
2*q^2/f + 1/4*(f*x + e)^2*b^2*h*p^2*q^2/f^2 - 2*(f*x + e)*b^2*h*p^2*q^2*e/f
^2 + 2*(f*x + e)*b^2*g*p*q*log(f*x + e)*log(c)/f + (f*x + e)^2*b^2*h*p*q*lo
g(f*x + e)*log(c)/f^2 - 2*(f*x + e)*b^2*h*p*q*e*log(f*x + e)*log(c)/f^2 - 2
*(f*x + e)*b^2*g*p*q^2*log(d)/f - 1/2*(f*x + e)^2*b^2*h*p*q^2*log(d)/f^2 +
2*(f*x + e)*b^2*h*p*q^2*e*log(d)/f^2 + (f*x + e)*b^2*g*q^2*log(d)^2/f + 1/2
*(f*x + e)^2*b^2*h*q^2*log(d)^2/f^2 - (f*x + e)*b^2*h*q^2*e*log(d)^2/f^2 +
2*(f*x + e)*a*b*g*p*q*log(f*x + e)/f + (f*x + e)^2*a*b*h*p*q*log(f*x + e)/f
^2 - 2*(f*x + e)*a*b*h*p*q*e*log(f*x + e)/f^2 - 2*(f*x + e)*b^2*g*p*q*log(c
)/f - 1/2*(f*x + e)^2*b^2*h*p*q*log(c)/f^2 + 2*(f*x + e)*b^2*h*p*q*e*log(c)
/f^2 + 2*(f*x + e)*b^2*g*q*log(c)*log(d)/f + (f*x + e)^2*b^2*h*q*log(c)*log
(d)/f^2 - 2*(f*x + e)*b^2*h*q*e*log(c)*log(d)/f^2 - 2*(f*x + e)*a*b*g*p*q/f
 - 1/2*(f*x + e)^2*a*b*h*p*q/f^2 + 2*(f*x + e)*a*b*h*p*q*e/f^2 + (f*x + e)*
b^2*g*log(c)^2/f + 1/2*(f*x + e)^2*b^2*h*log(c)^2/f^2 - (f*x + e)*b^2*h*e*l
og(c)^2/f^2 + 2*(f*x + e)*a*b*g*q*log(d)/f + (f*x + e)^2*a*b*h*q*log(d)/f^2
 - 2*(f*x + e)*a*b*h*q*e*log(d)/f^2 + 2*(f*x + e)*a*b*g*log(c)/f + (f*x + e
```

```
)^2*a*b*h*log(c)/f^2 - 2*(f*x + e)*a*b*h*e*log(c)/f^2 + (f*x + e)*a^2*g/f +
 1/2*(f*x + e)^2*a^2*h/f^2 - (f*x + e)*a^2*h*e/f^2
```

Mupad [B]
time = 0.46, size = 302, normalized size = 1.43

$$x\left(\frac{2a^2eh+2a^2fg-2b^2ehp^2q^2+4b^2fgp^2q^2-4abfgpq}{2f}-\frac{eh\left(2a^2-2abpq+b^2p^2q^2\right)}{2f}\right)+\ln\left(c\left(d\left(e+fx\right)^p\right)^q\right)\left(\frac{bh\left(2a-bpq\right)x^2}{2}+\left(\frac{2b\left(aeh+afg-bfgpq\right)}{f}-\frac{beh\left(2a-bpq\right)}{f}\right)x\right)+\ln\left(c\left(d\left(e+fx\right)^p\right)^q\right)^2\left(\frac{b^2hx^2}{2}-\frac{e\left(b^2eh-2b^2fg\right)}{2f^2}+b^2gx\right)+\frac{\ln\left(e+fx\right)\left(3hb^2e^2p^2q^2-4fgb^2ep^2q^2-2ahbe^2pq+4afgbepq\right)}{2f^2}+\frac{hx^2\left(2a^2-2abpq+b^2p^2q^2\right)}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g + h*x)*(a + b*log(c*(d*(e + f*x)^p)^q))^2,x)
```

```
[Out] x*((2*a^2*e*h + 2*a^2*f*g - 2*b^2*e*h*p^2*q^2 + 4*b^2*f*g*p^2*q^2 - 4*a*b*f
*g*p*q)/(2*f) - (e*h*(2*a^2 + b^2*p^2*q^2 - 2*a*b*p*q))/(2*f)) + log(c*(d*(
e + f*x)^p)^q)*(x*((2*b*(a*e*h + a*f*g - b*f*g*p*q))/f - (b*e*h*(2*a - b*p*
q))/f) + (b*h*x^2*(2*a - b*p*q))/2) + log(c*(d*(e + f*x)^p)^q)^2*((b^2*h*x^
2)/2 - (e*(b^2*e*h - 2*b^2*f*g))/(2*f^2) + b^2*g*x) + (log(e + f*x)*(3*b^2*
e^2*h*p^2*q^2 - 2*a*b*e^2*h*p*q - 4*b^2*e*f*g*p^2*q^2 + 4*a*b*e*f*g*p*q))/(
2*f^2) + (h*x^2*(2*a^2 + b^2*p^2*q^2 - 2*a*b*p*q))/4
```

3.431 $\int (a+b\log(c(d(e+fx)^p)^q))^2\,dx$

Optimal. Leaf size=78

$$-2abpqx+2b^2p^2q^2x-\frac{2b^2pq(e+fx)\log(c(d(e+fx)^p)^q)}{f}+\frac{(e+fx)(a+b\log(c(d(e+fx)^p)^q))^2}{f}$$

```
[Out] -2*a*b*p*q*x+2*b^2*p^2*q^2*x-2*b^2*p*q*(f*x+e)*ln(c*(d*(f*x+e)^p)^q)/f+(f*x
+e)*(a+b*ln(c*(d*(f*x+e)^p)^q))^2/f
```

Rubi [A]
time = 0.07, antiderivative size = 78, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.200$, Rules used = {2436, 2333, 2332, 2495}

$$\frac{(e+fx)(a+b\log(c(d(e+fx)^p)^q))^2}{f}-2abpqx-\frac{2b^2pq(e+fx)\log(c(d(e+fx)^p)^q)}{f}+2b^2p^2q^2x$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])^2,x]
```

```
[Out] -2*a*b*p*q*x + 2*b^2*p^2*q^2*x - (2*b^2*p*q*(e + f*x)*Log[c*(d*(e + f*x)^p)
^q])/f + ((e + f*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^2)/f
```

Rule 2332

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2333

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2436

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2495

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] && !IntegerQ[n] && !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
```

```
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\begin{aligned}\int \left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2\,dx &= \text{Subst}\left(\int \left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^2\,dx,cd^q(e+fx)^{pq},c\left(d(e+fx)^p\right)^q\right.\\ &= \text{Subst}\left(\frac{\text{Subst}\left(\int \left(a+b\log\left(cd^qx^{pq}\right)\right)^2\,dx,x,e+fx\right)}{f},cd^q(e+fx)^{pq},c(d(\right.\\ &= \frac{(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{f}-\text{Subst}\left(\frac{(2bpq)\text{Subst}\left(\int (a+b\,\text{lo}\right.}{}\right.\\ &= -2abpqx+\frac{(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{f}-\text{Subst}\left(\frac{(2b^2pq)\,\text{Sub}}{}\right.\\ &= -2abpqx+2b^2p^2q^2x-\frac{2b^2pq(e+fx)\log\left(c\left(d(e+fx)^p\right)^q\right)}{f}+\frac{(e+fx)\,(}{}\end{aligned}$$

Mathematica [A]
time = 0.01, size = 69, normalized size = 0.88

$$\frac{(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{f}-2bpq\left(ax-bpqx+\frac{b(e+fx)\log\left(c\left(d(e+fx)^p\right)^q\right)}{f}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])^2,x]
[Out] ((e + f*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^2)/f - 2*b*p*q*(a*x - b*p*q*x +
 (b*(e + f*x)*Log[c*(d*(e + f*x)^p)^q])/f)
```

Maple [F]
time = 0.03, size = 0, normalized size = 0.00

$$\int \left(a+b\ln\left(c\left(d(fx+e)^p\right)^q\right)\right)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(d*(f*x+e)^p)^q))^2,x)
[Out] int((a+b*ln(c*(d*(f*x+e)^p)^q))^2,x)
```

Maxima [A]
time = 0.28, size = 159, normalized size = 2.04

$$-2\,abfpq\left(\frac{x}{f}-\frac{e\log\left(fx+e\right)}{f^2}\right)+b^2x\log\left(\left(\left((fx+e)^pd\right)^qc\right)^2+2\,abx\log\left(\left((fx+e)^pd\right)^qc\right)-\left(2\,fpq\left(\frac{x}{f}-\frac{e\log\left(fx+e\right)}{f^2}\right)\log\left(\left((fx+e)^pd\right)^qc\right)+\frac{\left(e\log\left(fx+e\right)^2-2\,fx+2\,e\log\left(fx+e\right)\right)p^2q^2}{f}\right)b^2+a^2x$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="maxima")

[Out] -2*a*b*f*p*q*(x/f - e*log(f*x + e)/f^2) + b^2*x*log(((f*x + e)^p*d)^q*c)^2 + 2*a*b*x*log(((f*x + e)^p*d)^q*c) - (2*f*p*q*(x/f - e*log(f*x + e)/f^2)*log(((f*x + e)^p*d)^q*c) + (e*log(f*x + e)^2 - 2*f*x + 2*e*log(f*x + e))*p^2*q^2/f)*b^2 + a^2*x

Fricas [B] Leaf count of result is larger than twice the leaf count of optimal. 238 vs. $2(82) = 164$.
time = 0.35, size = 238, normalized size = 3.05

$$\frac{b^2fq^2x\log(d)^2 + b^2fx\log(c)^2 + (b^2fp^2q^2x + b^2p^2q^2e)\log(fx+e)^2 - 2(b^2fpq - abf)x\log(c) + (2b^2fp^2q^2 - 2abfpq + a^2f)x - 2((b^2fp^2q^2 - abfpq)x + (b^2p^2q^2 - abpq)e - (b^2fpqx + b^2pqe)\log(c) - (b^2fpq^2x + b^2pq^2e)\log(d))\log(fx+e) + 2(b^2fqx\log(c) - (b^2fpq^2 - abfq)x)\log(d)}{f}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="fricas")

[Out] (b^2*f*q^2*x*log(d)^2 + b^2*f*x*log(c)^2 + (b^2*f*p^2*q^2*x + b^2*p^2*q^2*e)*log(f*x + e)^2 - 2*(b^2*f*p*q - a*b*f)*x*log(c) + (2*b^2*f*p^2*q^2 - 2*a*b*f*p*q + a^2*f)*x - 2*((b^2*f*p^2*q^2 - a*b*f*p*q)*x + (b^2*p^2*q^2 - a*b*p*q)*e - (b^2*f*p*q*x + b^2*p*q*e)*log(c) - (b^2*f*p*q^2*x + b^2*p*q^2*e)*log(d))*log(f*x + e) + 2*(b^2*f*q*x*log(c) - (b^2*f*p*q^2 - a*b*f*q)*x)*log(d))/f

Sympy [B] Leaf count of result is larger than twice the leaf count of optimal. 178 vs. $2(76) = 152$.
time = 0.56, size = 178, normalized size = 2.28

$$\begin{cases} a^2x + \frac{2abe\log\left(c\left(d(e+fx)^p\right)^q\right)}{f} - 2abpqx + 2abx\log\left(c\left(d(e+fx)^p\right)^q\right) - \frac{2b^2epq\log\left(c\left(d(e+fx)^p\right)^q\right)}{f} + \frac{b^2e\log\left(c\left(d(e+fx)^p\right)^q\right)^2}{f} + 2b^2p^2q^2x - 2b^2pqx\log\left(c\left(d(e+fx)^p\right)^q\right) + b^2x\log\left(c\left(d(e+fx)^p\right)^q\right)^2 & \text{for } f \neq 0 \\ x\left(a + b\log\left(c\left(de^p\right)^q\right)\right)^2 & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))**2,x)

[Out] Piecewise((a**2*x + 2*a*b*e*log(c*(d*(e + f*x)**p)**q)/f - 2*a*b*p*q*x + 2*a*b*x*log(c*(d*(e + f*x)**p)**q) - 2*b**2*e*p*q*log(c*(d*(e + f*x)**p)**q)/f + b**2*e*log(c*(d*(e + f*x)**p)**q)**2/f + 2*b**2*p**2*q**2*x - 2*b**2*p*q*x*log(c*(d*(e + f*x)**p)**q) + b**2*x*log(c*(d*(e + f*x)**p)**q)**2, Ne(f, 0)), (x*(a + b*log(c*(d*e**p)**q))**2, True))

Giac [B] Leaf count of result is larger than twice the leaf count of optimal. 303 vs. $2(82) = 164$.
time = 5.90, size = 303, normalized size = 3.88

$$\frac{(fx+e)b^2p^2q^2\log(fx+e)^2}{f} - \frac{2(fx+e)b^2p^2q^2\log(fx+e)}{f} + \frac{2(fx+e)b^2pq^2\log(fx+e)\log(d)}{f} + \frac{2(fx+e)b^2p^2q^2}{f} + \frac{2(fx+e)b^2pq\log(fx+e)\log(c)}{f} - \frac{2(fx+e)b^2pq^2\log(d)}{f} + \frac{(fx+e)b^2q^2\log(d)^2}{f} + \frac{2(fx+e)abpq\log(fx+e)}{f} - \frac{2(fx+e)b^2pq\log(c)}{f} + \frac{2(fx+e)b^2q\log(c)\log(d)}{f} - \frac{2(fx+e)abpq}{f} + \frac{(fx+e)b^2\log(c)^2}{f} + \frac{2(fx+e)abq\log(d)}{f} + \frac{2(fx+e)ab\log(c)}{f} + \frac{(fx+e)a^2}{f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="giac")
```

```
[Out] (f*x + e)*b^2*p^2*q^2*log(f*x + e)^2/f - 2*(f*x + e)*b^2*p^2*q^2*log(f*x +
e)/f + 2*(f*x + e)*b^2*p*q^2*log(f*x + e)*log(d)/f + 2*(f*x + e)*b^2*p^2*q^
2/f + 2*(f*x + e)*b^2*p*q*log(f*x + e)*log(c)/f - 2*(f*x + e)*b^2*p*q^2*log
(d)/f + (f*x + e)*b^2*q^2*log(d)^2/f + 2*(f*x + e)*a*b*p*q*log(f*x + e)/f -
 2*(f*x + e)*b^2*p*q*log(c)/f + 2*(f*x + e)*b^2*q*log(c)*log(d)/f - 2*(f*x
+ e)*a*b*p*q/f + (f*x + e)*b^2*log(c)^2/f + 2*(f*x + e)*a*b*q*log(d)/f + 2*
(f*x + e)*a*b*log(c)/f + (f*x + e)*a^2/f
```

Mupad [B]
time = 0.30, size = 111, normalized size = 1.42

$$\ln\left(c\left(d\left(e+f\,x\right)^p\right)^q\right)^2\left(b^2\,x+\frac{b^2\,e}{f}\right)+x\,\left(a^2-2\,a\,b\,p\,q+2\,b^2\,p^2\,q^2\right)-\frac{\ln\left(e+f\,x\right)\,\left(2\,b^2\,e\,p^2\,q^2-2\,a\,b\,e\,p\,q\right)}{f}+2\,b\,x\,\ln\left(c\left(d\left(e+f\,x\right)^p\right)^q\right)\,\left(a-b\,p\,q\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d*(e + f*x)^p)^q))^2,x)
```

```
[Out] log(c*(d*(e + f*x)^p)^q)^2*(b^2*x + (b^2*e)/f) + x*(a^2 + 2*b^2*p^2*q^2 - 2
*a*b*p*q) - (log(e + f*x)*(2*b^2*e*p^2*q^2 - 2*a*b*e*p*q))/f + 2*b*x*log(c*
(d*(e + f*x)^p)^q)*(a - b*p*q)
```

3.432 $\int \frac{(a+b\log(c(d(e+fx)^p)^q))^2}{g+hx}\,dx$

Optimal. Leaf size=123

$$\frac{(a+b\log\left(c(d(e+fx)^p)^q\right))^2\log\left(\frac{f(g+hx)}{fg-eh}\right)}{h}+\frac{2bpq(a+b\log\left(c(d(e+fx)^p)^q\right))\operatorname{Li}_2\left(-\frac{h(e+fx)}{fg-eh}\right)}{h}-\frac{2b^2p^2q^2\operatorname{Li}_3\left(-\right.}{h}$$

```
[Out] (a+b*ln(c*(d*(f*x+e)^p)^q))^2*ln(f*(h*x+g)/(-e*h+f*g))/h+2*b*p*q*(a+b*ln(c*
(d*(f*x+e)^p)^q))*polylog(2,-h*(f*x+e)/(-e*h+f*g))/h-2*b^2*p^2*q^2*polylog(
3,-h*(f*x+e)/(-e*h+f*g))/h
```

Rubi [A]
time = 0.19, antiderivative size = 123, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}} = 0.179$, Rules used = {2443, 2481, 2421, 6724, 2495}

$$\frac{2bpq\text{PolyLog}\left(2,-\frac{h(e+fx)}{fg-eh}\right)\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)}{h}-\frac{2b^2p^2q^2\text{PolyLog}\left(3,-\frac{h(e+fx)}{fg-eh}\right)}{h}+\frac{\log\left(\frac{f(g+hx)}{fg-eh}\right)\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)^2}{h}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])^2/(g + h*x),x]
```

```
[Out] ((a + b*Log[c*(d*(e + f*x)^p)^q])^2*Log[(f*(g + h*x))/(f*g - e*h)])/h + (2*
b*p*q*(a + b*Log[c*(d*(e + f*x)^p)^q])*PolyLog[2, -((h*(e + f*x))/(f*g - e*
h))])/h - (2*b^2*p^2*q^2*PolyLog[3, -((h*(e + f*x))/(f*g - e*h))])/h
```

Rule 2421

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> Simp[(-PolyLog[2, (-d)*f*x^m])*((a + b*Log[c
*x^n])^p/m), x] + Dist[b*n*(p/m), Int[PolyLog[2, (-d)*f*x^m]*((a + b*Log[c*
x^n])^(p - 1)/x), x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0
] && EqQ[d*e, 1]
```

Rule 2443

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d
+ e*x)^n])^p/g), x] - Dist[b*e*n*(p/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]*
((a + b*Log[c*(d + e*x)^n])^(p - 1)/(d + e*x)), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2481

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
```

```
bol] :> Dist[1/e, Subst[Int[(k*(x/d))^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + j*(x/e))^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2495

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rule 6724

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(a+b\log(c(d(e+fx)^p)^q))^2}{g+hx}\,dx = \text{Subst}\left(\int \frac{(a+b\log(cd^q(e+fx)^{pq}))^2}{g+hx}\,dx, cd^q(e+fx)^{pq}, c(d(e+fx)^p)^q\right.$$

$$= \frac{(a+b\log(c(d(e+fx)^p)^q))^2\log\left(\frac{f(g+hx)}{fg-eh}\right)}{h} - \text{Subst}\left(\frac{(2bfpq)\int \frac{(a+b\log(c\cdots}{\cdots}}{\cdots}\right.$$

$$= \frac{(a+b\log(c(d(e+fx)^p)^q))^2\log\left(\frac{f(g+hx)}{fg-eh}\right)}{h} - \text{Subst}\left(\frac{(2bpq)\text{Subst}\left(\int \frac{(a\cdots}{\cdots}\right.}{\cdots}\right.$$

$$= \frac{(a+b\log(c(d(e+fx)^p)^q))^2\log\left(\frac{f(g+hx)}{fg-eh}\right)}{h} + \frac{2bpq(a+b\log(c(d(e+fx\cdots}{h}$$

$$= \frac{(a+b\log(c(d(e+fx)^p)^q))^2\log\left(\frac{f(g+hx)}{fg-eh}\right)}{h} + \frac{2bpq(a+b\log(c(d(e+fx\cdots}{h}$$

Mathematica [B] Leaf count is larger than twice the leaf count of optimal. 324 vs. 2(123) = 246.

time = 0.08, size = 324, normalized size = 2.63

$$\frac{a^2\log(g+hx)-2abpq\log(e+fx)\log(g+hx)+b^2p^2q^2\log^2(e+fx)\log(g+hx)+2ab\log\left(c(d(e+fx)^p)^q\right)\log(g+hx)-2b^2pq\log(e+fx)\log\left(c(d(e+fx)^p)^q\right)\log(g+hx)+b^2\log^2\left(c(d(e+fx)^p)^q\right)\log(g+hx)+2abpq\log(e+fx)\log\left(\frac{f(g+hx)}{fg-eh}\right)-b^2p^2q^2\log^2(e+fx)\log\left(\frac{f(g+hx)}{fg-eh}\right)+2b^2pq\log(e+fx)\log\left(c(d(e+fx)^p)^q\right)\log\left(\frac{f(g+hx)}{fg-eh}\right)+2bpq\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)\mathrm{Li}_2\left(\frac{h(e+fx)}{-fg+eh}\right)-2b^2p^2q^2\mathrm{Li}_3\left(\frac{h(e+fx)}{-fg+eh}\right)}{h}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])^2/(g + h*x),x]
```

```
[Out] (a^2*Log[g + h*x] - 2*a*b*p*q*Log[e + f*x]*Log[g + h*x] + b^2*p^2*q^2*Log[e
 + f*x]^2*Log[g + h*x] + 2*a*b*Log[c*(d*(e + f*x)^p)^q]*Log[g + h*x] - 2*b^
2*p*q*Log[e + f*x]*Log[c*(d*(e + f*x)^p)^q]*Log[g + h*x] + b^2*Log[c*(d*(e
+ f*x)^p)^q]^2*Log[g + h*x] + 2*a*b*p*q*Log[e + f*x]*Log[(f*(g + h*x))/(f*g
 - e*h)] - b^2*p^2*q^2*Log[e + f*x]^2*Log[(f*(g + h*x))/(f*g - e*h)] + 2*b^
2*p*q*Log[e + f*x]*Log[c*(d*(e + f*x)^p)^q]*Log[(f*(g + h*x))/(f*g - e*h)]
+ 2*b*p*q*(a + b*Log[c*(d*(e + f*x)^p)^q])*PolyLog[2, (h*(e + f*x))/(-(f*g)
 + e*h)] - 2*b^2*p^2*q^2*PolyLog[3, (h*(e + f*x))/(-(f*g) + e*h)])/h
```

Maple [F]
time = 0.18, size = 0, normalized size = 0.00

$$\int \frac{\left(a+b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)\right)^{2}}{hx+g}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(d*(f*x+e)^p)^q))^2/(h*x+g),x)
```

```
[Out] int((a+b*ln(c*(d*(f*x+e)^p)^q))^2/(h*x+g),x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^2/(h*x+g),x, algorithm="maxima")
```

```
[Out] a^2*log(h*x + g)/h + integrate((b^2*log(((f*x + e)^p)^q)^2 + 2*(q*log(d) +
log(c))*a*b + (q^2*log(d)^2 + 2*q*log(c)*log(d) + log(c)^2)*b^2 + 2*((q*log
(d) + log(c))*b^2 + a*b)*log(((f*x + e)^p)^q))/(h*x + g), x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^2/(h*x+g),x, algorithm="fricas")
```

```
[Out] integral((b^2*log(((f*x + e)^p*d)^q*c)^2 + 2*a*b*log(((f*x + e)^p*d)^q*c) +
 a^2)/(h*x + g), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a + b\log (c(d(e + fx)^p)^q))^2}{g + hx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))**2/(h*x+g),x)
```

```
[Out] Integral((a + b*log(c*(d*(e + f*x)**p)**q))**2/(g + h*x), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^2/(h*x+g),x, algorithm="giac")
```

```
[Out] integrate((b*log(((f*x + e)^p*d)^q*c) + a)^2/(h*x + g), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{{\left(a+b\,\ln \left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)\right)}^2}{g+h\,x} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d*(e + f*x)^p)^q))^2/(g + h*x),x)
```

```
[Out] int((a + b*log(c*(d*(e + f*x)^p)^q))^2/(g + h*x), x)
```

3.433 $\int \frac{(a+b\log(c(d(e+fx)^p)^q))^2}{(g+hx)^2}\,dx$

Optimal. Leaf size=144

$$\frac{(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{(fg-eh)(g+hx)}-\frac{2bfpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)\log\left(\frac{f(g+hx)}{fg-eh}\right)}{h(fg-eh)}-\frac{2b^2fp^2q^2\text{Li}_2\left(-\frac{h(e-}{fg-}\right.}{h(fg-eh)}$$

```
[Out] (f*x+e)*(a+b*ln(c*(d*(f*x+e)^p)^q))^2/(-e*h+f*g)/(h*x+g)-2*b*f*p*q*(a+b*ln(
c*(d*(f*x+e)^p)^q))*ln(f*(h*x+g)/(-e*h+f*g))/h/(-e*h+f*g)-2*b^2*f*p^2*q^2*p
olylog(2,-h*(f*x+e)/(-e*h+f*g))/h/(-e*h+f*g)
```

Rubi [A]

time = 0.14, antiderivative size = 144, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}} = 0.179$, Rules used = {2444, 2441, 2440, 2438, 2495}

$$-\frac{2b^2fp^2q^2\text{PolyLog}\left(2,-\frac{h(e+fx)}{fg-eh}\right)}{h(fg-eh)}-\frac{2bfpq\log\left(\frac{f(g+hx)}{fg-eh}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h(fg-eh)}+\frac{(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{(g+hx)(fg-eh)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])^2/(g + h*x)^2,x]
```

```
[Out] ((e + f*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^2)/((f*g - e*h)*(g + h*x)) - (2
*b*f*p*q*(a + b*Log[c*(d*(e + f*x)^p)^q])*Log[(f*(g + h*x))/(f*g - e*h)])/(
h*(f*g - e*h)) - (2*b^2*f*p^2*q^2*PolyLog[2, -((h*(e + f*x))/(f*g - e*h))])
/(h*(f*g - e*h))
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + c*e*(x/g)])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2441

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d + e*x
)^n])/g), x] - Dist[b*e*(n/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2444

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_))^2, x_Symbol] :> Simp[(d + e*x)*((a + b*Log[c*(d + e*x)^n])^p/((e*f
- d*g)*(f + g*x))), x] - Dist[b*e*n*(p/(e*f - d*g)), Int[(a + b*Log[c*(d +
e*x)^n])^(p - 1)/(f + g*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] &&
 NeQ[e*f - d*g, 0] && GtQ[p, 0]
```

Rule 2495

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{(a+b\log(c(d(e+fx)^p)^q))^2}{(g+hx)^2}\,dx = \text{Subst}\left(\int \frac{(a+b\log(cd^q(e+fx)^{pq}))^2}{(g+hx)^2}\,dx, cd^q(e+fx)^{pq}, c(d(e+fx)^p)^q\right.$$

$$= \frac{(e+fx)\,(a+b\log(c(d(e+fx)^p)^q))^2}{(fg-eh)(g+hx)} - \text{Subst}\left(\frac{(2bfpq)\int \frac{a+b\log(cd^q(e+f}{g+hx}}{fg-eh}\right.$$

$$= \frac{(e+fx)\,(a+b\log(c(d(e+fx)^p)^q))^2}{(fg-eh)(g+hx)} - \frac{2bfpq(a+b\log(c(d(e+fx)^p)}{h(fg-eh)}$$

$$= \frac{(e+fx)\,(a+b\log(c(d(e+fx)^p)^q))^2}{(fg-eh)(g+hx)} - \frac{2bfpq(a+b\log(c(d(e+fx)^p)}{h(fg-eh)}$$

$$= \frac{(e+fx)\,(a+b\log(c(d(e+fx)^p)^q))^2}{(fg-eh)(g+hx)} - \frac{2bfpq(a+b\log(c(d(e+fx)^p)}{h(fg-eh)}$$

Mathematica [A]
time = 0.13, size = 200, normalized size = 1.39

$$\frac{b^2fp^2q^2(g+hx)\log^2(e+fx)-2bfpq(g+hx)\log(e+fx)\,(a+b\log(c(d(e+fx)^p)^q))+(a+b\log(c(d(e+fx)^p)^q))\left(a(fg-eh)+b(fg-eh)\log(c(d(e+fx)^p)^q)+2bfpq(g+hx)\log\left(\frac{f(g+hx)}{fg-eh}\right)\right)+2b^2fp^2q^2(g+hx)\text{Li}_2\left(\frac{h(e+fx)}{-fg+eh}\right)}{h(-fg+eh)(g+hx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])^2/(g + h*x)^2,x]
```

```
[Out] (b^2*f*p^2*q^2*(g + h*x)*Log[e + f*x]^2 - 2*b*f*p*q*(g + h*x)*Log[e + f*x]*
(a + b*Log[c*(d*(e + f*x)^p)^q]) + (a + b*Log[c*(d*(e + f*x)^p)^q])*(a*(f*g
 - e*h) + b*(f*g - e*h)*Log[c*(d*(e + f*x)^p)^q] + 2*b*f*p*q*(g + h*x)*Log[
(f*(g + h*x))/(f*g - e*h)]) + 2*b^2*f*p^2*q^2*(g + h*x)*PolyLog[2, (h*(e +
f*x))/(-(f*g) + e*h)])/(h*(-(f*g) + e*h)*(g + h*x))
```

Maple [F]
time = 0.21, size = 0, normalized size = 0.00

$$\int \frac{\left(a + b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)\right)^{2}}{\left(hx+g\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(d*(f*x+e)^p)^q))^2/(h*x+g)^2,x)
```

```
[Out] int((a+b*ln(c*(d*(f*x+e)^p)^q))^2/(h*x+g)^2,x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^2/(h*x+g)^2,x, algorithm="maxima")
```

```
[Out] 2*a*b*f*p*q*(log(f*x + e)/(f*g*h - h^2*e) - log(h*x + g)/(f*g*h - h^2*e)) -
 b^2*(log(((f*x + e)^p)^q)^2/(h^2*x + g*h) - integrate(((f*h*q^2*log(d)^2 +
 2*f*h*q*log(c)*log(d) + f*h*log(c)^2)*x + (h*q^2*log(d)^2 + 2*h*q*log(c)*l
og(d) + h*log(c)^2)*e + 2*(f*g*p*q + (f*h*p*q + f*h*q*log(d) + f*h*log(c))*
x + (h*q*log(d) + h*log(c))*e)*log(((f*x + e)^p)^q))/(f*h^3*x^3 + g^2*h*e +
 (2*f*g*h^2 + h^3*e)*x^2 + (f*g^2*h + 2*g*h^2*e)*x), x)) - 2*a*b*log(((f*x
+ e)^p*d)^q*c)/(h^2*x + g*h) - a^2/(h^2*x + g*h)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^2/(h*x+g)^2,x, algorithm="fricas")
```

```
[Out] integral((b^2*log(((f*x + e)^p*d)^q*c)^2 + 2*a*b*log(((f*x + e)^p*d)^q*c) +
 a^2)/(h^2*x^2 + 2*g*h*x + g^2), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(a + b\log\left(c\left(d\left(e+fx\right)^{p}\right)^{q}\right)\right)^{2}}{\left(g+hx\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))**2/(h*x+g)**2,x)
```

```
[Out] Integral((a + b*log(c*(d*(e + f*x)**p)**q))**2/(g + h*x)**2, x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^2/(h*x+g)^2,x, algorithm="giac")
```

```
[Out] integrate((b*log(((f*x + e)^p*d)^q*c) + a)^2/(h*x + g)^2, x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\left(a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)\right)^2}{{\left(g+h\,x\right)}^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d*(e + f*x)^p)^q))^2/(g + h*x)^2,x)
```

```
[Out] int((a + b*log(c*(d*(e + f*x)^p)^q))^2/(g + h*x)^2, x)
```

3.434 $\int \frac{(a+b\log(c(d(e+fx)^p)^q))^2}{(g+hx)^3} \, dx$

Optimal. Leaf size=222

$$-\frac{bfpq(e+fx)\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)}{(fg-eh)^2(g+hx)}-\frac{\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)^2}{2h(g+hx)^2}+\frac{b^2f^2p^2q^2\log(g+hx)}{h(fg-eh)^2}-\frac{bf^2pq(a$$

```
[Out] -b*f*p*q*(f*x+e)*(a+b*ln(c*(d*(f*x+e)^p)^q))/(-e*h+f*g)^2/(h*x+g)-1/2*(a+b*
ln(c*(d*(f*x+e)^p)^q))^2/h/(h*x+g)^2+b^2*f^2*p^2*q^2*ln(h*x+g)/h/(-e*h+f*g)
^2-b*f^2*p*q*(a+b*ln(c*(d*(f*x+e)^p)^q))*ln(1+(-e*h+f*g)/h/(f*x+e))/h/(-e*h
+f*g)^2+b^2*f^2*p^2*q^2*polylog(2,(e*h-f*g)/h/(f*x+e))/h/(-e*h+f*g)^2
```

Rubi [A]
time = 0.49, antiderivative size = 222, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 8, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}} = 0.286$, Rules used = {2445, 2458, 2389, 2379, 2438, 2351, 31, 2495}

$$\frac{b^2f^2p^2q^2\text{PolyLog}\left(2,-\frac{fg-eh}{h(e+fx)}\right)}{h(fg-eh)^2}-\frac{bf^2pq\log\left(\frac{fg-eh}{h(e+fx)}+1\right)\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)}{h(fg-eh)^2}-\frac{bfpq(e+fx)\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)}{(g+hx)(fg-eh)^2}-\frac{\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)^2}{2h(g+hx)^2}+\frac{b^2f^2p^2q^2\log(g+hx)}{h(fg-eh)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])^2/(g + h*x)^3,x]
```

```
[Out] -((b*f*p*q*(e + f*x)*(a + b*Log[c*(d*(e + f*x)^p)^q]))/((f*g - e*h)^2*(g +
h*x))) - (a + b*Log[c*(d*(e + f*x)^p)^q])^2/(2*h*(g + h*x)^2) + (b^2*f^2*p^
2*q^2*Log[g + h*x])/(h*(f*g - e*h)^2) - (b*f^2*p*q*(a + b*Log[c*(d*(e + f*x
)^p)^q])*Log[1 + (f*g - e*h)/(h*(e + f*x))])/(h*(f*g - e*h)^2) + (b^2*f^2*p
^2*q^2*PolyLog[2, -((f*g - e*h)/(h*(e + f*x)))])/(h*(f*g - e*h)^2)
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 2351

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_) + (e_.)*(x_)^(r_.))^(q_), x
_Symbol] :> Simp[x*(d + e*x^r)^(q + 1)*((a + b*Log[c*x^n])/d), x] - Dist[b*
(n/d), Int[(d + e*x^r)^(q + 1), x], x] /; FreeQ[{a, b, c, d, e, n, q, r}, x
] && EqQ[r*(q + 1) + 1, 0]
```

Rule 2379

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((x_)*((d_) + (e_.)*(x_)^(r
_.))), x_Symbol] :> Simp[(-Log[1 + d/(e*x^r)])*((a + b*Log[c*x^n])^p/(d*r))
, x] + Dist[b*n*(p/(d*r)), Int[Log[1 + d/(e*x^r)]*((a + b*Log[c*x^n])^(p -
```

```
1)/x), x], x] /; FreeQ[{a, b, c, d, e, n, r}, x] && IGtQ[p, 0]
```

Rule 2389

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_))/
(x_), x_Symbol] :> Dist[1/d, Int[(d + e*x)^(q + 1)*((a + b*Log[c*x^n])^p/x)
, x], x] - Dist[e/d, Int[(d + e*x)^q*(a + b*Log[c*x^n])^p, x], x] /; FreeQ[
{a, b, c, d, e, n}, x] && IGtQ[p, 0] && LtQ[q, -1] && IntegerQ[2*q]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[(f + g*x)^(q + 1)*((a + b*Log[c*(d + e*x)^
n])^p/(g*(q + 1))), x] - Dist[b*e*n*(p/(g*(q + 1))), Int[(f + g*x)^(q + 1)*
((a + b*Log[c*(d + e*x)^n])^(p - 1)/(d + e*x)), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && GtQ[p, 0] && NeQ[q, -1] && Int
egersQ[2*p, 2*q] && ( !IGtQ[q, 0] || (EqQ[p, 2] && NeQ[q, 1]))
```

Rule 2458

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[(g*(x/e))^q*((e*h - d*i)/e + i*(x/e))^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2495

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{(a+b\log(c(d(e+fx)^p)^q))^2}{(g+hx)^3}\,dx = \text{Subst}\left(\int \frac{(a+b\log(cd^q(e+fx)^{pq}))^2}{(g+hx)^3}\,dx, cd^q(e+fx)^{pq}, c(d(e+fx)^p)\right.$$

$$= -\frac{(a+b\log(c(d(e+fx)^p)^q))^2}{2h(g+hx)^2} + \text{Subst}\left(\frac{(bfpq)\int \frac{a+b\log(cd^q(e+fx)^{pq})}{(e+fx)(g+hx)^2}\,dx}{h}\right.$$

$$= -\frac{(a+b\log(c(d(e+fx)^p)^q))^2}{2h(g+hx)^2} + \text{Subst}\left(\frac{(bpq)\text{Subst}\left(\int \frac{a+b\log(cd^qx^{pq})}{x\left(\frac{fg-eh}{f}+\frac{hx}{f}\right)^2}\right.}{h}\right.$$

$$= -\frac{(a+b\log(c(d(e+fx)^p)^q))^2}{2h(g+hx)^2} - \text{Subst}\left(\frac{(bpq)\text{Subst}\left(\int \frac{a+b\log(cd^qx^{pq})}{\left(\frac{fg-eh}{f}+\frac{hx}{f}\right)^2}\right.}{fg-eh}\right.$$

$$= -\frac{bfpq(e+fx)(a+b\log(c(d(e+fx)^p)^q))}{(fg-eh)^2(g+hx)} - \frac{(a+b\log(c(d(e+fx)^p}{2h(g+hx)^2}$$

$$= -\frac{bfpq(e+fx)(a+b\log(c(d(e+fx)^p)^q))}{(fg-eh)^2(g+hx)} + \frac{f^2(a+b\log(c(d(e+f}{2h(fg-eh)^2}$$

$$= -\frac{bfpq(e+fx)(a+b\log(c(d(e+fx)^p)^q))}{(fg-eh)^2(g+hx)} + \frac{f^2(a+b\log(c(d(e+f}{2h(fg-eh)^2}$$

Mathematica [A]
time = 0.26, size = 316, normalized size = 1.42

$$-\frac{(a-bpq\log(e+fx)+b\log(c(d(e+fx)^p)^q))^2+\frac{2bpq(a-bpq\log(e+fx)+b\log(c(d(e+fx)^p)^q))\left(h(e+fx)(eh-f(2g+hx))\log(e+fx)+f(g+hx)\left(h(e+fx)+f(g+hx)\log\left(\frac{f(g+hx)}{fg-eh}\right)\right)\right)}{(fg-eh)^2}+\frac{b^2p^2q^2\left(h(e+fx)(eh-f(2g+hx))\log^2(e+fx)-2f^2(g+hx)^2\log\left(\frac{f(g+hx)}{fg-eh}\right)+2f(g+hx)\log(e+fx)\left(h(e+fx)+f(g+hx)\log\left(\frac{f(g+hx)}{fg-eh}\right)\right)+2f^2(g+hx)^2\text{Li}_2\left(\frac{h(e+fx)}{-fg+eh}\right)\right)}{(fg-eh)^2}}{2h(g+hx)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])^2/(g + h*x)^3,x]
```

```
[Out] -1/2*((a - b*p*q*Log[e + f*x] + b*Log[c*(d*(e + f*x)^p)^q])^2 + (2*b*p*q*(a
 - b*p*q*Log[e + f*x] + b*Log[c*(d*(e + f*x)^p)^q])*(h*(e + f*x)*(e*h - f*(
2*g + h*x))*Log[e + f*x] + f*(g + h*x)*(h*(e + f*x) + f*(g + h*x)*Log[(f*(g
 + h*x))/(f*g - e*h)])))/(f*g - e*h)^2 + (b^2*p^2*q^2*(h*(e + f*x)*(e*h - f
*(2*g + h*x))*Log[e + f*x]^2 - 2*f^2*(g + h*x)^2*Log[(f*(g + h*x))/(f*g - e
```

```
*h)] + 2*f*(g + h*x)*Log[e + f*x]*(h*(e + f*x) + f*(g + h*x)*Log[(f*(g + h*
x))/(f*g - e*h)]) + 2*f^2*(g + h*x)^2*PolyLog[2, (h*(e + f*x))/(-(f*g) + e*
h)]))/(f*g - e*h)^2)/(h*(g + h*x)^2)
```

Maple [F]
time = 0.18, size = 0, normalized size = 0.00

$$\int \frac{\left(a+b\ln \left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)\right)^{2}}{\left(hx+g\right)^{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(d*(f*x+e)^p)^q))^2/(h*x+g)^3,x)
```

```
[Out] int((a+b*ln(c*(d*(f*x+e)^p)^q))^2/(h*x+g)^3,x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^2/(h*x+g)^3,x, algorithm="maxima")
```

```
[Out] a*b*f*p*q*(f*log(f*x + e)/(f^2*g^2*h - 2*f*g*h^2*e + h^3*e^2) - f*log(h*x +
 g)/(f^2*g^2*h - 2*f*g*h^2*e + h^3*e^2) + 1/(f*g^2*h - g*h^2*e + (f*g*h^2 -
 h^3*e)*x)) - 1/2*b^2*(log(((f*x + e)^p)^q)^2/(h^3*x^2 + 2*g*h^2*x + g^2*h)
 - 2*integrate(((f*h*q^2*log(d)^2 + 2*f*h*q*log(c)*log(d) + f*h*log(c)^2)*x
 + (h*q^2*log(d)^2 + 2*h*q*log(c)*log(d) + h*log(c)^2)*e + (f*g*p*q + (f*h*
p*q + 2*f*h*q*log(d) + 2*f*h*log(c))*x + 2*(h*q*log(d) + h*log(c))*e)*log((
(f*x + e)^p)^q))/(f*h^4*x^4 + g^3*h*e + (3*f*g*h^3 + h^4*e)*x^3 + 3*(f*g^2*
h^2 + g*h^3*e)*x^2 + (f*g^3*h + 3*g^2*h^2*e)*x), x)) - a*b*log(((f*x + e)^p
*d)^q*c)/(h^3*x^2 + 2*g*h^2*x + g^2*h) - 1/2*a^2/(h^3*x^2 + 2*g*h^2*x + g^2
*h)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^2/(h*x+g)^3,x, algorithm="fricas")
```

```
[Out] integral((b^2*log(((f*x + e)^p*d)^q*c)^2 + 2*a*b*log(((f*x + e)^p*d)^q*c) +
 a^2)/(h^3*x^3 + 3*g*h^2*x^2 + 3*g^2*h*x + g^3), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(a + b \log\left(c(d(e+fx)^p)^q\right)\right)^2}{\left(g+hx\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))**2/(h*x+g)**3,x)
[Out] Integral((a + b*log(c*(d*(e + f*x)**p)**q))**2/(g + h*x)**3, x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^2/(h*x+g)^3,x, algorithm="giac")
[Out] integrate((b*log(((f*x + e)^p*d)^q*c) + a)^2/(h*x + g)^3, x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(a + b\,\ln\left(c\,\left(d\,\left(e+f\,x\right)^p\right)^q\right)\right)^2}{\left(g+h\,x\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d*(e + f*x)^p)^q))^2/(g + h*x)^3,x)
[Out] int((a + b*log(c*(d*(e + f*x)^p)^q))^2/(g + h*x)^3, x)
```

3.435 $\int (g+hx)^2 \left(a+b\log \left(c(d(e+fx)^p)^q\right)\right)^3 \, dx$

Optimal. Leaf size=492

$$\frac{6ab^2(fg-eh)^2p^2q^2x}{f^2}-\frac{6b^3(fg-eh)^2p^3q^3x}{f^2}-\frac{3b^3h(fg-eh)p^3q^3(e+fx)^2}{4f^3}-\frac{2b^3h^2p^3q^3(e+fx)^3}{27f^3}+\frac{6b^3(fg-eh}{}$$

```
[Out] 6*a*b^2*(-e*h+f*g)^2*p^2*q^2*x/f^2-6*b^3*(-e*h+f*g)^2*p^3*q^3*x/f^2-3/4*b^3
*h*(-e*h+f*g)*p^3*q^3*(f*x+e)^2/f^3-2/27*b^3*h^2*p^3*q^3*(f*x+e)^3/f^3+6*b^
3*(-e*h+f*g)^2*p^2*q^2*(f*x+e)*ln(c*(d*(f*x+e)^p)^q)/f^3+3/2*b^2*h*(-e*h+f*
g)*p^2*q^2*(f*x+e)^2*(a+b*ln(c*(d*(f*x+e)^p)^q))/f^3+2/9*b^2*h^2*p^2*q^2*(f
*x+e)^3*(a+b*ln(c*(d*(f*x+e)^p)^q))/f^3-3*b*(-e*h+f*g)^2*p*q*(f*x+e)*(a+b*l
n(c*(d*(f*x+e)^p)^q))^2/f^3-3/2*b*h*(-e*h+f*g)*p*q*(f*x+e)^2*(a+b*ln(c*(d*(
f*x+e)^p)^q))^2/f^3-1/3*b*h^2*p*q*(f*x+e)^3*(a+b*ln(c*(d*(f*x+e)^p)^q))^2/f
^3+(-e*h+f*g)^2*(f*x+e)*(a+b*ln(c*(d*(f*x+e)^p)^q))^3/f^3+h*(-e*h+f*g)*(f*x
+e)^2*(a+b*ln(c*(d*(f*x+e)^p)^q))^3/f^3+1/3*h^2*(f*x+e)^3*(a+b*ln(c*(d*(f*x
+e)^p)^q))^3/f^3
```

Rubi [A]
time = 0.65, antiderivative size = 492, normalized size of antiderivative = 1.00, number of steps used = 16, number of rules used = 8, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}} = 0.286$, Rules used = {2448, 2436, 2333, 2332, 2437, 2342, 2341, 2495}

$$\frac{3b^2hp^2q^2(e+fx)^2(fg-eh)\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)}{2f^3}+\frac{2b^2h^2p^2q^2(e+fx)^3\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)}{9f^3}+\frac{6ab^2p^2q^2x(fg-eh)^2}{f^2}-\frac{3bhpq(e+fx)^2(fg-eh)\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)^2}{2f^3}-\frac{3bpq(e+fx)(fg-eh)^2\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)^2}{f^3}+\frac{h(e+fx)^2(fg-eh)\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)^3}{f^3}+\frac{(e+fx)(fg-eh)^2\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)^3}{f^3}-\frac{bh^2pq(e+fx)^3\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)^2}{3f^3}+\frac{h^2(e+fx)^3\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)^3}{3f^3}+\frac{6b^3p^2q^2(e+fx)(fg-eh)^2\log\left(c(d(e+fx)^p)^q\right)}{f^3}-\frac{3b^3hp^3q^3(e+fx)^2(fg-eh)}{4f^3}-\frac{2b^3h^2p^3q^3(e+fx)^3}{27f^3}-\frac{6b^3p^3q^3x(fg-eh)^2}{f^2}$$

Antiderivative was successfully verified.

```
[In] Int[(g + h*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])^3,x]
```

```
[Out] (6*a*b^2*(f*g - e*h)^2*p^2*q^2*x)/f^2 - (6*b^3*(f*g - e*h)^2*p^3*q^3*x)/f^2
 - (3*b^3*h*(f*g - e*h)*p^3*q^3*(e + f*x)^2)/(4*f^3) - (2*b^3*h^2*p^3*q^3*(
e + f*x)^3)/(27*f^3) + (6*b^3*(f*g - e*h)^2*p^2*q^2*(e + f*x)*Log[c*(d*(e +
 f*x)^p)^q])/f^3 + (3*b^2*h*(f*g - e*h)*p^2*q^2*(e + f*x)^2*(a + b*Log[c*(d
*(e + f*x)^p)^q]))/(2*f^3) + (2*b^2*h^2*p^2*q^2*(e + f*x)^3*(a + b*Log[c*(d
*(e + f*x)^p)^q]))/(9*f^3) - (3*b*(f*g - e*h)^2*p*q*(e + f*x)*(a + b*Log[c*
(d*(e + f*x)^p)^q])^2)/f^3 - (3*b*h*(f*g - e*h)*p*q*(e + f*x)^2*(a + b*Log[
c*(d*(e + f*x)^p)^q])^2)/(2*f^3) - (b*h^2*p*q*(e + f*x)^3*(a + b*Log[c*(d*(
e + f*x)^p)^q])^2)/(3*f^3) + ((f*g - e*h)^2*(e + f*x)*(a + b*Log[c*(d*(e +
f*x)^p)^q])^3)/f^3 + (h*(f*g - e*h)*(e + f*x)^2*(a + b*Log[c*(d*(e + f*x)^p
)^q])^3)/f^3 + (h^2*(e + f*x)^3*(a + b*Log[c*(d*(e + f*x)^p)^q])^3)/(3*f^3)
```

Rule 2332

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2333

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2341

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_.)*(x_))^(m_.), x_Symbol] :>
Simp[(d*x)^(m + 1)*((a + b*Log[c*x^n])/(d*(m + 1))), x] - Simp[b*n*((d*x)^(
m + 1)/(d*(m + 1)^2)), x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[m, -1]
```

Rule 2342

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_.)*(x_))^(m_.), x_Symbo
l] :> Simp[(d*x)^(m + 1)*((a + b*Log[c*x^n])^p/(d*(m + 1))), x] - Dist[b*n*
(p/(m + 1)), Int[(d*x)^m*(a + b*Log[c*x^n])^(p - 1), x], x] /; FreeQ[{a, b,
 c, d, m, n}, x] && NeQ[m, -1] && GtQ[p, 0]
```

Rule 2436

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2437

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[(f*(x/d))^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2448

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q*(a + b*Log[c*(d
 + e*x)^n])^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f -
 d*g, 0] && IGtQ[q, 0]
```

Rule 2495

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int (g+hx)^2 \left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)^3 \, dx = \text{Subst}\left(\int (g+hx)^2 \left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^3 \, dx, cd^q(e+fx\right.$$

$$= \text{Subst}\left(\int \left(\frac{(fg-eh)^2 \left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^3}{f^2} + \frac{2h(fg-\right.\right.$$

$$= \text{Subst}\left(\frac{h^2 \int (e+fx)^2 \left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^3 \, dx}{f^2}, cd^q(e+\right.$$

$$= \text{Subst}\left(\frac{h^2\text{Subst}\left(\int x^2 \left(a+b\log\left(cd^q x^{pq}\right)\right)^3 \, dx, x, e+fx\right)}{f^3}, cd^q(\right.$$

$$= \frac{(fg-eh)^2(e+fx)\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)^3}{f^3} + \frac{h(fg-eh}{}$$

$$= -\frac{3b(fg-eh)^2pq(e+fx)\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)^2}{f^3} - \frac{3bh}{}$$

$$= \frac{6ab^2(fg-eh)^2p^2q^2x}{f^2} - \frac{3b^3h(fg-eh)p^3q^3(e+fx)^2}{4f^3} - \frac{2b^3h^2}{}$$

$$= \frac{6ab^2(fg-eh)^2p^2q^2x}{f^2} - \frac{6b^3(fg-eh)^2p^3q^3x}{f^2} - \frac{3b^3h(fg-eh)}{4f}$$

Mathematica [A]
time = 0.72, size = 858, normalized size = 1.74

Antiderivative was successfully verified.

```
[In] Integrate[(g + h*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])^3,x]
```

```
[Out] (36*b^3*e*(3*f^2*g^2 - 3*e*f*g*h + e^2*h^2)*p^3*q^3*Log[e + f*x]^3 - 18*b^2
*e*p^2*q^2*Log[e + f*x]^2*(6*a*(3*f^2*g^2 - 3*e*f*g*h + e^2*h^2) + b*(-18*f
^2*g^2 + 27*e*f*g*h - 11*e^2*h^2)*p*q + 6*b*(3*f^2*g^2 - 3*e*f*g*h + e^2*h^
2)*Log[c*(d*(e + f*x)^p)^q]) + 6*b*e*p*q*Log[e + f*x]*(18*a^2*(3*f^2*g^2 -
3*e*f*g*h + e^2*h^2) - 6*a*b*(18*f^2*g^2 - 27*e*f*g*h + 11*e^2*h^2)*p*q + b
^2*(108*f^2*g^2 - 189*e*f*g*h + 85*e^2*h^2)*p^2*q^2 + 6*b*(6*a*(3*f^2*g^2 -
 3*e*f*g*h + e^2*h^2) + b*(-18*f^2*g^2 + 27*e*f*g*h - 11*e^2*h^2)*p*q)*Log[
c*(d*(e + f*x)^p)^q] + 18*b^2*(3*f^2*g^2 - 3*e*f*g*h + e^2*h^2)*Log[c*(d*(e
 + f*x)^p)^q]^2) + f*x*(36*a^3*f^2*(3*g^2 + 3*g*h*x + h^2*x^2) - 18*a^2*b*p
*q*(6*e^2*h^2 - 3*e*f*h*(6*g + h*x) + f^2*(18*g^2 + 9*g*h*x + 2*h^2*x^2)) +
 6*a*b^2*p^2*q^2*(66*e^2*h^2 - 3*e*f*h*(54*g + 5*h*x) + f^2*(108*g^2 + 27*g
*h*x + 4*h^2*x^2)) - b^3*p^3*q^3*(510*e^2*h^2 - 3*e*f*h*(378*g + 19*h*x) +
```

```
f^2*(648*g^2 + 81*g*h*x + 8*h^2*x^2)) + 6*b*(18*a^2*f^2*(3*g^2 + 3*g*h*x +
h^2*x^2) - 6*a*b*p*q*(6*e^2*h^2 - 3*e*f*h*(6*g + h*x) + f^2*(18*g^2 + 9*g*h
*x + 2*h^2*x^2)) + b^2*p^2*q^2*(66*e^2*h^2 - 3*e*f*h*(54*g + 5*h*x) + f^2*(
108*g^2 + 27*g*h*x + 4*h^2*x^2)))*Log[c*(d*(e + f*x)^p)^q] + 18*b^2*(6*a*f^
2*(3*g^2 + 3*g*h*x + h^2*x^2) - b*p*q*(6*e^2*h^2 - 3*e*f*h*(6*g + h*x) + f^
2*(18*g^2 + 9*g*h*x + 2*h^2*x^2)))*Log[c*(d*(e + f*x)^p)^q]^2 + 36*b^3*f^2*
(3*g^2 + 3*g*h*x + h^2*x^2)*Log[c*(d*(e + f*x)^p)^q]^3))/(108*f^3)
```

Maple [F]
time = 0.23, size = 0, normalized size = 0.00

$$\int (hx+g)^2 \left(a+b\ln\left(c(d(fx+e)^p)^q\right)\right)^3\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x+g)^2*(a+b*ln(c*(d*(f*x+e)^p)^q))^3,x)
[Out] int((h*x+g)^2*(a+b*ln(c*(d*(f*x+e)^p)^q))^3,x)
```

Maxima [B] Leaf count of result is larger than twice the leaf count of optimal. 1286 vs. $2(507) = 1014$.
time = 0.34, size = 1286, normalized size = 2.61

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^2*(a+b*log(c*(d*(f*x+e)^p)^q))^3,x, algorithm="maxima")
[Out] 1/3*b^3*h^2*x^3*log(((f*x + e)^p*d)^q*c)^3 + a*b^2*h^2*x^3*log(((f*x + e)^p
*d)^q*c)^2 + b^3*g*h*x^2*log(((f*x + e)^p*d)^q*c)^3 - 3*a^2*b*f*g^2*p*q*(x/
f - e*log(f*x + e)/f^2) - 3/2*a^2*b*f*g*h*p*q*((f*x^2 - 2*x*e)/f^2 + 2*e^2*
log(f*x + e)/f^3) - 1/6*a^2*b*f*h^2*p*q*((2*f^2*x^3 - 3*f*x^2*e + 6*x*e^2)/
f^3 - 6*e^3*log(f*x + e)/f^4) + a^2*b*h^2*x^3*log(((f*x + e)^p*d)^q*c) + 3*
a*b^2*g*h*x^2*log(((f*x + e)^p*d)^q*c)^2 + b^3*g^2*x*log(((f*x + e)^p*d)^q*
c)^3 + 1/3*a^3*h^2*x^3 + 3*a^2*b*g*h*x^2*log(((f*x + e)^p*d)^q*c) + 3*a*b^2
*g^2*x*log(((f*x + e)^p*d)^q*c)^2 + a^3*g*h*x^2 + 3*a^2*b*g^2*x*log(((f*x +
 e)^p*d)^q*c) - 3*(2*f*p*q*(x/f - e*log(f*x + e)/f^2)*log(((f*x + e)^p*d)^q
*c) + (e*log(f*x + e)^2 - 2*f*x + 2*e*log(f*x + e))*p^2*q^2/f)*a*b^2*g^2 -
(3*f*p*q*(x/f - e*log(f*x + e)/f^2)*log(((f*x + e)^p*d)^q*c)^2 - ((e*log(f*
x + e)^3 + 3*e*log(f*x + e)^2 - 6*f*x + 6*e*log(f*x + e))*p^2*q^2/f^2 - 3*(
e*log(f*x + e)^2 - 2*f*x + 2*e*log(f*x + e))*p*q*log(((f*x + e)^p*d)^q*c)/f
^2)*f*p*q)*b^3*g^2 - 3/2*(2*f*p*q*((f*x^2 - 2*x*e)/f^2 + 2*e^2*log(f*x + e)
/f^3)*log(((f*x + e)^p*d)^q*c) - (f^2*x^2 - 6*f*x*e + 2*e^2*log(f*x + e)^2
+ 6*e^2*log(f*x + e))*p^2*q^2/f^2)*a*b^2*g*h - 1/4*(6*f*p*q*((f*x^2 - 2*x*e
)/f^2 + 2*e^2*log(f*x + e)/f^3)*log(((f*x + e)^p*d)^q*c)^2 + ((3*f^2*x^2 +
4*e^2*log(f*x + e)^3 - 42*f*x*e + 18*e^2*log(f*x + e)^2 + 42*e^2*log(f*x +
```

```
e))*p^2*q^2/f^3 - 6*(f^2*x^2 - 6*f*x*e + 2*e^2*log(f*x + e)^2 + 6*e^2*log(f
*x + e))*p*q*log(((f*x + e)^p*d)^q*c)/f^3)*f*p*q)*b^3*g*h - 1/18*(6*f*p*q*(
(2*f^2*x^3 - 3*f*x^2*e + 6*x*e^2)/f^3 - 6*e^3*log(f*x + e)/f^4)*log(((f*x +
 e)^p*d)^q*c) - (4*f^3*x^3 - 15*f^2*x^2*e + 66*f*x*e^2 - 18*e^3*log(f*x + e
)^2 - 66*e^3*log(f*x + e))*p^2*q^2/f^3)*a*b^2*h^2 - 1/108*(18*f*p*q*((2*f^2
*x^3 - 3*f*x^2*e + 6*x*e^2)/f^3 - 6*e^3*log(f*x + e)/f^4)*log(((f*x + e)^p*
d)^q*c)^2 + f*p*q*((8*f^3*x^3 - 57*f^2*x^2*e - 36*e^3*log(f*x + e)^3 + 510*
f*x*e^2 - 198*e^3*log(f*x + e)^2 - 510*e^3*log(f*x + e))*p^2*q^2/f^4 - 6*(4
*f^3*x^3 - 15*f^2*x^2*e + 66*f*x*e^2 - 18*e^3*log(f*x + e)^2 - 66*e^3*log(f
*x + e))*p*q*log(((f*x + e)^p*d)^q*c)/f^4))*b^3*h^2 + a^3*g^2*x
```

Fricas [B] Leaf count of result is larger than twice the leaf count of optimal. 3392 vs. $2(507) = 1014$.
time = 0.48, size = 3392, normalized size = 6.89

Too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^2*(a+b*log(c*(d*(f*x+e)^p)^q))^3,x, algorithm="fricas")
```

```
[Out] -1/108*(4*(2*b^3*f^3*h^2*p^3*q^3 - 6*a*b^2*f^3*h^2*p^2*q^2 + 9*a^2*b*f^3*h^
2*p*q - 9*a^3*f^3*h^2)*x^3 - 36*(b^3*f^3*h^2*p^3*q^3*x^3 + 3*b^3*f^3*g*h*p^
3*q^3*x^2 + 3*b^3*f^3*g^2*p^3*q^3*x + 3*b^3*f^2*g^2*p^3*q^3*e - 3*b^3*f*g*h
*p^3*q^3*e^2 + b^3*h^2*p^3*q^3*e^3)*log(f*x + e)^3 - 36*(b^3*f^3*h^2*x^3 +
3*b^3*f^3*g*h*x^2 + 3*b^3*f^3*g^2*x)*log(c)^3 - 36*(b^3*f^3*h^2*q^3*x^3 + 3
*b^3*f^3*g*h*q^3*x^2 + 3*b^3*f^3*g^2*q^3*x)*log(d)^3 + 27*(3*b^3*f^3*g*h*p^
3*q^3 - 6*a*b^2*f^3*g*h*p^2*q^2 + 6*a^2*b*f^3*g*h*p*q - 4*a^3*f^3*g*h)*x^2
+ 6*(85*b^3*f*h^2*p^3*q^3 - 66*a*b^2*f*h^2*p^2*q^2 + 18*a^2*b*f*h^2*p*q)*x*
e^2 + 18*(2*(b^3*f^3*h^2*p^3*q^3 - 3*a*b^2*f^3*h^2*p^2*q^2)*x^3 + 9*(b^3*f^
3*g*h*p^3*q^3 - 2*a*b^2*f^3*g*h*p^2*q^2)*x^2 + 18*(b^3*f^3*g^2*p^3*q^3 - a*
b^2*f^3*g^2*p^2*q^2)*x + (11*b^3*h^2*p^3*q^3 - 6*a*b^2*h^2*p^2*q^2)*e^3 + 3
*(2*b^3*f*h^2*p^3*q^3*x - 9*b^3*f*g*h*p^3*q^3 + 6*a*b^2*f*g*h*p^2*q^2)*e^2
- 3*(b^3*f^2*h^2*p^3*q^3*x^2 + 6*b^3*f^2*g*h*p^3*q^3*x - 6*b^3*f^2*g^2*p^3*
q^3 + 6*a*b^2*f^2*g^2*p^2*q^2)*e - 6*(b^3*f^3*h^2*p^2*q^2*x^3 + 3*b^3*f^3*g
*h*p^2*q^2*x^2 + 3*b^3*f^3*g^2*p^2*q^2*x + 3*b^3*f^2*g^2*p^2*q^2*e - 3*b^3*
f*g*h*p^2*q^2*e^2 + b^3*h^2*p^2*q^2*e^3)*log(c) - 6*(b^3*f^3*h^2*p^2*q^3*x^
3 + 3*b^3*f^3*g*h*p^2*q^3*x^2 + 3*b^3*f^3*g^2*p^2*q^3*x + 3*b^3*f^2*g^2*p^2
*q^3*e - 3*b^3*f*g*h*p^2*q^3*e^2 + b^3*h^2*p^2*q^3*e^3)*log(d))*log(f*x + e
)^2 + 18*(6*b^3*f*h^2*p*q*x*e^2 + 2*(b^3*f^3*h^2*p*q - 3*a*b^2*f^3*h^2)*x^3
 + 9*(b^3*f^3*g*h*p*q - 2*a*b^2*f^3*g*h)*x^2 + 18*(b^3*f^3*g^2*p*q - a*b^2*
f^3*g^2)*x - 3*(b^3*f^2*h^2*p*q*x^2 + 6*b^3*f^2*g*h*p*q*x)*e)*log(c)^2 + 18
*(6*b^3*f*h^2*p*q^3*x*e^2 + 2*(b^3*f^3*h^2*p*q^3 - 3*a*b^2*f^3*h^2*q^2)*x^3
 + 9*(b^3*f^3*g*h*p*q^3 - 2*a*b^2*f^3*g*h*q^2)*x^2 + 18*(b^3*f^3*g^2*p*q^3
- a*b^2*f^3*g^2*q^2)*x - 3*(b^3*f^2*h^2*p*q^3*x^2 + 6*b^3*f^2*g*h*p*q^3*x)*
e - 6*(b^3*f^3*h^2*q^2*x^3 + 3*b^3*f^3*g*h*q^2*x^2 + 3*b^3*f^3*g^2*q^2*x)*l
```

```
og(c))*log(d)^2 + 108*(6*b^3*f^3*g^2*p^3*q^3 - 6*a*b^2*f^3*g^2*p^2*q^2 + 3*
a^2*b*f^3*g^2*p*q - a^3*f^3*g^2)*x - 3*((19*b^3*f^2*h^2*p^3*q^3 - 30*a*b^2*
f^2*h^2*p^2*q^2 + 18*a^2*b*f^2*h^2*p*q)*x^2 + 54*(7*b^3*f^2*g*h*p^3*q^3 - 6
*a*b^2*f^2*g*h*p^2*q^2 + 2*a^2*b*f^2*g*h*p*q)*x)*e - 6*(2*(2*b^3*f^3*h^2*p^
3*q^3 - 6*a*b^2*f^3*h^2*p^2*q^2 + 9*a^2*b*f^3*h^2*p*q)*x^3 + 27*(b^3*f^3*g*
h*p^3*q^3 - 2*a*b^2*f^3*g*h*p^2*q^2 + 2*a^2*b*f^3*g*h*p*q)*x^2 + 18*(b^3*f^
3*h^2*p*q*x^3 + 3*b^3*f^3*g*h*p*q*x^2 + 3*b^3*f^3*g^2*p*q*x + 3*b^3*f^2*g^2
*p*q*e - 3*b^3*f*g*h*p*q*e^2 + b^3*h^2*p*q*e^3)*log(c)^2 + 18*(b^3*f^3*h^2*
p*q^3*x^3 + 3*b^3*f^3*g*h*p*q^3*x^2 + 3*b^3*f^3*g^2*p*q^3*x + 3*b^3*f^2*g^2
*p*q^3*e - 3*b^3*f*g*h*p*q^3*e^2 + b^3*h^2*p*q^3*e^3)*log(d)^2 + 54*(2*b^3*
f^3*g^2*p^3*q^3 - 2*a*b^2*f^3*g^2*p^2*q^2 + a^2*b*f^3*g^2*p*q)*x + (85*b^3*
h^2*p^3*q^3 - 66*a*b^2*h^2*p^2*q^2 + 18*a^2*b*h^2*p*q)*e^3 - 3*(63*b^3*f*g*
h*p^3*q^3 - 54*a*b^2*f*g*h*p^2*q^2 + 18*a^2*b*f*g*h*p*q - 2*(11*b^3*f*h^2*p
^3*q^3 - 6*a*b^2*f*h^2*p^2*q^2)*x)*e^2 + 3*(36*b^3*f^2*g^2*p^3*q^3 - 36*a*b
^2*f^2*g^2*p^2*q^2 + 18*a^2*b*f^2*g^2*p*q - (5*b^3*f^2*h^2*p^3*q^3 - 6*a*b^
2*f^2*h^2*p^2*q^2)*x^2 - 18*(3*b^3*f^2*g*h*p^3*q^3 - 2*a*b^2*f^2*g*h*p^2*q^
2)*x)*e - 6*(2*(b^3*f^3*h^2*p^2*q^2 - 3*a*b^2*f^3*h^2*p*q)*x^3 + 9*(b^3*f^3
*g*h*p^2*q^2 - 2*a*b^2*f^3*g*h*p*q)*x^2 + 18*(b^3*f^3*g^2*p^2*q^2 - a*b^2*f
^3*g^2*p*q)*x + (11*b^3*h^2*p^2*q^2 - 6*a*b^2*h^2*p*q)*e^3 + 3*(2*b^3*f*h^2
*p^2*q^2*x - 9*b^3*f*g*h*p^2*q^2 + 6*a*b^2*f*g*h*p*q)*e^2 - 3*(b^3*f^2*h^2*
p^2*q^2*x^2 + 6*b^3*f^2*g*h*p^2*q^2*x - 6*b^3*f^2*g^2*p^2*q^2 + 6*a*b^2*f^2
*g^2*p*q)*e)*log(c) - 6*(2*(b^3*f^3*h^2*p^2*q^3 - 3*a*b^2*f^3*h^2*p*q^2)*x^
3 + 9*(b^3*f^3*g*h*p^2*q^3 - 2*a*b^2*f^3*g*h*p*q^2)*x^2 + 18*(b^3*f^3*g^2*p
^2*q^3 - a*b^2*f^3*g^2*p*q^2)*x + (11*b^3*h^2*p^2*q^3 - 6*a*b^2*h^2*p*q^2)*
e^3 + 3*(2*b^3*f*h^2*p^2*q^3*x - 9*b^3*f*g*h*p^2*q^3 + 6*a*b^2*f*g*h*p*q^2)
*e^2 - 3*(b^3*f^2*h^2*p^2*q^3*x^2 + 6*b^3*f^2*g*h*p^2*q^3*x - 6*b^3*f^2*g^2
*p^2*q^3 + 6*a*b^2*f^2*g^2*p*q^2)*e - 6*(b^3*f^3*h^2*p*q^2*x^3 + 3*b^3*f^3*
g*h*p*q^2*x^2 + 3*b^3*f^3*g^2*p*q^2*x + 3*b^3*f^2*g^2*p*q^2*e - 3*b^3*f*g*h
*p*q^2*e^2 + b^3*h^2*p*q^2*e^3)*log(c))*log(d))*log(f*x + e) - 6*(2*(2*b^3*
f^3*h^2*p^2*q^2 - 6*a*b^2*f^3*h^2*p*q + 9*a^2*b*f^3*h^2)*x^3 + 27*(b^3*f^3*
g*h*p^2*q^2 - 2*a*b^2*f^3*g*h*p*q + 2*a^2*b*f^3*g*h)*x^2 + 6*(11*b^3*f*h^2*
p^2*q^2 - 6*a*b^2*f*h^2*p*q)*x*e^2 + 54*(2*b^3*f^3*g^2*p^2*q^2 - 2*a*b^2*f^
3*g^2*p*q + a^2*b*f^3*g^2)*x - 3*((5*b^3*f^2*h^2*p^2*q^2 - 6*a*b^2*f^2*h^2*
p*q)*x^2 + 18*(3*b^3*f^2*g*h*p^2*q^2 - 2*a*b^2*f^2*g*h*p*q)*x)*e)*log(c) -
6*(2*(2*b^3*f^3*h^2*p^2*q^3 - 6*a*b^2*f^3*h^2*p*q^2 + 9*a^2*b*f^3*h^2*q)*x^
3 + 27*(b^3*f^3*g*h*p^2*q^3 - 2*a*b^2*f^3*g*h*p*q^2 + 2*a^2*b*f^3*g*h*q)*x^
2 + 6*(11*b^3*f*h^2*p^2*q^3 - 6*a*b^2*f*h^2*p*q^2)*x*e^2 + 18*(b^3*f^3*h^2*
q*x^3 + 3*b^3*f^3*g*h*q*x^2 + 3*b^3*f^3*g^2*q*x)*log(c)^2 + 54*(2*b^3*f^3*g
^2*p^2*q^3 - 2*a*b^2*f^3*g^2*p*q^2 + a^2*b*f^3*g^2*q)*x - 3*((5*b^3*f^2*h^2
*p^2*q^3 - 6*a*b^2*f^2*h^2*p*q^2)*x^2 + 18*(3*b^3*f^2*g*h*p^2*q^3 - 2*a*b^2
*f^2*g*h*p*q^2)*x)*e - 6*(6*b^3*f*h^2*p*q^2*x*e^2 + 2*(b^3*f^3*h^2*p*q^2 -
3*a*b^2*f^3*h^2*q)*x^3 + 9*(b^3*f^3*g*h*p*q^2 -...
```

Sympy [B] Leaf count of result is larger than twice the leaf count of optimal. 1846 vs. $2(481) = 962$.

time = 6.67, size = 1846, normalized size = 3.75

Too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((h*x+g)**2*(a+b*ln(c*(d*(f*x+e)**p)**q))**3,x)

```
[Out] Piecewise((a**3*g**2*x + a**3*g*h*x**2 + a**3*h**2*x**3/3 + a**2*b*e**3*h**
2*log(c*(d*(e + f*x)**p)**q)/f**3 - 3*a**2*b*e**2*g*h*log(c*(d*(e + f*x)**p
)**q)/f**2 - a**2*b*e**2*h**2*p*q*x/f**2 + 3*a**2*b*e*g**2*log(c*(d*(e + f*
x)**p)**q)/f + 3*a**2*b*e*g*h*p*q*x/f + a**2*b*e*h**2*p*q*x**2/(2*f) - 3*a*
*2*b*g**2*p*q*x + 3*a**2*b*g**2*x*log(c*(d*(e + f*x)**p)**q) - 3*a**2*b*g*h
*p*q*x**2/2 + 3*a**2*b*g*h*x**2*log(c*(d*(e + f*x)**p)**q) - a**2*b*h**2*p*
q*x**3/3 + a**2*b*h**2*x**3*log(c*(d*(e + f*x)**p)**q) - 11*a*b**2*e**3*h**
2*p*q*log(c*(d*(e + f*x)**p)**q)/(3*f**3) + a*b**2*e**3*h**2*log(c*(d*(e +
f*x)**p)**q)**2/f**3 + 9*a*b**2*e**2*g*h*p*q*log(c*(d*(e + f*x)**p)**q)/f**
2 - 3*a*b**2*e**2*g*h*log(c*(d*(e + f*x)**p)**q)**2/f**2 + 11*a*b**2*e**2*h
**2*p**2*q**2*x/(3*f**2) - 2*a*b**2*e**2*h**2*p*q*x*log(c*(d*(e + f*x)**p)*
*q)/f**2 - 6*a*b**2*e*g**2*p*q*log(c*(d*(e + f*x)**p)**q)/f + 3*a*b**2*e*g*
*2*log(c*(d*(e + f*x)**p)**q)**2/f - 9*a*b**2*e*g*h*p**2*q**2*x/f + 6*a*b**
2*e*g*h*p*q*x*log(c*(d*(e + f*x)**p)**q)/f - 5*a*b**2*e*h**2*p**2*q**2*x**2
/(6*f) + a*b**2*e*h**2*p*q*x**2*log(c*(d*(e + f*x)**p)**q)/f + 6*a*b**2*g**
2*p**2*q**2*x - 6*a*b**2*g**2*p*q*x*log(c*(d*(e + f*x)**p)**q) + 3*a*b**2*g
**2*x*log(c*(d*(e + f*x)**p)**q)**2 + 3*a*b**2*g*h*p**2*q**2*x**2/2 - 3*a*b
**2*g*h*p*q*x**2*log(c*(d*(e + f*x)**p)**q) + 3*a*b**2*g*h*x**2*log(c*(d*(e
 + f*x)**p)**q)**2 + 2*a*b**2*h**2*p**2*q**2*x**3/9 - 2*a*b**2*h**2*p*q*x**
3*log(c*(d*(e + f*x)**p)**q)/3 + a*b**2*h**2*x**3*log(c*(d*(e + f*x)**p)**q
)**2 + 85*b**3*e**3*h**2*p**2*q**2*log(c*(d*(e + f*x)**p)**q)/(18*f**3) - 1
1*b**3*e**3*h**2*p*q*log(c*(d*(e + f*x)**p)**q)**2/(6*f**3) + b**3*e**3*h**
2*log(c*(d*(e + f*x)**p)**q)**3/(3*f**3) - 21*b**3*e**2*g*h*p**2*q**2*log(c
*(d*(e + f*x)**p)**q)/(2*f**2) + 9*b**3*e**2*g*h*p*q*log(c*(d*(e + f*x)**p)
**q)**2/(2*f**2) - b**3*e**2*g*h*log(c*(d*(e + f*x)**p)**q)**3/f**2 - 85*b*
*3*e**2*h**2*p**3*q**3*x/(18*f**2) + 11*b**3*e**2*h**2*p**2*q**2*x*log(c*(d
*(e + f*x)**p)**q)/(3*f**2) - b**3*e**2*h**2*p*q*x*log(c*(d*(e + f*x)**p)**
q)**2/f**2 + 6*b**3*e*g**2*p**2*q**2*log(c*(d*(e + f*x)**p)**q)/f - 3*b**3*
e*g**2*p*q*log(c*(d*(e + f*x)**p)**q)**2/f + b**3*e*g**2*log(c*(d*(e + f*x)
**p)**q)**3/f + 21*b**3*e*g*h*p**3*q**3*x/(2*f) - 9*b**3*e*g*h*p**2*q**2*x*
log(c*(d*(e + f*x)**p)**q)/f + 3*b**3*e*g*h*p*q*x*log(c*(d*(e + f*x)**p)**q
)**2/f + 19*b**3*e*h**2*p**3*q**3*x**2/(36*f) - 5*b**3*e*h**2*p**2*q**2*x**
2*log(c*(d*(e + f*x)**p)**q)/(6*f) + b**3*e*h**2*p*q*x**2*log(c*(d*(e + f*x
)**p)**q)**2/(2*f) - 6*b**3*g**2*p**3*q**3*x + 6*b**3*g**2*p**2*q**2*x*log(
c*(d*(e + f*x)**p)**q) - 3*b**3*g**2*p*q*x*log(c*(d*(e + f*x)**p)**q)**2 +
b**3*g**2*x*log(c*(d*(e + f*x)**p)**q)**3 - 3*b**3*g*h*p**3*q**3*x**2/4 + 3
*b**3*g*h*p**2*q**2*x**2*log(c*(d*(e + f*x)**p)**q)/2 - 3*b**3*g*h*p*q*x**2
*log(c*(d*(e + f*x)**p)**q)**2/2 + b**3*g*h*x**2*log(c*(d*(e + f*x)**p)**q)
```

```
**3 - 2*b**3*h**2*p**3*q**3*x**3/27 + 2*b**3*h**2*p**2*q**2*x**3*log(c*(d*(
e + f*x)**p)**q)/9 - b**3*h**2*p*q*x**3*log(c*(d*(e + f*x)**p)**q)**2/3 + b
**3*h**2*x**3*log(c*(d*(e + f*x)**p)**q)**3/3, Ne(f, 0)), ((a + b*log(c*(d*
e**p)**q))**3*(g**2*x + g*h*x**2 + h**2*x**3/3), True))
```

Giac [**B**] Leaf count of result is larger than twice the leaf count of optimal. 5481 vs. $2(507) = 1014$.
time = 4.65, size = 5481, normalized size = 11.14

Too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^2*(a+b*log(c*(d*(f*x+e)^p)^q))^3,x, algorithm="giac")
```

```
[Out] 1/108*(108*(f*x + e)*b^3*f^2*g^2*p^3*q^3*log(f*x + e)^3 + 108*(f*x + e)^2*b
^3*f*g*h*p^3*q^3*log(f*x + e)^3 + 36*(f*x + e)^3*b^3*h^2*p^3*q^3*log(f*x +
e)^3 - 216*(f*x + e)*b^3*f*g*h*p^3*q^3*e*log(f*x + e)^3 - 108*(f*x + e)^2*b
^3*h^2*p^3*q^3*e*log(f*x + e)^3 - 324*(f*x + e)*b^3*f^2*g^2*p^3*q^3*log(f*x
 + e)^2 - 162*(f*x + e)^2*b^3*f*g*h*p^3*q^3*log(f*x + e)^2 - 36*(f*x + e)^3
*b^3*h^2*p^3*q^3*log(f*x + e)^2 + 648*(f*x + e)*b^3*f*g*h*p^3*q^3*e*log(f*x
 + e)^2 + 162*(f*x + e)^2*b^3*h^2*p^3*q^3*e*log(f*x + e)^2 + 108*(f*x + e)*
b^3*h^2*p^3*q^3*e^2*log(f*x + e)^3 + 324*(f*x + e)*b^3*f^2*g^2*p^2*q^3*log(
f*x + e)^2*log(d) + 324*(f*x + e)^2*b^3*f*g*h*p^2*q^3*log(f*x + e)^2*log(d)
 + 108*(f*x + e)^3*b^3*h^2*p^2*q^3*log(f*x + e)^2*log(d) - 648*(f*x + e)*b^
3*f*g*h*p^2*q^3*e*log(f*x + e)^2*log(d) - 324*(f*x + e)^2*b^3*h^2*p^2*q^3*e
*log(f*x + e)^2*log(d) + 648*(f*x + e)*b^3*f^2*g^2*p^3*q^3*log(f*x + e) + 1
62*(f*x + e)^2*b^3*f*g*h*p^3*q^3*log(f*x + e) + 24*(f*x + e)^3*b^3*h^2*p^3*
q^3*log(f*x + e) - 1296*(f*x + e)*b^3*f*g*h*p^3*q^3*e*log(f*x + e) - 162*(f
*x + e)^2*b^3*h^2*p^3*q^3*e*log(f*x + e) - 324*(f*x + e)*b^3*h^2*p^3*q^3*e^
2*log(f*x + e)^2 + 324*(f*x + e)*b^3*f^2*g^2*p^2*q^2*log(f*x + e)^2*log(c)
+ 324*(f*x + e)^2*b^3*f*g*h*p^2*q^2*log(f*x + e)^2*log(c) + 108*(f*x + e)^3
*b^3*h^2*p^2*q^2*log(f*x + e)^2*log(c) - 648*(f*x + e)*b^3*f*g*h*p^2*q^2*e*
log(f*x + e)^2*log(c) - 324*(f*x + e)^2*b^3*h^2*p^2*q^2*e*log(f*x + e)^2*lo
g(c) - 648*(f*x + e)*b^3*f^2*g^2*p^2*q^3*log(f*x + e)*log(d) - 324*(f*x + e
)^2*b^3*f*g*h*p^2*q^3*log(f*x + e)*log(d) - 72*(f*x + e)^3*b^3*h^2*p^2*q^3*
log(f*x + e)*log(d) + 1296*(f*x + e)*b^3*f*g*h*p^2*q^3*e*log(f*x + e)*log(d
) + 324*(f*x + e)^2*b^3*h^2*p^2*q^3*e*log(f*x + e)*log(d) + 324*(f*x + e)*b
^3*h^2*p^2*q^3*e^2*log(f*x + e)^2*log(d) + 324*(f*x + e)*b^3*f^2*g^2*p*q^3*
log(f*x + e)*log(d)^2 + 324*(f*x + e)^2*b^3*f*g*h*p*q^3*log(f*x + e)*log(d)
^2 + 108*(f*x + e)^3*b^3*h^2*p*q^3*log(f*x + e)*log(d)^2 - 648*(f*x + e)*b^
3*f*g*h*p*q^3*e*log(f*x + e)*log(d)^2 - 324*(f*x + e)^2*b^3*h^2*p*q^3*e*log
(f*x + e)*log(d)^2 - 648*(f*x + e)*b^3*f^2*g^2*p^3*q^3 - 81*(f*x + e)^2*b^3
*f*g*h*p^3*q^3 - 8*(f*x + e)^3*b^3*h^2*p^3*q^3 + 1296*(f*x + e)*b^3*f*g*h*p
^3*q^3*e + 81*(f*x + e)^2*b^3*h^2*p^3*q^3*e + 648*(f*x + e)*b^3*h^2*p^3*q^3
*e^2*log(f*x + e) + 324*(f*x + e)*a*b^2*f^2*g^2*p^2*q^2*log(f*x + e)^2 + 32
```

```
4*(f*x + e)^2*a*b^2*f*g*h*p^2*q^2*log(f*x + e)^2 + 108*(f*x + e)^3*a*b^2*h^
2*p^2*q^2*log(f*x + e)^2 - 648*(f*x + e)*a*b^2*f*g*h*p^2*q^2*e*log(f*x + e)
^2 - 324*(f*x + e)^2*a*b^2*h^2*p^2*q^2*e*log(f*x + e)^2 - 648*(f*x + e)*b^3
*f^2*g^2*p^2*q^2*log(f*x + e)*log(c) - 324*(f*x + e)^2*b^3*f*g*h*p^2*q^2*lo
g(f*x + e)*log(c) - 72*(f*x + e)^3*b^3*h^2*p^2*q^2*log(f*x + e)*log(c) + 12
96*(f*x + e)*b^3*f*g*h*p^2*q^2*e*log(f*x + e)*log(c) + 324*(f*x + e)^2*b^3*
h^2*p^2*q^2*e*log(f*x + e)*log(c) + 324*(f*x + e)*b^3*h^2*p^2*q^2*e^2*log(f
*x + e)^2*log(c) + 648*(f*x + e)*b^3*f^2*g^2*p^2*q^3*log(d) + 162*(f*x + e)
^2*b^3*f*g*h*p^2*q^3*log(d) + 24*(f*x + e)^3*b^3*h^2*p^2*q^3*log(d) - 1296*
(f*x + e)*b^3*f*g*h*p^2*q^3*e*log(d) - 162*(f*x + e)^2*b^3*h^2*p^2*q^3*e*lo
g(d) - 648*(f*x + e)*b^3*h^2*p^2*q^3*e^2*log(f*x + e)*log(d) + 648*(f*x + e
)*b^3*f^2*g^2*p*q^2*log(f*x + e)*log(c)*log(d) + 648*(f*x + e)^2*b^3*f*g*h*
p*q^2*log(f*x + e)*log(c)*log(d) + 216*(f*x + e)^3*b^3*h^2*p*q^2*log(f*x +
e)*log(c)*log(d) - 1296*(f*x + e)*b^3*f*g*h*p*q^2*e*log(f*x + e)*log(c)*log
(d) - 648*(f*x + e)^2*b^3*h^2*p*q^2*e*log(f*x + e)*log(c)*log(d) - 324*(f*x
 + e)*b^3*f^2*g^2*p*q^3*log(d)^2 - 162*(f*x + e)^2*b^3*f*g*h*p*q^3*log(d)^2
 - 36*(f*x + e)^3*b^3*h^2*p*q^3*log(d)^2 + 648*(f*x + e)*b^3*f*g*h*p*q^3*e*
log(d)^2 + 162*(f*x + e)^2*b^3*h^2*p*q^3*e*log(d)^2 + 324*(f*x + e)*b^3*h^2
*p*q^3*e^2*log(f*x + e)*log(d)^2 + 108*(f*x + e)*b^3*f^2*g^2*q^3*log(d)^3 +
 108*(f*x + e)^2*b^3*f*g*h*q^3*log(d)^3 + 36*(f*x + e)^3*b^3*h^2*q^3*log(d)
^3 - 216*(f*x + e)*b^3*f*g*h*q^3*e*log(d)^3 - 108*(f*x + e)^2*b^3*h^2*q^3*e
*log(d)^3 - 648*(f*x + e)*b^3*h^2*p^3*q^3*e^2 - 648*(f*x + e)*a*b^2*f^2*g^2
*p^2*q^2*log(f*x + e) - 324*(f*x + e)^2*a*b^2*f*g*h*p^2*q^2*log(f*x + e) -
72*(f*x + e)^3*a*b^2*h^2*p^2*q^2*log(f*x + e) + 1296*(f*x + e)*a*b^2*f*g*h*
p^2*q^2*e*log(f*x + e) + 324*(f*x + e)^2*a*b^2*h^2*p^2*q^2*e*log(f*x + e) +
 324*(f*x + e)*a*b^2*h^2*p^2*q^2*e^2*log(f*x + e)^2 + 648*(f*x + e)*b^3*f^2
*g^2*p^2*q^2*log(c) + 162*(f*x + e)^2*b^3*f*g*h*p^2*q^2*log(c) + 24*(f*x +
e)^3*b^3*h^2*p^2*q^2*log(c) - 1296*(f*x + e)*b^3*f*g*h*p^2*q^2*e*log(c) - 1
62*(f*x + e)^2*b^3*h^2*p^2*q^2*e*log(c) - 648*(f*x + e)*b^3*h^2*p^2*q^2*e^2
*log(f*x + e)*log(c) + 324*(f*x + e)*b^3*f^2*g^2*p*q*log(f*x + e)*log(c)^2
+ 324*(f*x + e)^2*b^3*f*g*h*p*q*log(f*x + e)*log(c)^2 + 108*(f*x + e)^3*b^3
*h^2*p*q*log(f*x + e)*log(c)^2 - 648*(f*x + e)*b^3*f*g*h*p*q*e*log(f*x + e)
*log(c)^2 - 324*(f*x + e)^2*b^3*h^2*p*q*e*log(f*x + e)*log(c)^2 + 648*(f*x
+ e)*b^3*h^2*p^2*q^3*e^2*log(d) + 648*(f*x + e)*a*b^2*f^2*g^2*p*q^2*log(f*x
 + e)*log(d) + 648*(f*x + e)^2*a*b^2*f*g*h*p*q^2*log(f*x + e)*log(d) + 216*
(f*x + e)^3*a*b^2*h^2*p*q^2*log(f*x + e)*log(d)...
```

Mupad [B]
time = 1.26, size = 1400, normalized size = 2.85

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g + h*x)^2*(a + b*log(c*(d*(e + f*x)^p)^q))^3,x)
```

```
[Out] x*((18*a^3*f^2*g^2 - 66*b^3*e^2*h^2*p^3*q^3 - 108*b^3*f^2*g^2*p^3*q^3 + 36*
a^3*e*f*g*h + 36*a*b^2*e^2*h^2*p^2*q^2 + 108*a*b^2*f^2*g^2*p^2*q^2 - 54*a^2
*b*f^2*g^2*p*q + 162*b^3*e*f*g*h*p^3*q^3 - 108*a*b^2*e*f*g*h*p^2*q^2)/(18*f
^2) - (e*((h*(6*a^3*e*h + 12*a^3*f*g + 5*b^3*e*h*p^3*q^3 - 9*b^3*f*g*p^3*q^
3 - 18*a^2*b*f*g*p*q - 6*a*b^2*e*h*p^2*q^2 + 18*a*b^2*f*g*p^2*q^2))/(6*f) -
 (e*h^2*(9*a^3 - 2*b^3*p^3*q^3 + 6*a*b^2*p^2*q^2 - 9*a^2*b*p*q))/(9*f)))/f)
 + log(c*(d*(e + f*x)^p)^q)^2*(x^2*((3*b^2*h*(a*e*h + 2*a*f*g - b*f*g*p*q))
/(2*f) - (b^2*e*h^2*(3*a - b*p*q))/(2*f)) - x*((e*((3*b^2*h*(a*e*h + 2*a*f*
g - b*f*g*p*q))/f - (b^2*e*h^2*(3*a - b*p*q))/f))/f - (3*b^2*g*(2*a*e*h + a
*f*g - b*f*g*p*q))/f) + (e*(6*a*b^2*e^2*h^2 + 18*a*b^2*f^2*g^2 - 11*b^3*e^2
*h^2*p*q - 18*b^3*f^2*g^2*p*q - 18*a*b^2*e*f*g*h + 27*b^3*e*f*g*h*p*q))/(6*
f^3) + (b^2*h^2*x^3*(3*a - b*p*q))/3) + log(c*(d*(e + f*x)^p)^q)^3*(b^3*g^2
*x + (b^3*h^2*x^3)/3 + (e*(b^3*e^2*h^2 + 3*b^3*f^2*g^2 - 3*b^3*e*f*g*h))/(3
*f^3) + b^3*g*h*x^2) + x^2*((h*(6*a^3*e*h + 12*a^3*f*g + 5*b^3*e*h*p^3*q^3
- 9*b^3*f*g*p^3*q^3 - 18*a^2*b*f*g*p*q - 6*a*b^2*e*h*p^2*q^2 + 18*a*b^2*f*g
*p^2*q^2))/(12*f) - (e*h^2*(9*a^3 - 2*b^3*p^3*q^3 + 6*a*b^2*p^2*q^2 - 9*a^2
*b*p*q))/(18*f)) + (log(e + f*x)*(85*b^3*e^3*h^2*p^3*q^3 - 66*a*b^2*e^3*h^2
*p^2*q^2 + 108*b^3*e*f^2*g^2*p^3*q^3 + 18*a^2*b*e^3*h^2*p*q - 108*a*b^2*e*f
^2*g^2*p^2*q^2 + 54*a^2*b*e*f^2*g^2*p*q - 189*b^3*e^2*f*g*h*p^3*q^3 + 162*a
*b^2*e^2*f*g*h*p^2*q^2 - 54*a^2*b*e^2*f*g*h*p*q))/(18*f^3) + (h^2*x^3*(9*a^
3 - 2*b^3*p^3*q^3 + 6*a*b^2*p^2*q^2 - 9*a^2*b*p*q))/27 + (log(c*(d*(e + f*x
)^p)^q)*(x^3*(f*(9*a^2*b*f*g*h - (5*b^3*e*h^2*p^2*q^2)/2 + 3*a*b^2*e*h^2*p*
q + (9*b^3*f*g*h*p^2*q^2)/2 - 9*a*b^2*f*g*h*p*q) + (b*e*f*h^2*(9*a^2 + 2*b^
2*p^2*q^2 - 6*a*b*p*q))/3) + x^2*(e*(9*a^2*b*f*g*h - (5*b^3*e*h^2*p^2*q^2)/
2 + 3*a*b^2*e*h^2*p*q + (9*b^3*f*g*h*p^2*q^2)/2 - 9*a*b^2*f*g*h*p*q) + 9*a^
2*b*f^2*g^2 + 11*b^3*e^2*h^2*p^2*q^2 + 18*b^3*f^2*g^2*p^2*q^2 - 6*a*b^2*e^2
*h^2*p*q - 18*a*b^2*f^2*g^2*p*q - 27*b^3*e*f*g*h*p^2*q^2 + 18*a*b^2*e*f*g*h
*p*q) + (e*x*(9*a^2*b*f^2*g^2 + 11*b^3*e^2*h^2*p^2*q^2 + 18*b^3*f^2*g^2*p^2
*q^2 - 6*a*b^2*e^2*h^2*p*q - 18*a*b^2*f^2*g^2*p*q - 27*b^3*e*f*g*h*p^2*q^2
+ 18*a*b^2*e*f*g*h*p*q))/f + (b*f^2*h^2*x^4*(9*a^2 + 2*b^2*p^2*q^2 - 6*a*b*
p*q))/3))/(3*f*(e + f*x))
```

3.436 $\int (g+hx)\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)^3\,dx$

Optimal. Leaf size=306

$$\frac{6ab^2(fg-eh)p^2q^2x}{f}-\frac{6b^3(fg-eh)p^3q^3x}{f}-\frac{3b^3hp^3q^3(e+fx)^2}{8f^2}+\frac{6b^3(fg-eh)p^2q^2(e+fx)\log\left(c(d(e+fx)^p)^q\right.}{f^2}$$

```
[Out] 6*a*b^2*(-e*h+f*g)*p^2*q^2*x/f-6*b^3*(-e*h+f*g)*p^3*q^3*x/f-3/8*b^3*h*p^3*q
^3*(f*x+e)^2/f^2+6*b^3*(-e*h+f*g)*p^2*q^2*(f*x+e)*ln(c*(d*(f*x+e)^p)^q)/f^2
+3/4*b^2*h*p^2*q^2*(f*x+e)^2*(a+b*ln(c*(d*(f*x+e)^p)^q))/f^2-3*b*(-e*h+f*g)
*p*q*(f*x+e)*(a+b*ln(c*(d*(f*x+e)^p)^q))^2/f^2-3/4*b*h*p*q*(f*x+e)^2*(a+b*l
n(c*(d*(f*x+e)^p)^q))^2/f^2+(-e*h+f*g)*(f*x+e)*(a+b*ln(c*(d*(f*x+e)^p)^q))^
3/f^2+1/2*h*(f*x+e)^2*(a+b*ln(c*(d*(f*x+e)^p)^q))^3/f^2
```

Rubi [A]
time = 0.38, antiderivative size = 306, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 8, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.308, Rules used = {2448, 2436, 2333, 2332, 2437, 2342, 2341, 2495}

$$\frac{3b^2hp^2q^2(e+fx)^2\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)}{4f^2}+\frac{6ab^2p^2q^2x(fg-eh)}{f}-\frac{3bpq(e+fx)(fg-eh)\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)^2}{f^2}+\frac{(e+fx)(fg-eh)\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)^3}{f^2}-\frac{3bhpq(e+fx)^2\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)^2}{4f^2}+\frac{h(e+fx)^2\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)^3}{2f^2}+\frac{6b^3p^2q^2(e+fx)(fg-eh)\log\left(c(d(e+fx)^p)^q\right)}{f^2}-\frac{3b^3hp^3q^3(e+fx)^2}{8f^2}-\frac{6b^3p^3q^3x(fg-eh)}{f}$$

Antiderivative was successfully verified.

```
[In] Int[(g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^3,x]
```

```
[Out] (6*a*b^2*(f*g - e*h)*p^2*q^2*x)/f - (6*b^3*(f*g - e*h)*p^3*q^3*x)/f - (3*b^
3*h*p^3*q^3*(e + f*x)^2)/(8*f^2) + (6*b^3*(f*g - e*h)*p^2*q^2*(e + f*x)*Log
[c*(d*(e + f*x)^p)^q])/f^2 + (3*b^2*h*p^2*q^2*(e + f*x)^2*(a + b*Log[c*(d*(
e + f*x)^p)^q]))/(4*f^2) - (3*b*(f*g - e*h)*p*q*(e + f*x)*(a + b*Log[c*(d*(
e + f*x)^p)^q])^2)/f^2 - (3*b*h*p*q*(e + f*x)^2*(a + b*Log[c*(d*(e + f*x)^p
)^q])^2)/(4*f^2) + ((f*g - e*h)*(e + f*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^
3)/f^2 + (h*(e + f*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])^3)/(2*f^2)
```

Rule 2332

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2333

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2341

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_.)*(x_))^(m_.), x_Symbol] :>
Simp[(d*x)^(m + 1)*((a + b*Log[c*x^n])/(d*(m + 1))), x] - Simp[b*n*((d*x)^(
```

```
m + 1)/(d*(m + 1)^2)), x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[m, -1]
```

Rule 2342

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_.)*(x_))^(m_.), x_Symbo
l] :> Simp[(d*x)^(m + 1)*((a + b*Log[c*x^n])^p/(d*(m + 1))), x] - Dist[b*n*
(p/(m + 1)), Int[(d*x)^m*(a + b*Log[c*x^n])^(p - 1), x], x] /; FreeQ[{a, b,
 c, d, m, n}, x] && NeQ[m, -1] && GtQ[p, 0]
```

Rule 2436

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2437

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[(f*(x/d))^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2448

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q*(a + b*Log[c*(d
 + e*x)^n])^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f -
 d*g, 0] && IGtQ[q, 0]
```

Rule 2495

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int (g+hx)\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)^3\,dx = \text{Subst}\left(\int (g+hx)\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^3\,dx, cd^q(e+fx)^{p}$$

$$= \text{Subst}\left(\int \left(\frac{(fg-eh)\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^3}{f} + \frac{h(e+fx)}{}\right.\right.$$

$$= \text{Subst}\left(\frac{h\int (e+fx)\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^3\,dx}{f}, cd^q(e+fx\right.$$

$$= \text{Subst}\left(\frac{h\text{Subst}\left(\int x\left(a+b\log\left(cd^q x^{pq}\right)\right)^3\,dx, x, e+fx\right)}{f^2}, cd^q(e+\right.$$

$$= \frac{(fg-eh)(e+fx)\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)^3}{f^2} + \frac{h(e+fx)^2\,(}{}$$

$$= -\frac{3b(fg-eh)pq(e+fx)\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)^2}{f^2} - \frac{3bhpq}{}$$

$$= \frac{6ab^2(fg-eh)p^2q^2x}{f} - \frac{3b^3hp^3q^3(e+fx)^2}{8f^2} + \frac{3b^2hp^2q^2(e+fx)}{}$$

$$= \frac{6ab^2(fg-eh)p^2q^2x}{f} - \frac{6b^3(fg-eh)p^3q^3x}{f} - \frac{3b^3hp^3q^3(e+fx)}{8f^2}$$

Mathematica [A]
time = 0.11, size = 231, normalized size = 0.75

$$\frac{8(fg-eh)(e+fx)\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)^3+4h(e+fx)^2\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)^3-24b(fg-eh)pq\left((e+fx)\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)^2-2bpq\left(f(a-bpq)x+b(e+fx)\log\left(c(d(e+fx)^p)^q\right)\right)\right)-3bhpq\left(2(e+fx)^2\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)^2+bpq\left(bfpqx(2e+fx)-2(e+fx)^2\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)\right)\right)}{8f^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^3,x]
```

```
[Out] (8*(f*g - e*h)*(e + f*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^3 + 4*h*(e + f*x)
^2*(a + b*Log[c*(d*(e + f*x)^p)^q])^3 - 24*b*(f*g - e*h)*p*q*((e + f*x)*(a
+ b*Log[c*(d*(e + f*x)^p)^q])^2 - 2*b*p*q*(f*(a - b*p*q)*x + b*(e + f*x)*Lo
g[c*(d*(e + f*x)^p)^q])) - 3*b*h*p*q*(2*(e + f*x)^2*(a + b*Log[c*(d*(e + f*
x)^p)^q])^2 + b*p*q*(b*f*p*q*x*(2*e + f*x) - 2*(e + f*x)^2*(a + b*Log[c*(d*
(e + f*x)^p)^q]))))/(8*f^2)
```

Maple [F]
time = 0.08, size = 0, normalized size = 0.00

$$\int (hx+g)\left(a+b\ln\left(c(d(fx+e)^p)^q\right)\right)^3\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x+g)*(a+b*ln(c*(d*(f*x+e)^p)^q))^3,x)
```

```
[Out] int((h*x+g)*(a+b*ln(c*(d*(f*x+e)^p)^q))^3,x)
```

Maxima [B] Leaf count of result is larger than twice the leaf count of optimal. 770 vs. $2(316) = 632$.
time = 0.32, size = 770, normalized size = 2.52

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)*(a+b*log(c*(d*(f*x+e)^p)^q))^3,x, algorithm="maxima")
```

```
[Out] 1/2*b^3*h*x^2*log(((f*x + e)^p*d)^q*c)^3 - 3*a^2*b*f*g*p*q*(x/f - e*log(f*x
 + e)/f^2) - 3/4*a^2*b*f*h*p*q*((f*x^2 - 2*x*e)/f^2 + 2*e^2*log(f*x + e)/f^
3) + 3/2*a*b^2*h*x^2*log(((f*x + e)^p*d)^q*c)^2 + b^3*g*x*log(((f*x + e)^p*
d)^q*c)^3 + 3/2*a^2*b*h*x^2*log(((f*x + e)^p*d)^q*c) + 3*a*b^2*g*x*log(((f*
x + e)^p*d)^q*c)^2 + 1/2*a^3*h*x^2 + 3*a^2*b*g*x*log(((f*x + e)^p*d)^q*c) -
 3*(2*f*p*q*(x/f - e*log(f*x + e)/f^2)*log(((f*x + e)^p*d)^q*c) + (e*log(f*
x + e)^2 - 2*f*x + 2*e*log(f*x + e))*p^2*q^2/f)*a*b^2*g - (3*f*p*q*(x/f - e
*log(f*x + e)/f^2)*log(((f*x + e)^p*d)^q*c)^2 - ((e*log(f*x + e)^3 + 3*e*lo
g(f*x + e)^2 - 6*f*x + 6*e*log(f*x + e))*p^2*q^2/f^2 - 3*(e*log(f*x + e)^2
- 2*f*x + 2*e*log(f*x + e))*p*q*log(((f*x + e)^p*d)^q*c)/f^2)*f*p*q)*b^3*g
- 3/4*(2*f*p*q*((f*x^2 - 2*x*e)/f^2 + 2*e^2*log(f*x + e)/f^3)*log(((f*x + e
)^p*d)^q*c) - (f^2*x^2 - 6*f*x*e + 2*e^2*log(f*x + e)^2 + 6*e^2*log(f*x + e
))*p^2*q^2/f^2)*a*b^2*h - 1/8*(6*f*p*q*((f*x^2 - 2*x*e)/f^2 + 2*e^2*log(f*x
 + e)/f^3)*log(((f*x + e)^p*d)^q*c)^2 + ((3*f^2*x^2 + 4*e^2*log(f*x + e)^3
- 42*f*x*e + 18*e^2*log(f*x + e)^2 + 42*e^2*log(f*x + e))*p^2*q^2/f^3 - 6*(
f^2*x^2 - 6*f*x*e + 2*e^2*log(f*x + e)^2 + 6*e^2*log(f*x + e))*p*q*log(((f*
x + e)^p*d)^q*c)/f^3)*f*p*q)*b^3*h + a^3*g*x
```

Fricas [B] Leaf count of result is larger than twice the leaf count of optimal. 1776 vs. $2(316) = 632$.
time = 0.43, size = 1776, normalized size = 5.80

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)*(a+b*log(c*(d*(f*x+e)^p)^q))^3,x, algorithm="fricas")
```

```
[Out] 1/8*(4*(b^3*f^2*h*p^3*q^3*x^2 + 2*b^3*f^2*g*p^3*q^3*x + 2*b^3*f*g*p^3*q^3*e
 - b^3*h*p^3*q^3*e^2)*log(f*x + e)^3 + 4*(b^3*f^2*h*x^2 + 2*b^3*f^2*g*x)*lo
g(c)^3 + 4*(b^3*f^2*h*q^3*x^2 + 2*b^3*f^2*g*q^3*x)*log(d)^3 - (3*b^3*f^2*h*
p^3*q^3 - 6*a*b^2*f^2*h*p^2*q^2 + 6*a^2*b*f^2*h*p*q - 4*a^3*f^2*h)*x^2 + 6*
(7*b^3*f*h*p^3*q^3 - 6*a*b^2*f*h*p^2*q^2 + 2*a^2*b*f*h*p*q)*x*e - 6*((b^3*f
^2*h*p^3*q^3 - 2*a*b^2*f^2*h*p^2*q^2)*x^2 + 4*(b^3*f^2*g*p^3*q^3 - a*b^2*f^
```

```
2*g*p^2*q^2)*x - (3*b^3*h*p^3*q^3 - 2*a*b^2*h*p^2*q^2)*e^2 - 2*(b^3*f*h*p^3
*q^3*x - 2*b^3*f*g*p^3*q^3 + 2*a*b^2*f*g*p^2*q^2)*e - 2*(b^3*f^2*h*p^2*q^2*
x^2 + 2*b^3*f^2*g*p^2*q^2*x + 2*b^3*f*g*p^2*q^2*e - b^3*h*p^2*q^2*e^2)*log(
c) - 2*(b^3*f^2*h*p^2*q^3*x^2 + 2*b^3*f^2*g*p^2*q^3*x + 2*b^3*f*g*p^2*q^3*e
 - b^3*h*p^2*q^3*e^2)*log(d))*log(f*x + e)^2 + 6*(2*b^3*f*h*p*q*x*e - (b^3*
f^2*h*p*q - 2*a*b^2*f^2*h)*x^2 - 4*(b^3*f^2*g*p*q - a*b^2*f^2*g)*x)*log(c)^
2 + 6*(2*b^3*f*h*p*q^3*x*e - (b^3*f^2*h*p*q^3 - 2*a*b^2*f^2*h*q^2)*x^2 - 4*
(b^3*f^2*g*p*q^3 - a*b^2*f^2*g*q^2)*x + 2*(b^3*f^2*h*q^2*x^2 + 2*b^3*f^2*g*
q^2*x)*log(c))*log(d)^2 - 8*(6*b^3*f^2*g*p^3*q^3 - 6*a*b^2*f^2*g*p^2*q^2 +
3*a^2*b*f^2*g*p*q - a^3*f^2*g)*x + 6*((b^3*f^2*h*p^3*q^3 - 2*a*b^2*f^2*h*p^
2*q^2 + 2*a^2*b*f^2*h*p*q)*x^2 + 2*(b^3*f^2*h*p*q*x^2 + 2*b^3*f^2*g*p*q*x +
 2*b^3*f*g*p*q*e - b^3*h*p*q*e^2)*log(c)^2 + 2*(b^3*f^2*h*p*q^3*x^2 + 2*b^3
*f^2*g*p*q^3*x + 2*b^3*f*g*p*q^3*e - b^3*h*p*q^3*e^2)*log(d)^2 + 4*(2*b^3*f
^2*g*p^3*q^3 - 2*a*b^2*f^2*g*p^2*q^2 + a^2*b*f^2*g*p*q)*x - (7*b^3*h*p^3*q^
3 - 6*a*b^2*h*p^2*q^2 + 2*a^2*b*h*p*q)*e^2 + 2*(4*b^3*f*g*p^3*q^3 - 4*a*b^2
*f*g*p^2*q^2 + 2*a^2*b*f*g*p*q - (3*b^3*f*h*p^3*q^3 - 2*a*b^2*f*h*p^2*q^2)*
x)*e - 2*((b^3*f^2*h*p^2*q^2 - 2*a*b^2*f^2*h*p*q)*x^2 + 4*(b^3*f^2*g*p^2*q^
2 - a*b^2*f^2*g*p*q)*x - (3*b^3*h*p^2*q^2 - 2*a*b^2*h*p*q)*e^2 - 2*(b^3*f*h
*p^2*q^2*x - 2*b^3*f*g*p^2*q^2 + 2*a*b^2*f*g*p*q)*e)*log(c) - 2*((b^3*f^2*h
*p^2*q^3 - 2*a*b^2*f^2*h*p*q^2)*x^2 + 4*(b^3*f^2*g*p^2*q^3 - a*b^2*f^2*g*p*
q^2)*x - (3*b^3*h*p^2*q^3 - 2*a*b^2*h*p*q^2)*e^2 - 2*(b^3*f*h*p^2*q^3*x - 2
*b^3*f*g*p^2*q^3 + 2*a*b^2*f*g*p*q^2)*e - 2*(b^3*f^2*h*p*q^2*x^2 + 2*b^3*f^
2*g*p*q^2*x + 2*b^3*f*g*p*q^2*e - b^3*h*p*q^2*e^2)*log(c))*log(d))*log(f*x
+ e) + 6*((b^3*f^2*h*p^2*q^2 - 2*a*b^2*f^2*h*p*q + 2*a^2*b*f^2*h)*x^2 - 2*(
3*b^3*f*h*p^2*q^2 - 2*a*b^2*f*h*p*q)*x*e + 4*(2*b^3*f^2*g*p^2*q^2 - 2*a*b^2
*f^2*g*p*q + a^2*b*f^2*g)*x)*log(c) + 6*((b^3*f^2*h*p^2*q^3 - 2*a*b^2*f^2*h
*p*q^2 + 2*a^2*b*f^2*h*q)*x^2 - 2*(3*b^3*f*h*p^2*q^3 - 2*a*b^2*f*h*p*q^2)*x
*e + 2*(b^3*f^2*h*q*x^2 + 2*b^3*f^2*g*q*x)*log(c)^2 + 4*(2*b^3*f^2*g*p^2*q^
3 - 2*a*b^2*f^2*g*p*q^2 + a^2*b*f^2*g*q)*x + 2*(2*b^3*f*h*p*q^2*x*e - (b^3*
f^2*h*p*q^2 - 2*a*b^2*f^2*h*q)*x^2 - 4*(b^3*f^2*g*p*q^2 - a*b^2*f^2*g*q)*x)
*log(c))*log(d))/f^2
```

Sympy [B] Leaf count of result is larger than twice the leaf count of optimal. 991 vs. $2(299) = 598$.
time = 3.17, size = 991, normalized size = 3.24

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)*(a+b*ln(c*(d*(f*x+e)**p)**q))**3,x)
```

```
[Out] Piecewise((a**3*g*x + a**3*h*x**2/2 - 3*a**2*b*e**2*h*log(c*(d*(e + f*x)**p
)**q)/(2*f**2) + 3*a**2*b*e*g*log(c*(d*(e + f*x)**p)**q)/f + 3*a**2*b*e*h*p
*q*x/(2*f) - 3*a**2*b*g*p*q*x + 3*a**2*b*g*x*log(c*(d*(e + f*x)**p)**q) - 3
*a**2*b*h*p*q*x**2/4 + 3*a**2*b*h*x**2*log(c*(d*(e + f*x)**p)**q)/2 + 9*a*b
```

```
**2*e**2*h*p*q*log(c*(d*(e + f*x)**p)**q)/(2*f**2) - 3*a*b**2*e**2*h*log(c*
(d*(e + f*x)**p)**q)**2/(2*f**2) - 6*a*b**2*e*g*p*q*log(c*(d*(e + f*x)**p)*
*q)/f + 3*a*b**2*e*g*log(c*(d*(e + f*x)**p)**q)**2/f - 9*a*b**2*e*h*p**2*q*
*2*x/(2*f) + 3*a*b**2*e*h*p*q*x*log(c*(d*(e + f*x)**p)**q)/f + 6*a*b**2*g*p
**2*q**2*x - 6*a*b**2*g*p*q*x*log(c*(d*(e + f*x)**p)**q) + 3*a*b**2*g*x*log
(c*(d*(e + f*x)**p)**q)**2 + 3*a*b**2*h*p**2*q**2*x**2/4 - 3*a*b**2*h*p*q*x
**2*log(c*(d*(e + f*x)**p)**q)/2 + 3*a*b**2*h*x**2*log(c*(d*(e + f*x)**p)**
q)**2/2 - 21*b**3*e**2*h*p**2*q**2*log(c*(d*(e + f*x)**p)**q)/(4*f**2) + 9*
b**3*e**2*h*p*q*log(c*(d*(e + f*x)**p)**q)**2/(4*f**2) - b**3*e**2*h*log(c*
(d*(e + f*x)**p)**q)**3/(2*f**2) + 6*b**3*e*g*p**2*q**2*log(c*(d*(e + f*x)*
*p)**q)/f - 3*b**3*e*g*p*q*log(c*(d*(e + f*x)**p)**q)**2/f + b**3*e*g*log(c
*(d*(e + f*x)**p)**q)**3/f + 21*b**3*e*h*p**3*q**3*x/(4*f) - 9*b**3*e*h*p**
2*q**2*x*log(c*(d*(e + f*x)**p)**q)/(2*f) + 3*b**3*e*h*p*q*x*log(c*(d*(e +
f*x)**p)**q)**2/(2*f) - 6*b**3*g*p**3*q**3*x + 6*b**3*g*p**2*q**2*x*log(c*(
d*(e + f*x)**p)**q) - 3*b**3*g*p*q*x*log(c*(d*(e + f*x)**p)**q)**2 + b**3*g
*x*log(c*(d*(e + f*x)**p)**q)**3 - 3*b**3*h*p**3*q**3*x**2/8 + 3*b**3*h*p**
2*q**2*x**2*log(c*(d*(e + f*x)**p)**q)/4 - 3*b**3*h*p*q*x**2*log(c*(d*(e +
f*x)**p)**q)**2/4 + b**3*h*x**2*log(c*(d*(e + f*x)**p)**q)**3/2, Ne(f, 0)),
 ((a + b*log(c*(d*e**p)**q))**3*(g*x + h*x**2/2), True))
```

Giac [B] Leaf count of result is larger than twice the leaf count of optimal. 2717 vs. $2(316) = 632$.
time = 5.70, size = 2717, normalized size = 8.88

Too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)*(a+b*log(c*(d*(f*x+e)^p)^q))^3,x, algorithm="giac")
```

```
[Out] (f*x + e)*b^3*g*p^3*q^3*log(f*x + e)^3/f + 1/2*(f*x + e)^2*b^3*h*p^3*q^3*lo
g(f*x + e)^3/f^2 - (f*x + e)*b^3*h*p^3*q^3*e*log(f*x + e)^3/f^2 - 3*(f*x +
e)*b^3*g*p^3*q^3*log(f*x + e)^2/f - 3/4*(f*x + e)^2*b^3*h*p^3*q^3*log(f*x +
 e)^2/f^2 + 3*(f*x + e)*b^3*h*p^3*q^3*e*log(f*x + e)^2/f^2 + 3*(f*x + e)*b^
3*g*p^2*q^3*log(f*x + e)^2*log(d)/f + 3/2*(f*x + e)^2*b^3*h*p^2*q^3*log(f*x
 + e)^2*log(d)/f^2 - 3*(f*x + e)*b^3*h*p^2*q^3*e*log(f*x + e)^2*log(d)/f^2
+ 6*(f*x + e)*b^3*g*p^3*q^3*log(f*x + e)/f + 3/4*(f*x + e)^2*b^3*h*p^3*q^3*
log(f*x + e)/f^2 - 6*(f*x + e)*b^3*h*p^3*q^3*e*log(f*x + e)/f^2 + 3*(f*x +
e)*b^3*g*p^2*q^2*log(f*x + e)^2*log(c)/f + 3/2*(f*x + e)^2*b^3*h*p^2*q^2*lo
g(f*x + e)^2*log(c)/f^2 - 3*(f*x + e)*b^3*h*p^2*q^2*e*log(f*x + e)^2*log(c)
/f^2 - 6*(f*x + e)*b^3*g*p^2*q^3*log(f*x + e)*log(d)/f - 3/2*(f*x + e)^2*b^
3*h*p^2*q^3*log(f*x + e)*log(d)/f^2 + 6*(f*x + e)*b^3*h*p^2*q^3*e*log(f*x +
 e)*log(d)/f^2 + 3*(f*x + e)*b^3*g*p*q^3*log(f*x + e)*log(d)^2/f + 3/2*(f*x
 + e)^2*b^3*h*p*q^3*log(f*x + e)*log(d)^2/f^2 - 3*(f*x + e)*b^3*h*p*q^3*e*l
og(f*x + e)*log(d)^2/f^2 - 6*(f*x + e)*b^3*g*p^3*q^3/f - 3/8*(f*x + e)^2*b^
3*h*p^3*q^3/f^2 + 6*(f*x + e)*b^3*h*p^3*q^3*e/f^2 + 3*(f*x + e)*a*b^2*g*p^2
```

```
*q^2*log(f*x + e)^2/f + 3/2*(f*x + e)^2*a*b^2*h*p^2*q^2*log(f*x + e)^2/f^2
- 3*(f*x + e)*a*b^2*h*p^2*q^2*e*log(f*x + e)^2/f^2 - 6*(f*x + e)*b^3*g*p^2*
q^2*log(f*x + e)*log(c)/f - 3/2*(f*x + e)^2*b^3*h*p^2*q^2*log(f*x + e)*log(
c)/f^2 + 6*(f*x + e)*b^3*h*p^2*q^2*e*log(f*x + e)*log(c)/f^2 + 6*(f*x + e)*
b^3*g*p^2*q^3*log(d)/f + 3/4*(f*x + e)^2*b^3*h*p^2*q^3*log(d)/f^2 - 6*(f*x
+ e)*b^3*h*p^2*q^3*e*log(d)/f^2 + 6*(f*x + e)*b^3*g*p*q^2*log(f*x + e)*log(
c)*log(d)/f + 3*(f*x + e)^2*b^3*h*p*q^2*log(f*x + e)*log(c)*log(d)/f^2 - 6*
(f*x + e)*b^3*h*p*q^2*e*log(f*x + e)*log(c)*log(d)/f^2 - 3*(f*x + e)*b^3*g*
p*q^3*log(d)^2/f - 3/4*(f*x + e)^2*b^3*h*p*q^3*log(d)^2/f^2 + 3*(f*x + e)*b
^3*h*p*q^3*e*log(d)^2/f^2 + (f*x + e)*b^3*g*q^3*log(d)^3/f + 1/2*(f*x + e)^
2*b^3*h*q^3*log(d)^3/f^2 - (f*x + e)*b^3*h*q^3*e*log(d)^3/f^2 - 6*(f*x + e)
*a*b^2*g*p^2*q^2*log(f*x + e)/f - 3/2*(f*x + e)^2*a*b^2*h*p^2*q^2*log(f*x +
 e)/f^2 + 6*(f*x + e)*a*b^2*h*p^2*q^2*e*log(f*x + e)/f^2 + 6*(f*x + e)*b^3*
g*p^2*q^2*log(c)/f + 3/4*(f*x + e)^2*b^3*h*p^2*q^2*log(c)/f^2 - 6*(f*x + e)
*b^3*h*p^2*q^2*e*log(c)/f^2 + 3*(f*x + e)*b^3*g*p*q*log(f*x + e)*log(c)^2/f
 + 3/2*(f*x + e)^2*b^3*h*p*q*log(f*x + e)*log(c)^2/f^2 - 3*(f*x + e)*b^3*h*
p*q*e*log(f*x + e)*log(c)^2/f^2 + 6*(f*x + e)*a*b^2*g*p*q^2*log(f*x + e)*lo
g(d)/f + 3*(f*x + e)^2*a*b^2*h*p*q^2*log(f*x + e)*log(d)/f^2 - 6*(f*x + e)*
a*b^2*h*p*q^2*e*log(f*x + e)*log(d)/f^2 - 6*(f*x + e)*b^3*g*p*q^2*log(c)*lo
g(d)/f - 3/2*(f*x + e)^2*b^3*h*p*q^2*log(c)*log(d)/f^2 + 6*(f*x + e)*b^3*h*
p*q^2*e*log(c)*log(d)/f^2 + 3*(f*x + e)*b^3*g*q^2*log(c)*log(d)^2/f + 3/2*(
f*x + e)^2*b^3*h*q^2*log(c)*log(d)^2/f^2 - 3*(f*x + e)*b^3*h*q^2*e*log(c)*l
og(d)^2/f^2 + 6*(f*x + e)*a*b^2*g*p^2*q^2/f + 3/4*(f*x + e)^2*a*b^2*h*p^2*q
^2/f^2 - 6*(f*x + e)*a*b^2*h*p^2*q^2*e/f^2 + 6*(f*x + e)*a*b^2*g*p*q*log(f*
x + e)*log(c)/f + 3*(f*x + e)^2*a*b^2*h*p*q*log(f*x + e)*log(c)/f^2 - 6*(f*
x + e)*a*b^2*h*p*q*e*log(f*x + e)*log(c)/f^2 - 3*(f*x + e)*b^3*g*p*q*log(c)
^2/f - 3/4*(f*x + e)^2*b^3*h*p*q*log(c)^2/f^2 + 3*(f*x + e)*b^3*h*p*q*e*log
(c)^2/f^2 - 6*(f*x + e)*a*b^2*g*p*q^2*log(d)/f - 3/2*(f*x + e)^2*a*b^2*h*p*
q^2*log(d)/f^2 + 6*(f*x + e)*a*b^2*h*p*q^2*e*log(d)/f^2 + 3*(f*x + e)*b^3*g
*q*log(c)^2*log(d)/f + 3/2*(f*x + e)^2*b^3*h*q*log(c)^2*log(d)/f^2 - 3*(f*x
 + e)*b^3*h*q*e*log(c)^2*log(d)/f^2 + 3*(f*x + e)*a*b^2*g*q^2*log(d)^2/f +
3/2*(f*x + e)^2*a*b^2*h*q^2*log(d)^2/f^2 - 3*(f*x + e)*a*b^2*h*q^2*e*log(d)
^2/f^2 + 3*(f*x + e)*a^2*b*g*p*q*log(f*x + e)/f + 3/2*(f*x + e)^2*a^2*b*h*p
*q*log(f*x + e)/f^2 - 3*(f*x + e)*a^2*b*h*p*q*e*log(f*x + e)/f^2 - 6*(f*x +
 e)*a*b^2*g*p*q*log(c)/f - 3/2*(f*x + e)^2*a*b^2*h*p*q*log(c)/f^2 + 6*(f*x
+ e)*a*b^2*h*p*q*e*log(c)/f^2 + (f*x + e)*b^3*g*log(c)^3/f + 1/2*(f*x + e)^
2*b^3*h*log(c)^3/f^2 - (f*x + e)*b^3*h*e*log(c)^3/f^2 + 6*(f*x + e)*a*b^2*g
*q*log(c)*log(d)/f + 3*(f*x + e)^2*a*b^2*h*q*log(c)*log(d)/f^2 - 6*(f*x + e
)*a*b^2*h*q*e*log(c)*log(d)/f^2 - 3*(f*x + e)*a^2*b*g*p*q/f - 3/4*(f*x + e)
^2*a^2*b*h*p*q/f^2 + 3*(f*x + e)*a^2*b*h*p*q*e/f^2 + 3*(f*x + e)*a*b^2*g*lo
g(c)^2/f + 3/2*(f*x + e)^2*a*b^2*h*log(c)^2/f^2 - 3*(f*x + e)*a*b^2*h*e*log
(c)^2/f^2 + 3*(f*x + e)*a^2*b*g*q*log(d)/f + 3/2*(f*x + e)^2*a^2*b*h*q*log(
d)/f^2 - 3*(f*x + e)*a^2*b*h*q*e*log(d)/f^2 + 3*(f*x + e)*a^2*b*g*log(c)/f
+ 3/2*(f*x + e)^2*a^2*b*h*log(c)/f^2 - 3*(f*x + e)*a^2*b*h*e*log(c)/f^2 + (
f*x + e)*a^3*g/f + 1/2*(f*x + e)^2*a^3*h/f^2 - (f*x + e)*a^3*h*e/f^2
```

Mupad [B]
time = 0.83, size = 651, normalized size = 2.13

$$x\left(\frac{4a^3eh+4a^3fg+18b^3ehp^3q^3-24b^3fgp^3q^3-12a^2bfgpq-12ab^2ehp^2q^2+24ab^2fgp^2q^2}{4f}-\frac{eh\left(4a^3-6a^2bpq+6ab^2p^2q^2-3b^3p^3q^3\right)}{4f}\right)+\ln\left(c\left(d\left(e+fx\right)^p\right)^q\right)^2\left(\frac{x\left(\frac{6b^2\left(aeh+afg-bfgpq\right)}{f}-\frac{3b^2eh\left(2a-bpq\right)}{f}\right)}{2}-\frac{3e\left(2ab^2eh-4ab^2fg-3b^3ehpq+4b^3fgpq\right)}{4f^2}+\frac{3b^2hx^2\left(2a-bpq\right)}{4}\right)+\ln\left(c\left(d\left(e+fx\right)^p\right)^q\right)^3\left(\frac{b^3hx^2}{2}-\frac{e\left(b^3eh-2b^3fg\right)}{2f^2}+b^3gx\right)+\frac{\ln\left(c\left(d\left(e+fx\right)^p\right)^q\right)\left(x^2\left(6a^2bfg+\frac{3beh\left(2a^2-2abpq+b^2p^2q^2\right)}{2}-9b^3ehp^2q^2+12b^3fgp^2q^2+6ab^2ehpq-12ab^2fgpq\right)+\frac{3ex\left(2a^2bfg-3b^3ehp^2q^2+4b^3fgp^2q^2+2ab^2ehpq-4ab^2fgpq\right)}{f}+\frac{3bfhx^3\left(2a^2-2abpq+b^2p^2q^2\right)}{2}\right)}{2e+2fx}+\frac{hx^2\left(4a^3-6a^2bpq+6ab^2p^2q^2-3b^3p^3q^3\right)}{8}-\frac{\ln\left(e+fx\right)\left(6ha^2be^2pq-12fga^2bepq-18hab^2e^2p^2q^2+24fgab^2ep^2q^2+21hb^3e^2p^3q^3-24fgb^3ep^3q^3\right)}{4f^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g + h*x)*(a + b*log(c*(d*(e + f*x)^p)^q))^3,x)
```

```
[Out] x*((4*a^3*e*h + 4*a^3*f*g + 18*b^3*e*h*p^3*q^3 - 24*b^3*f*g*p^3*q^3 - 12*a^
2*b*f*g*p*q - 12*a*b^2*e*h*p^2*q^2 + 24*a*b^2*f*g*p^2*q^2)/(4*f) - (e*h*(4*
a^3 - 3*b^3*p^3*q^3 + 6*a*b^2*p^2*q^2 - 6*a^2*b*p*q))/(4*f)) + log(c*(d*(e
+ f*x)^p)^q)^2*((x*((6*b^2*(a*e*h + a*f*g - b*f*g*p*q))/f - (3*b^2*e*h*(2*a
 - b*p*q))/f))/2 - (3*e*(2*a*b^2*e*h - 4*a*b^2*f*g - 3*b^3*e*h*p*q + 4*b^3*
f*g*p*q))/(4*f^2) + (3*b^2*h*x^2*(2*a - b*p*q))/4) + log(c*(d*(e + f*x)^p)^
q)^3*((b^3*h*x^2)/2 - (e*(b^3*e*h - 2*b^3*f*g))/(2*f^2) + b^3*g*x) + (log(c
*(d*(e + f*x)^p)^q)*(x^2*(6*a^2*b*f*g + (3*b*e*h*(2*a^2 + b^2*p^2*q^2 - 2*a
*b*p*q))/2 - 9*b^3*e*h*p^2*q^2 + 12*b^3*f*g*p^2*q^2 + 6*a*b^2*e*h*p*q - 12*
a*b^2*f*g*p*q) + (3*e*x*(2*a^2*b*f*g - 3*b^3*e*h*p^2*q^2 + 4*b^3*f*g*p^2*q^
2 + 2*a*b^2*e*h*p*q - 4*a*b^2*f*g*p*q))/f + (3*b*f*h*x^3*(2*a^2 + b^2*p^2*q
^2 - 2*a*b*p*q))/2))/(2*e + 2*f*x) + (h*x^2*(4*a^3 - 3*b^3*p^3*q^3 + 6*a*b^
2*p^2*q^2 - 6*a^2*b*p*q))/8 - (log(e + f*x)*(21*b^3*e^2*h*p^3*q^3 - 18*a*b^
2*e^2*h*p^2*q^2 + 6*a^2*b*e^2*h*p*q - 24*b^3*e*f*g*p^3*q^3 + 24*a*b^2*e*f*g
*p^2*q^2 - 12*a^2*b*e*f*g*p*q))/(4*f^2)
```

3.437 $\int (a+b\log(c(d(e+fx)^p)^q))^3\,dx$

Optimal. Leaf size=121

$$6ab^2p^2q^2x-6b^3p^3q^3x+\frac{6b^3p^2q^2(e+fx)\log(c(d(e+fx)^p)^q)}{f}-\frac{3bpq(e+fx)(a+b\log(c(d(e+fx)^p)^q))^2}{f}+\frac{(e+$$

```
[Out] 6*a*b^2*p^2*q^2*x-6*b^3*p^3*q^3*x+6*b^3*p^2*q^2*(f*x+e)*ln(c*(d*(f*x+e)^p)^
q)/f-3*b*p*q*(f*x+e)*(a+b*ln(c*(d*(f*x+e)^p)^q))^2/f+(f*x+e)*(a+b*ln(c*(d*(
f*x+e)^p)^q))^3/f
```

Rubi [A]
time = 0.11, antiderivative size = 121, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.200$, Rules used = {2436, 2333, 2332, 2495}

$$6ab^2p^2q^2x-\frac{3bpq(e+fx)(a+b\log(c(d(e+fx)^p)^q))^2}{f}+\frac{(e+fx)(a+b\log(c(d(e+fx)^p)^q))^3}{f}+\frac{6b^3p^2q^2(e+fx)\log(c(d(e+fx)^p)^q)}{f}-6b^3p^3q^3x$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])^3,x]
```

```
[Out] 6*a*b^2*p^2*q^2*x - 6*b^3*p^3*q^3*x + (6*b^3*p^2*q^2*(e + f*x)*Log[c*(d*(e
+ f*x)^p)^q])/f - (3*b*p*q*(e + f*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^2)/f
+ ((e + f*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^3)/f
```

Rule 2332

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2333

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2436

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2495

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
```

```
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int (a+b\log(c(d(e+fx)^p)^q))^3\,dx = \text{Subst}\left(\int (a+b\log(cd^q(e+fx)^{pq}))^3\,dx, cd^q(e+fx)^{pq}, c(d(e+fx)^p)\right.$$
$$= \text{Subst}\left(\frac{\text{Subst}\left(\int (a+b\log(cd^qx^{pq}))^3\,dx, x, e+fx\right)}{f}, cd^q(e+fx)^{pq}, c(\right.$$
$$= \frac{(e+fx)(a+b\log(c(d(e+fx)^p)^q))^3}{f} - \text{Subst}\left(\frac{(3bpq)\text{Subst}\left(\int (a+b\right.}{}\right.$$
$$= -\frac{3bpq(e+fx)(a+b\log(c(d(e+fx)^p)^q))^2}{f} + \frac{(e+fx)(a+b\log(c(d}{f}$$
$$= 6ab^2p^2q^2x - \frac{3bpq(e+fx)(a+b\log(c(d(e+fx)^p)^q))^2}{f} + \frac{(e+fx)(a}{}$$
$$= 6ab^2p^2q^2x - 6b^3p^3q^3x + \frac{6b^3p^2q^2(e+fx)\log(c(d(e+fx)^p)^q)}{f} - \frac{3bpq(}{}$$

Mathematica [A]
time = 0.02, size = 100, normalized size = 0.83

$$\frac{(e+fx)(a+b\log(c(d(e+fx)^p)^q))^3 - 3bpq\left((e+fx)(a+b\log(c(d(e+fx)^p)^q))^2 - 2bpq(f(a-bpq)x + b(e+fx)\log(c(d(e+fx)^p)^q))\right)}{f}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])^3,x]
[Out] ((e + f*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^3 - 3*b*p*q*((e + f*x)*(a + b*L
og[c*(d*(e + f*x)^p)^q])^2 - 2*b*p*q*(f*(a - b*p*q)*x + b*(e + f*x)*Log[c*(
d*(e + f*x)^p)^q])))/f
```

Maple [F]
time = 0.05, size = 0, normalized size = 0.00

$$\int (a+b\ln(c(d(fx+e)^p)^q))^3\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(d*(f*x+e)^p)^q))^3,x)
```

```
[Out] int((a+b*ln(c*(d*(f*x+e)^p)^q))^3,x)
```

Maxima [B] Leaf count of result is larger than twice the leaf count of optimal. 343 vs. $2(127) = 254$.
time = 0.28, size = 343, normalized size = 2.83

$$-3\,a^{2}bfpq\left(\frac{x}{f}-\frac{e\log\left(fx+e\right)}{f^{2}}\right)+b^{3}x\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)^{3}+3\,ab^{2}x\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)^{2}+3\,a^{2}bx\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)-3\left(2\,fpq\left(\frac{x}{f}-\frac{e\log\left(fx+e\right)}{f^{2}}\right)\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+\frac{\left(e\log\left(fx+e\right)^{2}-2\,fx+2\,e\log\left(fx+e\right)\right)p^{2}q^{2}}{f}\right)ab^{2}-\left(3\,fpq\left(\frac{x}{f}-\frac{e\log\left(fx+e\right)}{f^{2}}\right)\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)^{2}-\left(\frac{\left(e\log\left(fx+e\right)^{3}+3\,e\log\left(fx+e\right)^{2}-6\,fx+6\,e\log\left(fx+e\right)\right)p^{2}q^{2}}{f^{2}}-\frac{3\left(e\log\left(fx+e\right)^{2}-2\,fx+2\,e\log\left(fx+e\right)\right)pq\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)}{f^{2}}\right)fpq\right)b^{3}+a^{3}x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^3,x, algorithm="maxima")
```

```
[Out] -3*a^2*b*f*p*q*(x/f - e*log(f*x + e)/f^2) + b^3*x*log(((f*x + e)^p*d)^q*c)^
3 + 3*a*b^2*x*log(((f*x + e)^p*d)^q*c)^2 + 3*a^2*b*x*log(((f*x + e)^p*d)^q*
c) - 3*(2*f*p*q*(x/f - e*log(f*x + e)/f^2)*log(((f*x + e)^p*d)^q*c) + (e*lo
g(f*x + e)^2 - 2*f*x + 2*e*log(f*x + e))*p^2*q^2/f)*a*b^2 - (3*f*p*q*(x/f -
 e*log(f*x + e)/f^2)*log(((f*x + e)^p*d)^q*c)^2 - ((e*log(f*x + e)^3 + 3*e*
log(f*x + e)^2 - 6*f*x + 6*e*log(f*x + e))*p^2*q^2/f^2 - 3*(e*log(f*x + e)^
2 - 2*f*x + 2*e*log(f*x + e))*p*q*log(((f*x + e)^p*d)^q*c)/f^2)*f*p*q)*b^3
+ a^3*x
```

Fricas [B] Leaf count of result is larger than twice the leaf count of optimal. 655 vs. $2(127) = 254$.
time = 0.37, size = 655, normalized size = 5.41

$$\frac{b^{3}fq^{3}x\log\left(d\right)^{3}+b^{3}fx\log\left(c\right)^{3}+\left(b^{3}fp^{3}q^{3}x+b^{3}p^{3}q^{3}e\right)\log\left(fx+e\right)^{3}-3\left(b^{3}fpq-ab^{2}f\right)x\log\left(c\right)^{2}-3\left(\left(b^{3}fp^{3}q^{3}-ab^{2}fp^{2}q^{2}\right)x+\left(b^{3}p^{3}q^{3}-ab^{2}p^{2}q^{2}\right)e-\left(b^{3}fp^{2}q^{2}x+b^{3}p^{2}q^{2}e\right)\log\left(c\right)-\left(b^{3}fp^{2}q^{3}x+b^{3}p^{2}q^{3}e\right)\log\left(d\right)\right)\log\left(fx+e\right)^{2}+3\left(2\,b^{3}fp^{2}q^{2}-2\,ab^{2}fpq+a^{2}bf\right)x\log\left(c\right)+3\left(b^{3}fq^{2}x\log\left(c\right)-\left(b^{3}fpq^{3}-ab^{2}fq^{2}\right)x\right)\log\left(d\right)^{2}-\left(6\,b^{3}fp^{3}q^{3}-6\,ab^{2}fp^{2}q^{2}+3\,a^{2}bfpq-a^{3}f\right)x+3\left(\left(b^{3}fpqx+b^{3}pqe\right)\log\left(c\right)^{2}+\left(b^{3}fpq^{3}x+b^{3}pq^{3}e\right)\log\left(d\right)^{2}+\left(2\,b^{3}fp^{3}q^{3}-2\,ab^{2}fp^{2}q^{2}+a^{2}bfpq\right)x+\left(2\,b^{3}p^{3}q^{3}-2\,ab^{2}p^{2}q^{2}+a^{2}bpq\right)e-2\left(\left(b^{3}fp^{2}q^{2}-ab^{2}fpq\right)x+\left(b^{3}p^{2}q^{2}-ab^{2}pq\right)e\right)\log\left(c\right)-2\left(\left(b^{3}fp^{2}q^{3}-ab^{2}fpq^{2}\right)x+\left(b^{3}p^{2}q^{3}-ab^{2}pq^{2}\right)e-\left(b^{3}fpq^{2}x+b^{3}pq^{2}e\right)\log\left(c\right)\right)\log\left(d\right)\right)\log\left(fx+e\right)+3\left(b^{3}fqx\log\left(c\right)^{2}-2\left(b^{3}fpq^{2}-ab^{2}fq\right)x\log\left(c\right)+\left(2\,b^{3}fp^{2}q^{3}-2\,ab^{2}fpq^{2}+a^{2}bfq\right)x\right)\log\left(d\right)}{f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^3,x, algorithm="fricas")
```

```
[Out] (b^3*f*q^3*x*log(d)^3 + b^3*f*x*log(c)^3 + (b^3*f*p^3*q^3*x + b^3*p^3*q^3*e
)*log(f*x + e)^3 - 3*(b^3*f*p*q - a*b^2*f)*x*log(c)^2 - 3*((b^3*f*p^3*q^3 -
 a*b^2*f*p^2*q^2)*x + (b^3*p^3*q^3 - a*b^2*p^2*q^2)*e - (b^3*f*p^2*q^2*x +
b^3*p^2*q^2*e)*log(c) - (b^3*f*p^2*q^3*x + b^3*p^2*q^3*e)*log(d))*log(f*x +
 e)^2 + 3*(2*b^3*f*p^2*q^2 - 2*a*b^2*f*p*q + a^2*b*f)*x*log(c) + 3*(b^3*f*q
^2*x*log(c) - (b^3*f*p*q^3 - a*b^2*f*q^2)*x)*log(d)^2 - (6*b^3*f*p^3*q^3 -
6*a*b^2*f*p^2*q^2 + 3*a^2*b*f*p*q - a^3*f)*x + 3*((b^3*f*p*q*x + b^3*p*q*e)
*log(c)^2 + (b^3*f*p*q^3*x + b^3*p*q^3*e)*log(d)^2 + (2*b^3*f*p^3*q^3 - 2*a
*b^2*f*p^2*q^2 + a^2*b*f*p*q)*x + (2*b^3*p^3*q^3 - 2*a*b^2*p^2*q^2 + a^2*b*
p*q)*e - 2*((b^3*f*p^2*q^2 - a*b^2*f*p*q)*x + (b^3*p^2*q^2 - a*b^2*p*q)*e)*
log(c) - 2*((b^3*f*p^2*q^3 - a*b^2*f*p*q^2)*x + (b^3*p^2*q^3 - a*b^2*p*q^2)
*e - (b^3*f*p*q^2*x + b^3*p*q^2*e)*log(c))*log(d))*log(f*x + e) + 3*(b^3*f*
q*x*log(c)^2 - 2*(b^3*f*p*q^2 - a*b^2*f*q)*x*log(c) + (2*b^3*f*p^2*q^3 - 2*
a*b^2*f*p*q^2 + a^2*b*f*q)*x)*log(d))/f
```

Sympy [B] Leaf count of result is larger than twice the leaf count of optimal. 360 vs. $2(117) = 234$.
time = 1.19, size = 360, normalized size = 2.98

$$\begin{cases} a^3x + \frac{3a^2be\log(c(d(e+fx)^p)^q)}{f} - 3a^2bpqx + 3a^2bx\log(c(d(e+fx)^p)^q) - \frac{6ab^2epq\log(c(d(e+fx)^p)^q)}{f} + \frac{3ab^2e\log(c(d(e+fx)^p)^q)^2}{f} + 6ab^2p^2q^2x - 6ab^2pqx\log(c(d(e+fx)^p)^q) + 3ab^2x\log(c(d(e+fx)^p)^q)^2 + \frac{6b^3ep^2q^2\log(c(d(e+fx)^p)^q)}{f} - \frac{3b^3epq\log(c(d(e+fx)^p)^q)^2}{f} + \frac{b^3e\log(c(d(e+fx)^p)^q)^3}{f} - 6b^3p^3q^3x + 6b^3p^2q^2x\log(c(d(e+fx)^p)^q) - 3b^3pqx\log(c(d(e+fx)^p)^q)^2 + b^3x\log(c(d(e+fx)^p)^q)^3 & \text{for } f \neq 0 \\ x(a + b\log(c(de^p)^q))^3 & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))**3,x)
```

```
[Out] Piecewise((a**3*x + 3*a**2*b*e*log(c*(d*(e + f*x)**p)**q)/f - 3*a**2*b*p*q*
x + 3*a**2*b*x*log(c*(d*(e + f*x)**p)**q) - 6*a*b**2*e*p*q*log(c*(d*(e + f*
x)**p)**q)/f + 3*a*b**2*e*log(c*(d*(e + f*x)**p)**q)**2/f + 6*a*b**2*p**2*q
**2*x - 6*a*b**2*p*q*x*log(c*(d*(e + f*x)**p)**q) + 3*a*b**2*x*log(c*(d*(e
+ f*x)**p)**q)**2 + 6*b**3*e*p**2*q**2*log(c*(d*(e + f*x)**p)**q)/f - 3*b**
3*e*p*q*log(c*(d*(e + f*x)**p)**q)**2/f + b**3*e*log(c*(d*(e + f*x)**p)**q)
**3/f - 6*b**3*p**3*q**3*x + 6*b**3*p**2*q**2*x*log(c*(d*(e + f*x)**p)**q)
- 3*b**3*p*q*x*log(c*(d*(e + f*x)**p)**q)**2 + b**3*x*log(c*(d*(e + f*x)**p
)**q)**3, Ne(f, 0)), (x*(a + b*log(c*(d*e**p)**q))**3, True))
```

Giac [B] Leaf count of result is larger than twice the leaf count of optimal. 822 vs. $2(127) = 254$.
time = 3.58, size = 822, normalized size = 6.79

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^3,x, algorithm="giac")
```

```
[Out] (f*x + e)*b^3*p^3*q^3*log(f*x + e)^3/f - 3*(f*x + e)*b^3*p^3*q^3*log(f*x +
e)^2/f + 3*(f*x + e)*b^3*p^2*q^3*log(f*x + e)^2*log(d)/f + 6*(f*x + e)*b^3*
p^3*q^3*log(f*x + e)/f + 3*(f*x + e)*b^3*p^2*q^2*log(f*x + e)^2*log(c)/f -
6*(f*x + e)*b^3*p^2*q^3*log(f*x + e)*log(d)/f + 3*(f*x + e)*b^3*p*q^3*log(f
*x + e)*log(d)^2/f - 6*(f*x + e)*b^3*p^3*q^3/f + 3*(f*x + e)*a*b^2*p^2*q^2*
log(f*x + e)^2/f - 6*(f*x + e)*b^3*p^2*q^2*log(f*x + e)*log(c)/f + 6*(f*x +
 e)*b^3*p^2*q^3*log(d)/f + 6*(f*x + e)*b^3*p*q^2*log(f*x + e)*log(c)*log(d)
/f - 3*(f*x + e)*b^3*p*q^3*log(d)^2/f + (f*x + e)*b^3*q^3*log(d)^3/f - 6*(f
*x + e)*a*b^2*p^2*q^2*log(f*x + e)/f + 6*(f*x + e)*b^3*p^2*q^2*log(c)/f + 3
*(f*x + e)*b^3*p*q*log(f*x + e)*log(c)^2/f + 6*(f*x + e)*a*b^2*p*q^2*log(f*
x + e)*log(d)/f - 6*(f*x + e)*b^3*p*q^2*log(c)*log(d)/f + 3*(f*x + e)*b^3*q
^2*log(c)*log(d)^2/f + 6*(f*x + e)*a*b^2*p^2*q^2/f + 6*(f*x + e)*a*b^2*p*q*
log(f*x + e)*log(c)/f - 3*(f*x + e)*b^3*p*q*log(c)^2/f - 6*(f*x + e)*a*b^2*
p*q^2*log(d)/f + 3*(f*x + e)*b^3*q*log(c)^2*log(d)/f + 3*(f*x + e)*a*b^2*q^
2*log(d)^2/f + 3*(f*x + e)*a^2*b*p*q*log(f*x + e)/f - 6*(f*x + e)*a*b^2*p*q
*log(c)/f + (f*x + e)*b^3*log(c)^3/f + 6*(f*x + e)*a*b^2*q*log(c)*log(d)/f
- 3*(f*x + e)*a^2*b*p*q/f + 3*(f*x + e)*a*b^2*log(c)^2/f + 3*(f*x + e)*a^2*
b*q*log(d)/f + 3*(f*x + e)*a^2*b*log(c)/f + (f*x + e)*a^3/f
```

Mupad [B]
time = 0.43, size = 242, normalized size = 2.00

$$x\left(a^3-3a^2bpq+6ab^2p^2q^2-6b^3p^3q^3\right)+\ln\left(c\left(d\left(e+fx\right)^p\right)^q\right)^2\left(\frac{3\left(ab^2e-b^3epq\right)}{f}+3b^2x\left(a-bpq\right)\right)+\ln\left(c\left(d\left(e+fx\right)^p\right)^q\right)^3\left(b^3x+\frac{b^3e}{f}\right)+\frac{\ln\left(c\left(d\left(e+fx\right)^p\right)^q\right)\left(3bf\left(a^2-2abpq+2b^2p^2q^2\right)x^2+3be\left(a^2-2abpq+2b^2p^2q^2\right)x\right)}{e+fx}+\frac{\ln\left(e+fx\right)\left(3ea^2bpq-6eab^2p^2q^2+6eb^3p^3q^3\right)}{f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d*(e + f*x)^p)^q))^3,x)
```

```
[Out] x*(a^3 - 6*b^3*p^3*q^3 + 6*a*b^2*p^2*q^2 - 3*a^2*b*p*q) + log(c*(d*(e + f*x
)^p)^q)^2*((3*(a*b^2*e - b^3*e*p*q))/f + 3*b^2*x*(a - b*p*q)) + log(c*(d*(e
 + f*x)^p)^q)^3*(b^3*x + (b^3*e)/f) + (log(c*(d*(e + f*x)^p)^q)*(3*b*e*x*(a
^2 + 2*b^2*p^2*q^2 - 2*a*b*p*q) + 3*b*f*x^2*(a^2 + 2*b^2*p^2*q^2 - 2*a*b*p*
q)))/(e + f*x) + (log(e + f*x)*(6*b^3*e*p^3*q^3 - 6*a*b^2*e*p^2*q^2 + 3*a^2
*b*e*p*q))/f
```

3.438 $\int \frac{(a+b\log(c(d(e+fx)^p)^q))^3}{g+hx}\,dx$

Optimal. Leaf size=177

$$\frac{(a+b\log(c(d(e+fx)^p)^q))^3\log\left(\frac{f(g+hx)}{fg-eh}\right)}{h}+\frac{3bpq(a+b\log(c(d(e+fx)^p)^q))^2\operatorname{Li}_2\left(-\frac{h(e+fx)}{fg-eh}\right)}{h}-\frac{6b^2p^2q^2(a+b$$

```
[Out] (a+b*ln(c*(d*(f*x+e)^p)^q))^3*ln(f*(h*x+g)/(-e*h+f*g))/h+3*b*p*q*(a+b*ln(c*
(d*(f*x+e)^p)^q))^2*polylog(2,-h*(f*x+e)/(-e*h+f*g))/h-6*b^2*p^2*q^2*(a+b*l
n(c*(d*(f*x+e)^p)^q))*polylog(3,-h*(f*x+e)/(-e*h+f*g))/h+6*b^3*p^3*q^3*poly
log(4,-h*(f*x+e)/(-e*h+f*g))/h
```

Rubi [A]
time = 0.29, antiderivative size = 177, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}} = 0.214$, Rules used = {2443, 2481, 2421, 2430, 6724, 2495}

$$-\frac{6b^2p^2q^2\text{PolyLog}\left(3,-\frac{h(e+fx)}{fg-eh}\right)(a+b\log(c(d(e+fx)^p)^q))}{h}+\frac{3bpq\text{PolyLog}\left(2,-\frac{h(e+fx)}{fg-eh}\right)(a+b\log(c(d(e+fx)^p)^q))^2}{h}+\frac{6b^3p^3q^3\text{PolyLog}\left(4,-\frac{h(e+fx)}{fg-eh}\right)}{h}+\frac{\log\left(\frac{f(g+hx)}{fg-eh}\right)(a+b\log(c(d(e+fx)^p)^q))^3}{h}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])^3/(g + h*x),x]
```

```
[Out] ((a + b*Log[c*(d*(e + f*x)^p)^q])^3*Log[(f*(g + h*x))/(f*g - e*h)])/h + (3*
b*p*q*(a + b*Log[c*(d*(e + f*x)^p)^q])^2*PolyLog[2, -((h*(e + f*x))/(f*g -
e*h))])/h - (6*b^2*p^2*q^2*(a + b*Log[c*(d*(e + f*x)^p)^q])*PolyLog[3, -((h
*(e + f*x))/(f*g - e*h))])/h + (6*b^3*p^3*q^3*PolyLog[4, -((h*(e + f*x))/(f
*g - e*h))])/h
```

Rule 2421

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> Simp[(-PolyLog[2, (-d)*f*x^m])*((a + b*Log[c
*x^n])^p/m), x] + Dist[b*n*(p/m), Int[PolyLog[2, (-d)*f*x^m]*((a + b*Log[c*
x^n])^(p - 1)/x), x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0
] && EqQ[d*e, 1]
```

Rule 2430

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*PolyLog[k_, (e_.)*(x_)^(q_
.)])/(x_), x_Symbol] :> Simp[PolyLog[k + 1, e*x^q]*((a + b*Log[c*x^n])^p/q)
, x] - Dist[b*n*(p/q), Int[PolyLog[k + 1, e*x^q]*((a + b*Log[c*x^n])^(p - 1
)/x), x], x] /; FreeQ[{a, b, c, e, k, n, q}, x] && GtQ[p, 0]
```

Rule 2443

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d
+ e*x)^n])^p/g), x] - Dist[b*e*n*(p/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]*
((a + b*Log[c*(d + e*x)^n])^(p - 1)/(d + e*x)), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2481

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[(k*(x/d))^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + j*(x/e))^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2495

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rule 6724

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(a+b\log(c(d(e+fx)^p)^q))^3}{g+hx}\,dx = \text{Subst}\left(\int \frac{(a+b\log(cd^q(e+fx)^{pq}))^3}{g+hx}\,dx, cd^q(e+fx)^{pq}, c(d(e+fx)^p$$

$$= \frac{(a+b\log(c(d(e+fx)^p)^q))^3\log\left(\frac{f(g+hx)}{fg-eh}\right)}{h} - \text{Subst}\left(\frac{(3bfpq)\int \frac{(a+b\log}{}}{}\right.$$

$$= \frac{(a+b\log(c(d(e+fx)^p)^q))^3\log\left(\frac{f(g+hx)}{fg-eh}\right)}{h} - \text{Subst}\left(\frac{(3bpq)\text{Subst}\left(\int\right.}{}\right.$$

$$= \frac{(a+b\log(c(d(e+fx)^p)^q))^3\log\left(\frac{f(g+hx)}{fg-eh}\right)}{h} + \frac{3bpq(a+b\log(c(d(e+f}{h}$$

$$= \frac{(a+b\log(c(d(e+fx)^p)^q))^3\log\left(\frac{f(g+hx)}{fg-eh}\right)}{h} + \frac{3bpq(a+b\log(c(d(e+f}{h}$$

$$= \frac{(a+b\log(c(d(e+fx)^p)^q))^3\log\left(\frac{f(g+hx)}{fg-eh}\right)}{h} + \frac{3bpq(a+b\log(c(d(e+f}{h}$$

Mathematica [B] Leaf count is larger than twice the leaf count of optimal. 646 vs. 2(177) = 354.
time = 0.14, size = 646, normalized size = 3.65

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])^3/(g + h*x),x]
```

```
[Out] (a^3*Log[g + h*x] - 3*a^2*b*p*q*Log[e + f*x]*Log[g + h*x] + 3*a*b^2*p^2*q^2
*Log[e + f*x]^2*Log[g + h*x] - b^3*p^3*q^3*Log[e + f*x]^3*Log[g + h*x] + 3*
a^2*b*Log[c*(d*(e + f*x)^p)^q]*Log[g + h*x] - 6*a*b^2*p*q*Log[e + f*x]*Log[
c*(d*(e + f*x)^p)^q]*Log[g + h*x] + 3*b^3*p^2*q^2*Log[e + f*x]^2*Log[c*(d*(
e + f*x)^p)^q]*Log[g + h*x] + 3*a*b^2*Log[c*(d*(e + f*x)^p)^q]^2*Log[g + h*
x] - 3*b^3*p*q*Log[e + f*x]*Log[c*(d*(e + f*x)^p)^q]^2*Log[g + h*x] + b^3*L
og[c*(d*(e + f*x)^p)^q]^3*Log[g + h*x] + 3*a^2*b*p*q*Log[e + f*x]*Log[(f*(g
```

```
 + h*x))/(f*g - e*h)] - 3*a*b^2*p^2*q^2*Log[e + f*x]^2*Log[(f*(g + h*x))/(f
*g - e*h)] + b^3*p^3*q^3*Log[e + f*x]^3*Log[(f*(g + h*x))/(f*g - e*h)] + 6*
a*b^2*p*q*Log[e + f*x]*Log[c*(d*(e + f*x)^p)^q]*Log[(f*(g + h*x))/(f*g - e*
h)] - 3*b^3*p^2*q^2*Log[e + f*x]^2*Log[c*(d*(e + f*x)^p)^q]*Log[(f*(g + h*x
))/(f*g - e*h)] + 3*b^3*p*q*Log[e + f*x]*Log[c*(d*(e + f*x)^p)^q]^2*Log[(f*
(g + h*x))/(f*g - e*h)] + 3*b*p*q*(a + b*Log[c*(d*(e + f*x)^p)^q])^2*PolyLo
g[2, (h*(e + f*x))/(-(f*g) + e*h)] - 6*b^2*p^2*q^2*(a + b*Log[c*(d*(e + f*x
)^p)^q])*PolyLog[3, (h*(e + f*x))/(-(f*g) + e*h)] + 6*b^3*p^3*q^3*PolyLog[4
, (h*(e + f*x))/(-(f*g) + e*h)])/h
```

Maple [F]
time = 0.18, size = 0, normalized size = 0.00

$$\int \frac{\left(a+b\ln\left(c\left(d(fx+e)^{p}\right)^{q}\right)\right)^{3}}{hx+g}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(d*(f*x+e)^p)^q))^3/(h*x+g),x)
```

```
[Out] int((a+b*ln(c*(d*(f*x+e)^p)^q))^3/(h*x+g),x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^3/(h*x+g),x, algorithm="maxima")
```

```
[Out] a^3*log(h*x + g)/h + integrate((b^3*log(((f*x + e)^p)^q)^3 + 3*(q*log(d) +
log(c))*a^2*b + 3*(q^2*log(d)^2 + 2*q*log(c)*log(d) + log(c)^2)*a*b^2 + (q^
3*log(d)^3 + 3*q^2*log(c)*log(d)^2 + 3*q*log(c)^2*log(d) + log(c)^3)*b^3 +
3*((q*log(d) + log(c))*b^3 + a*b^2)*log(((f*x + e)^p)^q)^2 + 3*(2*(q*log(d)
 + log(c))*a*b^2 + (q^2*log(d)^2 + 2*q*log(c)*log(d) + log(c)^2)*b^3 + a^2*
b)*log(((f*x + e)^p)^q))/(h*x + g), x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^3/(h*x+g),x, algorithm="fricas")
```

```
[Out] integral((b^3*log(((f*x + e)^p*d)^q*c)^3 + 3*a*b^2*log(((f*x + e)^p*d)^q*c)
^2 + 3*a^2*b*log(((f*x + e)^p*d)^q*c) + a^3)/(h*x + g), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(a + b \log \left(c(d(e + fx)^p)^q\right)\right)^3}{g + hx}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))**3/(h*x+g),x)
[Out] Integral((a + b*log(c*(d*(e + f*x)**p)**q))**3/(g + h*x), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^3/(h*x+g),x, algorithm="giac")
[Out] integrate((b*log(((f*x + e)^p*d)^q*c) + a)^3/(h*x + g), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\left(a + b\,\ln\left(c\,{\left(d\,{\left(e + f\,x\right)}^p\right)}^q\right)\right)^3}{g + h\,x}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d*(e + f*x)^p)^q))^3/(g + h*x),x)
[Out] int((a + b*log(c*(d*(e + f*x)^p)^q))^3/(g + h*x), x)
```

3.439 $\int \frac{(a+b\log(c(d(e+fx)^p)^q))^3}{(g+hx)^2}\,dx$

Optimal. Leaf size=209

$$\frac{(e+fx)\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)^3}{(fg-eh)(g+hx)}-\frac{3bfpq(a+b\log\left(c(d(e+fx)^p)^q\right))^2\log\left(\frac{f(g+hx)}{fg-eh}\right)}{h(fg-eh)}-\frac{6b^2fp^2q^2(a+b\log}{}$$

```
[Out] (f*x+e)*(a+b*ln(c*(d*(f*x+e)^p)^q))^3/(-e*h+f*g)/(h*x+g)-3*b*f*p*q*(a+b*ln(
c*(d*(f*x+e)^p)^q))^2*ln(f*(h*x+g)/(-e*h+f*g))/h/(-e*h+f*g)-6*b^2*f*p^2*q^2
*(a+b*ln(c*(d*(f*x+e)^p)^q))*polylog(2,-h*(f*x+e)/(-e*h+f*g))/h/(-e*h+f*g)+
6*b^3*f*p^3*q^3*polylog(3,-h*(f*x+e)/(-e*h+f*g))/h/(-e*h+f*g)
```

Rubi [A]

time = 0.26, antiderivative size = 209, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}} = 0.214$, Rules used = {2444, 2443, 2481, 2421, 6724, 2495}

$$-\frac{6b^2fp^2q^2\text{PolyLog}\left(2,-\frac{h(e+fx)}{fg-eh}\right)\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)}{h(fg-eh)}+\frac{6b^3fp^3q^3\text{PolyLog}\left(3,-\frac{h(e+fx)}{fg-eh}\right)}{h(fg-eh)}-\frac{3bfpq\log\left(\frac{f(g+hx)}{fg-eh}\right)\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)^2}{h(fg-eh)}+\frac{(e+fx)\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)^3}{(g+hx)(fg-eh)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])^3/(g + h*x)^2,x]
```

```
[Out] ((e + f*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^3)/((f*g - e*h)*(g + h*x)) - (3
*b*f*p*q*(a + b*Log[c*(d*(e + f*x)^p)^q])^2*Log[(f*(g + h*x))/(f*g - e*h)])
/(h*(f*g - e*h)) - (6*b^2*f*p^2*q^2*(a + b*Log[c*(d*(e + f*x)^p)^q])*PolyLo
g[2, -((h*(e + f*x))/(f*g - e*h))])/(h*(f*g - e*h)) + (6*b^3*f*p^3*q^3*Poly
Log[3, -((h*(e + f*x))/(f*g - e*h))])/(h*(f*g - e*h))
```

Rule 2421

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> Simp[(-PolyLog[2, (-d)*f*x^m])*((a + b*Log[c
*x^n])^p/m), x] + Dist[b*n*(p/m), Int[PolyLog[2, (-d)*f*x^m]*((a + b*Log[c*
x^n])^(p - 1)/x), x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0
] && EqQ[d*e, 1]
```

Rule 2443

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d
+ e*x)^n])^p/g), x] - Dist[b*e*n*(p/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]*
((a + b*Log[c*(d + e*x)^n])^(p - 1)/(d + e*x)), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2444

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_))^2, x_Symbol] :> Simp[(d + e*x)*((a + b*Log[c*(d + e*x)^n])^p/((e*f
- d*g)*(f + g*x))), x] - Dist[b*e*n*(p/(e*f - d*g)), Int[(a + b*Log[c*(d +
e*x)^n])^(p - 1)/(f + g*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] &&
 NeQ[e*f - d*g, 0] && GtQ[p, 0]
```

Rule 2481

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[(k*(x/d))^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + j*(x/e))^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2495

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rule 6724

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(a+b\log(c(d(e+fx)^p)^q))^3}{(g+hx)^2}\,dx = \text{Subst}\left(\int \frac{(a+b\log(cd^q(e+fx)^{pq}))^3}{(g+hx)^2}\,dx, cd^q(e+fx)^{pq}, c(d(e+fx)^p)^q\right.$$

$$= \frac{(e+fx)(a+b\log(c(d(e+fx)^p)^q))^3}{(fg-eh)(g+hx)} - \text{Subst}\left(\frac{(3bfpq)\int \frac{(a+b\log(cd^q(e+}{g+hx}}{fg-eh}\right.$$

$$= \frac{(e+fx)(a+b\log(c(d(e+fx)^p)^q))^3}{(fg-eh)(g+hx)} - \frac{3bfpq(a+b\log(c(d(e+fx)^p)}{h(fg-eh)}$$

$$= \frac{(e+fx)(a+b\log(c(d(e+fx)^p)^q))^3}{(fg-eh)(g+hx)} - \frac{3bfpq(a+b\log(c(d(e+fx)^p)}{h(fg-eh)}$$

$$= \frac{(e+fx)(a+b\log(c(d(e+fx)^p)^q))^3}{(fg-eh)(g+hx)} - \frac{3bfpq(a+b\log(c(d(e+fx)^p)}{h(fg-eh)}$$

$$= \frac{(e+fx)(a+b\log(c(d(e+fx)^p)^q))^3}{(fg-eh)(g+hx)} - \frac{3bfpq(a+b\log(c(d(e+fx)^p)}{h(fg-eh)}$$

Mathematica [**B**] Leaf count is larger than twice the leaf count of optimal. 444 vs. $2(209) = 418$.
time = 0.32, size = 444, normalized size = 2.12

$$\frac{-3b(fg-eh)pq\log(e+fx)\left(a-bpq\log(e+fx)+b\log\left(c(d(e+fx)^p)^q\right)\right)^2+3bfpq(g+hx)\log(e+fx)\left(a-bpq\log(e+fx)+b\log\left(c(d(e+fx)^p)^q\right)\right)^2-(fg-eh)\left(a-bpq\log(e+fx)+b\log\left(c(d(e+fx)^p)^q\right)\right)^3-3bfpq(g+hx)\left(a-bpq\log(e+fx)+b\log\left(c(d(e+fx)^p)^q\right)\right)^2\log(g+hx)+3b^2p^2q^2(a-bpq\log(e+fx)+b\log\left(c(d(e+fx)^p)^q\right))\left(\log(e+fx)\left(h(e+fx)\log(e+fx)-2f(g+hx)\log\left(\frac{f(g+hx)}{fg-eh}\right)\right)-2f(g+hx)\text{Li}_2\left(\frac{h(e+fx)}{-fg+eh}\right)\right)+b^3p^3q^3\left(\log^2(e+fx)\left(h(e+fx)\log(e+fx)-3f(g+hx)\log\left(\frac{f(g+hx)}{fg-eh}\right)\right)-6f(g+hx)\log(e+fx)\text{Li}_2\left(\frac{h(e+fx)}{-fg+eh}\right)+6f(g+hx)\text{Li}_3\left(\frac{h(e+fx)}{-fg+eh}\right)\right)}{h(fg-eh)(g+hx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])^3/(g + h*x)^2,x]
```

```
[Out] (-3*b*(f*g - e*h)*p*q*Log[e + f*x]*(a - b*p*q*Log[e + f*x] + b*Log[c*(d*(e
+ f*x)^p)^q])^2 + 3*b*f*p*q*(g + h*x)*Log[e + f*x]*(a - b*p*q*Log[e + f*x]
+ b*Log[c*(d*(e + f*x)^p)^q])^2 - (f*g - e*h)*(a - b*p*q*Log[e + f*x] + b*L
og[c*(d*(e + f*x)^p)^q])^3 - 3*b*f*p*q*(g + h*x)*(a - b*p*q*Log[e + f*x] +
b*Log[c*(d*(e + f*x)^p)^q])^2*Log[g + h*x] + 3*b^2*p^2*q^2*(a - b*p*q*Log[e
 + f*x] + b*Log[c*(d*(e + f*x)^p)^q])*(Log[e + f*x]*(h*(e + f*x)*Log[e + f*
x] - 2*f*(g + h*x)*Log[(f*(g + h*x))/(f*g - e*h)]) - 2*f*(g + h*x)*PolyLog[
2, (h*(e + f*x))/(-(f*g) + e*h)]) + b^3*p^3*q^3*(Log[e + f*x]^2*(h*(e + f*x
```

```
)*Log[e + f*x] - 3*f*(g + h*x)*Log[(f*(g + h*x))/(f*g - e*h)]) - 6*f*(g + h
*x)*Log[e + f*x]*PolyLog[2, (h*(e + f*x))/(-(f*g) + e*h)] + 6*f*(g + h*x)*P
olyLog[3, (h*(e + f*x))/(-(f*g) + e*h)]))/(h*(f*g - e*h)*(g + h*x))
```

Maple [F]
time = 0.19, size = 0, normalized size = 0.00

$$\int \frac{\left(a+b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)\right)^{3}}{\left(hx+g\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(d*(f*x+e)^p)^q))^3/(h*x+g)^2,x)
```

```
[Out] int((a+b*ln(c*(d*(f*x+e)^p)^q))^3/(h*x+g)^2,x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^3/(h*x+g)^2,x, algorithm="maxima")
```

```
[Out] 3*a^2*b*f*p*q*(log(f*x + e)/(f*g*h - h^2*e) - log(h*x + g)/(f*g*h - h^2*e))
 - b^3*log(((f*x + e)^p)^q)^3/(h^2*x + g*h) - 3*a^2*b*log(((f*x + e)^p*d)^q
*c)/(h^2*x + g*h) - a^3/(h^2*x + g*h) + integrate((3*(b^3*f*g*p*q + (a*b^2*
f*h + (f*h*p*q + f*h*q*log(d) + f*h*log(c))*b^3)*x + ((h*q*log(d) + h*log(c
))*b^3 + a*b^2*h)*e)*log(((f*x + e)^p)^q)^2 + (3*(f*h*q^2*log(d)^2 + 2*f*h*
q*log(c)*log(d) + f*h*log(c)^2)*a*b^2 + (f*h*q^3*log(d)^3 + 3*f*h*q^2*log(c
)*log(d)^2 + 3*f*h*q*log(c)^2*log(d) + f*h*log(c)^3)*b^3)*x + (3*(h*q^2*log
(d)^2 + 2*h*q*log(c)*log(d) + h*log(c)^2)*a*b^2 + (h*q^3*log(d)^3 + 3*h*q^2
*log(c)*log(d)^2 + 3*h*q*log(c)^2*log(d) + h*log(c)^3)*b^3)*e + 3*((2*(f*h*
q*log(d) + f*h*log(c))*a*b^2 + (f*h*q^2*log(d)^2 + 2*f*h*q*log(c)*log(d) +
f*h*log(c)^2)*b^3)*x + (2*(h*q*log(d) + h*log(c))*a*b^2 + (h*q^2*log(d)^2 +
 2*h*q*log(c)*log(d) + h*log(c)^2)*b^3)*e)*log(((f*x + e)^p)^q))/(f*h^3*x^3
 + g^2*h*e + (2*f*g*h^2 + h^3*e)*x^2 + (f*g^2*h + 2*g*h^2*e)*x), x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^3/(h*x+g)^2,x, algorithm="fricas")
```

```
[Out] integral((b^3*log(((f*x + e)^p*d)^q*c)^3 + 3*a*b^2*log(((f*x + e)^p*d)^q*c)
^2 + 3*a^2*b*log(((f*x + e)^p*d)^q*c) + a^3)/(h^2*x^2 + 2*g*h*x + g^2), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)^3}{(g+hx)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))**3/(h*x+g)**2,x)
[Out] Integral((a + b*log(c*(d*(e + f*x)**p)**q))**3/(g + h*x)**2, x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^3/(h*x+g)^2,x, algorithm="giac")
[Out] integrate((b*log(((f*x + e)^p*d)^q*c) + a)^3/(h*x + g)^2, x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(a+b\,\ln\left(c\,\left(d\,\left(e+f\,x\right)^p\right)^q\right)\right)^3}{\left(g+h\,x\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d*(e + f*x)^p)^q))^3/(g + h*x)^2,x)
[Out] int((a + b*log(c*(d*(e + f*x)^p)^q))^3/(g + h*x)^2, x)
```

3.440 $\int \frac{(a+b\log(c(d(e+fx)^p)^q))^3}{(g+hx)^3}\,dx$

Optimal. Leaf size=376

$$-\frac{3bfpq(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{2(fg-eh)^2(g+hx)}-\frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3}{2h(g+hx)^2}+\frac{3b^2f^2p^2q^2(a+b\log(c(d(e+}{h(fg-eh}$$

```
[Out] -3/2*b*f*p*q*(f*x+e)*(a+b*ln(c*(d*(f*x+e)^p)^q))^2/(-e*h+f*g)^2/(h*x+g)-1/2
*(a+b*ln(c*(d*(f*x+e)^p)^q))^3/h/(h*x+g)^2+3*b^2*f^2*p^2*q^2*(a+b*ln(c*(d*(
f*x+e)^p)^q))*ln(f*(h*x+g)/(-e*h+f*g))/h/(-e*h+f*g)^2-3/2*b*f^2*p*q*(a+b*ln
(c*(d*(f*x+e)^p)^q))^2*ln(1+(-e*h+f*g)/h/(f*x+e))/h/(-e*h+f*g)^2+3*b^2*f^2*
p^2*q^2*(a+b*ln(c*(d*(f*x+e)^p)^q))*polylog(2,(e*h-f*g)/h/(f*x+e))/h/(-e*h+
f*g)^2+3*b^3*f^2*p^3*q^3*polylog(2,-h*(f*x+e)/(-e*h+f*g))/h/(-e*h+f*g)^2+3*
b^3*f^2*p^3*q^3*polylog(3,(e*h-f*g)/h/(f*x+e))/h/(-e*h+f*g)^2
```

Rubi [A]
time = 0.86, antiderivative size = 376, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 10, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}} = 0.357$, Rules used = {2445, 2458, 2389, 2379, 2421, 6724, 2355, 2354, 2438, 2495}

$$\frac{3b^2f^2p^2q^2\text{PolyLog}\left(2,-\frac{fg-eh}{h(e+fx)}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h(fg-eh)^2}+\frac{3b^3f^2p^3q^3\text{PolyLog}\left(2,-\frac{h(e+fx)}{fg-eh}\right)}{h(fg-eh)^2}+\frac{3b^3f^2p^3q^3\text{PolyLog}\left(3,-\frac{fg-eh}{h(e+fx)}\right)}{h(fg-eh)^2}+\frac{3b^2f^2p^2q^2\log\left(\frac{f(g+hx)}{fg-eh}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h(fg-eh)^2}-\frac{3bf^2pq\log\left(\frac{fg-eh}{h(e+fx)}+1\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{2h(fg-eh)^2}-\frac{3bfpq(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{2(g+hx)(fg-eh)^2}-\frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3}{2h(g+hx)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])^3/(g + h*x)^3,x]
```

```
[Out] (-3*b*f*p*q*(e + f*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^2)/(2*(f*g - e*h)^2*
(g + h*x)) - (a + b*Log[c*(d*(e + f*x)^p)^q])^3/(2*h*(g + h*x)^2) + (3*b^2*
f^2*p^2*q^2*(a + b*Log[c*(d*(e + f*x)^p)^q])*Log[(f*(g + h*x))/(f*g - e*h)]
)/(h*(f*g - e*h)^2) - (3*b*f^2*p*q*(a + b*Log[c*(d*(e + f*x)^p)^q])^2*Log[1
 + (f*g - e*h)/(h*(e + f*x))])/(2*h*(f*g - e*h)^2) + (3*b^2*f^2*p^2*q^2*(a
+ b*Log[c*(d*(e + f*x)^p)^q])*PolyLog[2, -((f*g - e*h)/(h*(e + f*x)))])/(h*
(f*g - e*h)^2) + (3*b^3*f^2*p^3*q^3*PolyLog[2, -((h*(e + f*x))/(f*g - e*h))
])/(h*(f*g - e*h)^2) + (3*b^3*f^2*p^3*q^3*PolyLog[3, -((f*g - e*h)/(h*(e +
f*x)))])/(h*(f*g - e*h)^2)
```

Rule 2354

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[Log[1 + e*(x/d)]*((a + b*Log[c*x^n])^p/e), x] - Dist[b*n*(p/e),
 Int[Log[1 + e*(x/d)]*((a + b*Log[c*x^n])^(p - 1)/x), x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2355

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_))^2, x_Sy
mbol] :> Simp[x*((a + b*Log[c*x^n])^p/(d*(d + e*x))), x] - Dist[b*n*(p/d),
```

```
Int[(a + b*Log[c*x^n])^(p - 1)/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, n
, p}, x] && GtQ[p, 0]
```

Rule 2379

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((x_)*((d_) + (e_.)*(x_)^(r
_.))), x_Symbol] :> Simp[(-Log[1 + d/(e*x^r)])*((a + b*Log[c*x^n])^p/(d*r))
, x] + Dist[b*n*(p/(d*r)), Int[Log[1 + d/(e*x^r)]*((a + b*Log[c*x^n])^(p -
1)/x), x], x] /; FreeQ[{a, b, c, d, e, n, r}, x] && IGtQ[p, 0]
```

Rule 2389

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_))/
(x_), x_Symbol] :> Dist[1/d, Int[(d + e*x)^(q + 1)*((a + b*Log[c*x^n])^p/x)
, x], x] - Dist[e/d, Int[(d + e*x)^q*(a + b*Log[c*x^n])^p, x], x] /; FreeQ[
{a, b, c, d, e, n}, x] && IGtQ[p, 0] && LtQ[q, -1] && IntegerQ[2*q]
```

Rule 2421

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> Simp[(-PolyLog[2, (-d)*f*x^m])*((a + b*Log[c
*x^n])^p/m), x] + Dist[b*n*(p/m), Int[PolyLog[2, (-d)*f*x^m]*((a + b*Log[c*
x^n])^(p - 1)/x), x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0
] && EqQ[d*e, 1]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[(f + g*x)^(q + 1)*((a + b*Log[c*(d + e*x)^
n])^p/(g*(q + 1))), x] - Dist[b*e*n*(p/(g*(q + 1))), Int[(f + g*x)^(q + 1)*
((a + b*Log[c*(d + e*x)^n])^(p - 1)/(d + e*x)), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && GtQ[p, 0] && NeQ[q, -1] && Int
egersQ[2*p, 2*q] && ( !IGtQ[q, 0] || (EqQ[p, 2] && NeQ[q, 1]))
```

Rule 2458

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[(g*(x/e))^q*((e*h - d*i)/e + i*(x/e))^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2495

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rule 6724

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(a+b\log(c(d(e+fx)^p)^q))^3}{(g+hx)^3}\,dx = \text{Subst}\left(\int \frac{(a+b\log(cd^q(e+fx)^{pq}))^3}{(g+hx)^3}\,dx, cd^q(e+fx)^{pq}, c(d(e+fx)^p)^q\right.$$

$$= -\frac{(a+b\log(c(d(e+fx)^p)^q))^3}{2h(g+hx)^2} + \text{Subst}\left(\frac{(3bfpq)\int \frac{(a+b\log(cd^q(e+fx)^{pq}))^2}{(e+fx)(g+hx)^2}}{2h}\right.$$

$$= -\frac{(a+b\log(c(d(e+fx)^p)^q))^3}{2h(g+hx)^2} + \text{Subst}\left(\frac{(3bpq)\text{Subst}\left(\int \frac{(a+b\log(cd^qx^{pq}))^2}{x\left(\frac{fg-eh}{f}+\frac{hx}{f}\right)^2}\right.}{2h}\right.$$

$$= -\frac{(a+b\log(c(d(e+fx)^p)^q))^3}{2h(g+hx)^2} - \text{Subst}\left(\frac{(3bpq)\text{Subst}\left(\int \frac{(a+b\log(cd^qx^{pq}))^2}{\left(\frac{fg-eh}{f}+\frac{hx}{f}\right)^2}\right.}{2(fg-eh)}\right.$$

$$= -\frac{3bfpq(e+fx)(a+b\log(c(d(e+fx)^p)^q))^2}{2(fg-eh)^2(g+hx)} - \frac{(a+b\log(c(d(e+fx)}{2h(g+hx)^2}$$

$$= -\frac{3bfpq(e+fx)(a+b\log(c(d(e+fx)^p)^q))^2}{2(fg-eh)^2(g+hx)} - \frac{(a+b\log(c(d(e+fx)}{2h(g+hx)^2}$$

$$= -\frac{3bfpq(e+fx)(a+b\log(c(d(e+fx)^p)^q))^2}{2(fg-eh)^2(g+hx)} + \frac{f^2(a+b\log(c(d(e+f}{2h(fg-eh)^2}$$

$$= -\frac{3bfpq(e+fx)(a+b\log(c(d(e+fx)^p)^q))^2}{2(fg-eh)^2(g+hx)} + \frac{f^2(a+b\log(c(d(e+f}{2h(fg-eh)^2}$$

Mathematica [A]
time = 0.52, size = 660, normalized size = 1.76

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])^3/(g + h*x)^3,x]
```

```
[Out] -1/2*(-3*b*f*(f*g - e*h)*p*q*(g + h*x)*(a - b*p*q*Log[e + f*x] + b*Log[c*(d
*(e + f*x)^p)^q])^2 + 3*b*(f*g - e*h)^2*p*q*Log[e + f*x]*(a - b*p*q*Log[e +
 f*x] + b*Log[c*(d*(e + f*x)^p)^q])^2 - 3*b*f^2*p*q*(g + h*x)^2*Log[e + f*x
]*(a - b*p*q*Log[e + f*x] + b*Log[c*(d*(e + f*x)^p)^q])^2 + (f*g - e*h)^2*(
a - b*p*q*Log[e + f*x] + b*Log[c*(d*(e + f*x)^p)^q])^3 + 3*b*f^2*p*q*(g + h
*x)^2*(a - b*p*q*Log[e + f*x] + b*Log[c*(d*(e + f*x)^p)^q])^2*Log[g + h*x]
+ 3*b^2*p^2*q^2*(a - b*p*q*Log[e + f*x] + b*Log[c*(d*(e + f*x)^p)^q])*(h*(e
 + f*x)*(e*h - f*(2*g + h*x))*Log[e + f*x]^2 - 2*f^2*(g + h*x)^2*Log[(f*(g
+ h*x))/(f*g - e*h)] + 2*f*(g + h*x)*Log[e + f*x]*(h*(e + f*x) + f*(g + h*x
)*Log[(f*(g + h*x))/(f*g - e*h)]) + 2*f^2*(g + h*x)^2*PolyLog[2, (h*(e + f*
x))/(-(f*g) + e*h)]) + b^3*p^3*q^3*(h*(e + f*x)*(e*h - f*(2*g + h*x))*Log[e
 + f*x]^3 + 3*f*(g + h*x)*Log[e + f*x]^2*(h*(e + f*x) + f*(g + h*x)*Log[(f*
(g + h*x))/(f*g - e*h)]) - 6*f^2*(g + h*x)^2*Log[e + f*x]*(Log[(f*(g + h*x)
)/(f*g - e*h)] - PolyLog[2, (h*(e + f*x))/(-(f*g) + e*h)]) - 6*f^2*(g + h*x
)^2*PolyLog[2, (h*(e + f*x))/(-(f*g) + e*h)] - 6*f^2*(g + h*x)^2*PolyLog[3,
 (h*(e + f*x))/(-(f*g) + e*h)]))/(h*(f*g - e*h)^2*(g + h*x)^2)
```

Maple [F]
time = 0.20, size = 0, normalized size = 0.00

$$\int \frac{\left(a+b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)\right)^{3}}{\left(hx+g\right)^{3}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(d*(f*x+e)^p)^q))^3/(h*x+g)^3,x)
```

```
[Out] int((a+b*ln(c*(d*(f*x+e)^p)^q))^3/(h*x+g)^3,x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^3/(h*x+g)^3,x, algorithm="maxima")
```

```
[Out] 3/2*a^2*b*f*p*q*(f*log(f*x + e)/(f^2*g^2*h - 2*f*g*h^2*e + h^3*e^2) - f*log
(h*x + g)/(f^2*g^2*h - 2*f*g*h^2*e + h^3*e^2) + 1/(f*g^2*h - g*h^2*e + (f*g
*h^2 - h^3*e)*x)) - 1/2*b^3*log(((f*x + e)^p)^q)^3/(h^3*x^2 + 2*g*h^2*x + g
^2*h) - 3/2*a^2*b*log(((f*x + e)^p*d)^q*c)/(h^3*x^2 + 2*g*h^2*x + g^2*h) -
1/2*a^3/(h^3*x^2 + 2*g*h^2*x + g^2*h) + integrate(1/2*(3*(b^3*f*g*p*q + (2*
a*b^2*f*h + (f*h*p*q + 2*f*h*q*log(d) + 2*f*h*log(c))*b^3)*x + 2*((h*q*log(
d) + h*log(c))*b^3 + a*b^2*h)*e)*log(((f*x + e)^p)^q)^2 + 2*(3*(f*h*q^2*log
(d)^2 + 2*f*h*q*log(c)*log(d) + f*h*log(c)^2)*a*b^2 + (f*h*q^3*log(d)^3 + 3
*f*h*q^2*log(c)*log(d)^2 + 3*f*h*q*log(c)^2*log(d) + f*h*log(c)^3)*b^3)*x +
 2*(3*(h*q^2*log(d)^2 + 2*h*q*log(c)*log(d) + h*log(c)^2)*a*b^2 + (h*q^3*lo
```

```
g(d)^3 + 3*h*q^2*log(c)*log(d)^2 + 3*h*q*log(c)^2*log(d) + h*log(c)^3)*b^3)
*e + 6*((2*(f*h*q*log(d) + f*h*log(c))*a*b^2 + (f*h*q^2*log(d)^2 + 2*f*h*q*
log(c)*log(d) + f*h*log(c)^2)*b^3)*x + (2*(h*q*log(d) + h*log(c))*a*b^2 + (
h*q^2*log(d)^2 + 2*h*q*log(c)*log(d) + h*log(c)^2)*b^3)*e)*log(((f*x + e)^p
)^q))/(f*h^4*x^4 + g^3*h*e + (3*f*g*h^3 + h^4*e)*x^3 + 3*(f*g^2*h^2 + g*h^3
*e)*x^2 + (f*g^3*h + 3*g^2*h^2*e)*x), x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^3/(h*x+g)^3,x, algorithm="fricas")
[Out] integral((b^3*log(((f*x + e)^p*d)^q*c)^3 + 3*a*b^2*log(((f*x + e)^p*d)^q*c)
^2 + 3*a^2*b*log(((f*x + e)^p*d)^q*c) + a^3)/(h^3*x^3 + 3*g*h^2*x^2 + 3*g^2
*h*x + g^3), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(a + b \log \left(c(d(e + fx)^p)^q\right)\right)^3}{(g + hx)^3}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))**3/(h*x+g)**3,x)
[Out] Integral((a + b*log(c*(d*(e + f*x)**p)**q))**3/(g + h*x)**3, x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^3/(h*x+g)^3,x, algorithm="giac")
[Out] integrate((b*log(((f*x + e)^p*d)^q*c) + a)^3/(h*x + g)^3, x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(a + b\,\ln\left(c\,{\left(d\,{\left(e + f\,x\right)}^p\right)}^q\right)\right)^3}{{\left(g + h\,x\right)}^3}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d*(e + f*x)^p)^q))^3/(g + h*x)^3,x)
[Out] int((a + b*log(c*(d*(e + f*x)^p)^q))^3/(g + h*x)^3, x)
```

3.441 $\int (a+b\log(c(d(e+fx)^p)^q))^4\,dx$

Optimal. Leaf size=160

$$-24ab^3p^3q^3x+24b^4p^4q^4x-\frac{24b^4p^3q^3(e+fx)\log(c(d(e+fx)^p)^q)}{f}+\frac{12b^2p^2q^2(e+fx)\left(a+b\log(c(d(e+fx)^p\right.}{f}$$

```
[Out] -24*a*b^3*p^3*q^3*x+24*b^4*p^4*q^4*x-24*b^4*p^3*q^3*(f*x+e)*ln(c*(d*(f*x+e)
^p)^q)/f+12*b^2*p^2*q^2*(f*x+e)*(a+b*ln(c*(d*(f*x+e)^p)^q))^2/f-4*b*p*q*(f*
x+e)*(a+b*ln(c*(d*(f*x+e)^p)^q))^3/f+(f*x+e)*(a+b*ln(c*(d*(f*x+e)^p)^q))^4/
f
```

Rubi [A]
time = 0.14, antiderivative size = 160, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 4, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.200$, Rules used = {2436, 2333, 2332, 2495}

$$-24ab^3p^3q^3x+\frac{12b^2p^2q^2(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{f}-\frac{4bpq(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3}{f}+\frac{(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^4}{f}-\frac{24b^4p^3q^3(e+fx)\log\left(c\left(d(e+fx)^p\right)^q\right)}{f}+24b^4p^4q^4x$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])^4,x]
```

```
[Out] -24*a*b^3*p^3*q^3*x + 24*b^4*p^4*q^4*x - (24*b^4*p^3*q^3*(e + f*x)*Log[c*(d
*(e + f*x)^p)^q])/f + (12*b^2*p^2*q^2*(e + f*x)*(a + b*Log[c*(d*(e + f*x)^p
)^q])^2)/f - (4*b*p*q*(e + f*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^3)/f + ((e
 + f*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^4)/f
```

Rule 2332

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2333

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2436

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2495

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] && !IntegerQ[n] && !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int (a+b\log(c(d(e+fx)^p)^q))^4\,dx = \text{Subst}\left(\int (a+b\log(cd^q(e+fx)^{pq}))^4\,dx, cd^q(e+fx)^{pq}, c(d(e+fx)^p)^q\right.$$
$$= \text{Subst}\left(\frac{\text{Subst}\left(\int (a+b\log(cd^q x^{pq}))^4\,dx, x, e+fx\right)}{f}, cd^q(e+fx)^{pq}, c(d(\right.$$
$$= \frac{(e+fx)(a+b\log(c(d(e+fx)^p)^q))^4}{f} - \text{Subst}\left(\frac{(4bpq)\text{Subst}\left(\int (a+b\log\right.}{}\right.$$
$$= -\frac{4bpq(e+fx)(a+b\log(c(d(e+fx)^p)^q))^3}{f} + \frac{(e+fx)(a+b\log(c(d(}{f}$$
$$= \frac{12b^2p^2q^2(e+fx)(a+b\log(c(d(e+fx)^p)^q))^2}{f} - \frac{4bpq(e+fx)(a+b\log}{f}$$
$$= -24ab^3p^3q^3x + \frac{12b^2p^2q^2(e+fx)(a+b\log(c(d(e+fx)^p)^q))^2}{f} - \frac{4bpq(e}{}$$
$$= -24ab^3p^3q^3x + 24b^4p^4q^4x - \frac{24b^4p^3q^3(e+fx)\log(c(d(e+fx)^p)^q)}{f} + \frac{12}{}$$

Mathematica [A]
time = 0.04, size = 132, normalized size = 0.82

$$\frac{(e+fx)(a+b\log(c(d(e+fx)^p)^q))^4 - 4bpq\left((e+fx)(a+b\log(c(d(e+fx)^p)^q))^3 - 3bpq\left((e+fx)(a+b\log(c(d(e+fx)^p)^q))^2 - 2bpq(f(a-bpq)x + b(e+fx)\log(c(d(e+fx)^p)^q))\right)\right)}{f}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])^4,x]
```

```
[Out] ((e + f*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^4 - 4*b*p*q*((e + f*x)*(a + b*L
og[c*(d*(e + f*x)^p)^q])^3 - 3*b*p*q*((e + f*x)*(a + b*Log[c*(d*(e + f*x)^p
)^q])^2 - 2*b*p*q*(f*(a - b*p*q)*x + b*(e + f*x)*Log[c*(d*(e + f*x)^p)^q]))
))/f
```

Maple [F]
time = 0.04, size = 0, normalized size = 0.00

$$\int (a+b\ln(c(d(fx+e)^p)^q))^4\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(d*(f*x+e)^p)^q))^4,x)
```

```
[Out] int((a+b*ln(c*(d*(f*x+e)^p)^q))^4,x)
```

Maxima [B] Leaf count of result is larger than twice the leaf count of optimal. 609 vs. $2(168) = 336$.
time = 0.31, size = 609, normalized size = 3.81

$$b^{4} x \log\left(\left(\left(f x + e\right)^{p} d\right)^{q} c\right)^{4} - 4 \, a^{3} b f p q {\left(\frac{x}{f} - \frac{e \log\left(f x + e\right)}{f^{2}}\right)} + 4 \, a b^{3} x \log\left(\left(\left(f x + e\right)^{p} d\right)^{q} c\right)^{3} + 6 \, a^{2} b^{2} x \log\left(\left(\left(f x + e\right)^{p} d\right)^{q} c\right)^{2} + 4 \, a^{3} b x \log\left(\left(\left(f x + e\right)^{p} d\right)^{q} c\right) - 6 \, {\left(2 \, f p q {\left(\frac{x}{f} - \frac{e \log\left(f x + e\right)}{f^{2}}\right)} \log\left(\left(\left(f x + e\right)^{p} d\right)^{q} c\right) + \frac{{\left(e \log\left(f x + e\right)^{2} - 2 \, f x + 2 \, e \log\left(f x + e\right)\right)} p^{2} q^{2}}{f}\right)} a^{2} b^{2} - 4 \, {\left(3 \, f p q {\left(\frac{x}{f} - \frac{e \log\left(f x + e\right)}{f^{2}}\right)} \log\left(\left(\left(f x + e\right)^{p} d\right)^{q} c\right)^{2} - {\left(\frac{{\left(e \log\left(f x + e\right)^{3} + 3 \, e \log\left(f x + e\right)^{2} - 6 \, f x + 6 \, e \log\left(f x + e\right)\right)} p^{2} q^{2}}{f^{2}} - \frac{3 \, {\left(e \log\left(f x + e\right)^{2} - 2 \, f x + 2 \, e \log\left(f x + e\right)\right)} p q \log\left(\left(\left(f x + e\right)^{p} d\right)^{q} c\right)}{f^{2}}\right)} f p q\right)} a b^{3} - {\left(4 \, f p q {\left(\frac{x}{f} - \frac{e \log\left(f x + e\right)}{f^{2}}\right)} \log\left(\left(\left(f x + e\right)^{p} d\right)^{q} c\right)^{3} + {\left({\left(\frac{{\left(e \log\left(f x + e\right)^{4} + 4 \, e \log\left(f x + e\right)^{3} + 12 \, e \log\left(f x + e\right)^{2} - 24 \, f x + 24 \, e \log\left(f x + e\right)\right)} p^{2} q^{2}}{f^{3}} - \frac{4 \, {\left(e \log\left(f x + e\right)^{3} + 3 \, e \log\left(f x + e\right)^{2} - 6 \, f x + 6 \, e \log\left(f x + e\right)\right)} p q \log\left(\left(\left(f x + e\right)^{p} d\right)^{q} c\right)}{f^{3}}\right)} f p q + \frac{6 \, {\left(e \log\left(f x + e\right)^{2} - 2 \, f x + 2 \, e \log\left(f x + e\right)\right)} p q \log\left(\left(\left(f x + e\right)^{p} d\right)^{q} c\right)^{2}}{f^{2}}\right)} f p q\right)} b^{4} + a^{4} x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^4,x, algorithm="maxima")
```

```
[Out] b^4*x*log(((f*x + e)^p*d)^q*c)^4 - 4*a^3*b*f*p*q*(x/f - e*log(f*x + e)/f^2)
 + 4*a*b^3*x*log(((f*x + e)^p*d)^q*c)^3 + 6*a^2*b^2*x*log(((f*x + e)^p*d)^q
*c)^2 + 4*a^3*b*x*log(((f*x + e)^p*d)^q*c) - 6*(2*f*p*q*(x/f - e*log(f*x +
e)/f^2)*log(((f*x + e)^p*d)^q*c) + (e*log(f*x + e)^2 - 2*f*x + 2*e*log(f*x
+ e))*p^2*q^2/f)*a^2*b^2 - 4*(3*f*p*q*(x/f - e*log(f*x + e)/f^2)*log(((f*x
+ e)^p*d)^q*c)^2 - ((e*log(f*x + e)^3 + 3*e*log(f*x + e)^2 - 6*f*x + 6*e*lo
g(f*x + e))*p^2*q^2/f^2 - 3*(e*log(f*x + e)^2 - 2*f*x + 2*e*log(f*x + e))*p
*q*log(((f*x + e)^p*d)^q*c)/f^2)*f*p*q)*a*b^3 - (4*f*p*q*(x/f - e*log(f*x +
 e)/f^2)*log(((f*x + e)^p*d)^q*c)^3 + (((e*log(f*x + e)^4 + 4*e*log(f*x + e
)^3 + 12*e*log(f*x + e)^2 - 24*f*x + 24*e*log(f*x + e))*p^2*q^2/f^3 - 4*(e*
log(f*x + e)^3 + 3*e*log(f*x + e)^2 - 6*f*x + 6*e*log(f*x + e))*p*q*log(((f
*x + e)^p*d)^q*c)/f^3)*f*p*q + 6*(e*log(f*x + e)^2 - 2*f*x + 2*e*log(f*x +
e))*p*q*log(((f*x + e)^p*d)^q*c)^2/f^2)*f*p*q)*b^4 + a^4*x
```

Fricas [B] Leaf count of result is larger than twice the leaf count of optimal. 1438 vs. $2(168) = 336$.
time = 0.37, size = 1438, normalized size = 8.99

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^4,x, algorithm="fricas")
```

```
[Out] (b^4*f*q^4*x*log(d)^4 + b^4*f*x*log(c)^4 + (b^4*f*p^4*q^4*x + b^4*p^4*q^4*e
)*log(f*x + e)^4 - 4*(b^4*f*p*q - a*b^3*f)*x*log(c)^3 - 4*((b^4*f*p^4*q^4 -
 a*b^3*f*p^3*q^3)*x + (b^4*p^4*q^4 - a*b^3*p^3*q^3)*e - (b^4*f*p^3*q^3*x +
b^4*p^3*q^3*e)*log(c) - (b^4*f*p^3*q^4*x + b^4*p^3*q^4*e)*log(d))*log(f*x +
 e)^3 + 6*(2*b^4*f*p^2*q^2 - 2*a*b^3*f*p*q + a^2*b^2*f)*x*log(c)^2 + 4*(b^4
*f*q^3*x*log(c) - (b^4*f*p*q^4 - a*b^3*f*q^3)*x)*log(d)^3 + 6*((b^4*f*p^2*q
^2*x + b^4*p^2*q^2*e)*log(c)^2 + (b^4*f*p^2*q^4*x + b^4*p^2*q^4*e)*log(d)^2
 + (2*b^4*f*p^4*q^4 - 2*a*b^3*f*p^3*q^3 + a^2*b^2*f*p^2*q^2)*x + (2*b^4*p^4
```

```
*q^4 - 2*a*b^3*p^3*q^3 + a^2*b^2*p^2*q^2)*e - 2*((b^4*f*p^3*q^3 - a*b^3*f*p
^2*q^2)*x + (b^4*p^3*q^3 - a*b^3*p^2*q^2)*e)*log(c) - 2*((b^4*f*p^3*q^4 - a
*b^3*f*p^2*q^3)*x + (b^4*p^3*q^4 - a*b^3*p^2*q^3)*e - (b^4*f*p^2*q^3*x + b^
4*p^2*q^3*e)*log(c))*log(d))*log(f*x + e)^2 - 4*(6*b^4*f*p^3*q^3 - 6*a*b^3*
f*p^2*q^2 + 3*a^2*b^2*f*p*q - a^3*b*f)*x*log(c) + 6*(b^4*f*q^2*x*log(c)^2 -
 2*(b^4*f*p*q^3 - a*b^3*f*q^2)*x*log(c) + (2*b^4*f*p^2*q^4 - 2*a*b^3*f*p*q^
3 + a^2*b^2*f*q^2)*x)*log(d)^2 + (24*b^4*f*p^4*q^4 - 24*a*b^3*f*p^3*q^3 + 1
2*a^2*b^2*f*p^2*q^2 - 4*a^3*b*f*p*q + a^4*f)*x + 4*((b^4*f*p*q*x + b^4*p*q*
e)*log(c)^3 + (b^4*f*p*q^4*x + b^4*p*q^4*e)*log(d)^3 - 3*((b^4*f*p^2*q^2 -
a*b^3*f*p*q)*x + (b^4*p^2*q^2 - a*b^3*p*q)*e)*log(c)^2 - 3*((b^4*f*p^2*q^4
- a*b^3*f*p*q^3)*x + (b^4*p^2*q^4 - a*b^3*p*q^3)*e - (b^4*f*p*q^3*x + b^4*p
*q^3*e)*log(c))*log(d)^2 - (6*b^4*f*p^4*q^4 - 6*a*b^3*f*p^3*q^3 + 3*a^2*b^2
*f*p^2*q^2 - a^3*b*f*p*q)*x - (6*b^4*p^4*q^4 - 6*a*b^3*p^3*q^3 + 3*a^2*b^2*
p^2*q^2 - a^3*b*p*q)*e + 3*((2*b^4*f*p^3*q^3 - 2*a*b^3*f*p^2*q^2 + a^2*b^2*
f*p*q)*x + (2*b^4*p^3*q^3 - 2*a*b^3*p^2*q^2 + a^2*b^2*p*q)*e)*log(c) + 3*((
b^4*f*p*q^2*x + b^4*p*q^2*e)*log(c)^2 + (2*b^4*f*p^3*q^4 - 2*a*b^3*f*p^2*q^
3 + a^2*b^2*f*p*q^2)*x + (2*b^4*p^3*q^4 - 2*a*b^3*p^2*q^3 + a^2*b^2*p*q^2)*
e - 2*((b^4*f*p^2*q^3 - a*b^3*f*p*q^2)*x + (b^4*p^2*q^3 - a*b^3*p*q^2)*e)*l
og(c))*log(d))*log(f*x + e) + 4*(b^4*f*q*x*log(c)^3 - 3*(b^4*f*p*q^2 - a*b^
3*f*q)*x*log(c)^2 + 3*(2*b^4*f*p^2*q^3 - 2*a*b^3*f*p*q^2 + a^2*b^2*f*q)*x*l
og(c) - (6*b^4*f*p^3*q^4 - 6*a*b^3*f*p^2*q^3 + 3*a^2*b^2*f*p*q^2 - a^3*b*f*
q)*x)*log(d))/f
```

Sympy [**B**] Leaf count of result is larger than twice the leaf count of optimal. 609 vs. $2(155) = 310$.

time = 2.67, size = 609, normalized size = 3.81

$$\begin{cases} a^{4}x + \frac{4a^{3}be\log\left(c\left(d\left(e+fx\right)^{p}\right)^{q}\right)}{f} - 4a^{3}bpqx + 4a^{3}bx\log\left(c\left(d\left(e+fx\right)^{p}\right)^{q}\right) - \frac{12a^{2}b^{2}epq\log\left(c\left(d\left(e+fx\right)^{p}\right)^{q}\right)}{f} + \frac{6a^{2}b^{2}e\log\left(c\left(d\left(e+fx\right)^{p}\right)^{q}\right)^{2}}{f} + 12a^{2}b^{2}p^{2}q^{2}x - 12a^{2}b^{2}pqx\log\left(c\left(d\left(e+fx\right)^{p}\right)^{q}\right) + 6a^{2}b^{2}x\log\left(c\left(d\left(e+fx\right)^{p}\right)^{q}\right)^{2} + \frac{24ab^{3}ep^{2}q^{2}\log\left(c\left(d\left(e+fx\right)^{p}\right)^{q}\right)}{f} - \frac{12ab^{3}epq\log\left(c\left(d\left(e+fx\right)^{p}\right)^{q}\right)^{2}}{f} + \frac{4ab^{3}e\log\left(c\left(d\left(e+fx\right)^{p}\right)^{q}\right)^{3}}{f} - 24ab^{3}p^{3}q^{3}x + 24ab^{3}p^{2}q^{2}x\log\left(c\left(d\left(e+fx\right)^{p}\right)^{q}\right) - 12ab^{3}pqx\log\left(c\left(d\left(e+fx\right)^{p}\right)^{q}\right)^{2} + 4ab^{3}x\log\left(c\left(d\left(e+fx\right)^{p}\right)^{q}\right)^{3} - \frac{24b^{4}ep^{3}q^{3}\log\left(c\left(d\left(e+fx\right)^{p}\right)^{q}\right)}{f} + \frac{12b^{4}ep^{2}q^{2}\log\left(c\left(d\left(e+fx\right)^{p}\right)^{q}\right)^{2}}{f} - \frac{4b^{4}epq\log\left(c\left(d\left(e+fx\right)^{p}\right)^{q}\right)^{3}}{f} + \frac{b^{4}e\log\left(c\left(d\left(e+fx\right)^{p}\right)^{q}\right)^{4}}{f} + 24b^{4}p^{4}q^{4}x - 24b^{4}p^{3}q^{3}x\log\left(c\left(d\left(e+fx\right)^{p}\right)^{q}\right) + 12b^{4}p^{2}q^{2}x\log\left(c\left(d\left(e+fx\right)^{p}\right)^{q}\right)^{2} - 4b^{4}pqx\log\left(c\left(d\left(e+fx\right)^{p}\right)^{q}\right)^{3} + b^{4}x\log\left(c\left(d\left(e+fx\right)^{p}\right)^{q}\right)^{4} & \text{for}\: f \neq 0 \\ x\left(a + b\log\left(c\left(de^{p}\right)^{q}\right)\right)^{4} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))**4,x)
```

```
[Out] Piecewise((a**4*x + 4*a**3*b*e*log(c*(d*(e + f*x)**p)**q)/f - 4*a**3*b*p*q*
x + 4*a**3*b*x*log(c*(d*(e + f*x)**p)**q) - 12*a**2*b**2*e*p*q*log(c*(d*(e
+ f*x)**p)**q)/f + 6*a**2*b**2*e*log(c*(d*(e + f*x)**p)**q)**2/f + 12*a**2*
b**2*p**2*q**2*x - 12*a**2*b**2*p*q*x*log(c*(d*(e + f*x)**p)**q) + 6*a**2*b
**2*x*log(c*(d*(e + f*x)**p)**q)**2 + 24*a*b**3*e*p**2*q**2*log(c*(d*(e + f
*x)**p)**q)/f - 12*a*b**3*e*p*q*log(c*(d*(e + f*x)**p)**q)**2/f + 4*a*b**3*
e*log(c*(d*(e + f*x)**p)**q)**3/f - 24*a*b**3*p**3*q**3*x + 24*a*b**3*p**2*
q**2*x*log(c*(d*(e + f*x)**p)**q) - 12*a*b**3*p*q*x*log(c*(d*(e + f*x)**p)*
*q)**2 + 4*a*b**3*x*log(c*(d*(e + f*x)**p)**q)**3 - 24*b**4*e*p**3*q**3*log
(c*(d*(e + f*x)**p)**q)/f + 12*b**4*e*p**2*q**2*log(c*(d*(e + f*x)**p)**q)*
*2/f - 4*b**4*e*p*q*log(c*(d*(e + f*x)**p)**q)**3/f + b**4*e*log(c*(d*(e +
f*x)**p)**q)**4/f + 24*b**4*p**4*q**4*x - 24*b**4*p**3*q**3*x*log(c*(d*(e +
 f*x)**p)**q) + 12*b**4*p**2*q**2*x*log(c*(d*(e + f*x)**p)**q)**2 - 4*b**4*
```

```
p*q*x*log(c*(d*(e + f*x)**p)**q)**3 + b**4*x*log(c*(d*(e + f*x)**p)**q)**4,
 Ne(f, 0)), (x*(a + b*log(c*(d*e**p)**q))**4, True))
```

Giac [B] Leaf count of result is larger than twice the leaf count of optimal. 1802 vs. $2(168) = 336$.
time = 5.02, size = 1802, normalized size = 11.26

Too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^4,x, algorithm="giac")
```

```
[Out] (f*x + e)*b^4*p^4*q^4*log(f*x + e)^4/f - 4*(f*x + e)*b^4*p^4*q^4*log(f*x +
e)^3/f + 4*(f*x + e)*b^4*p^3*q^4*log(f*x + e)^3*log(d)/f + 12*(f*x + e)*b^4
*p^4*q^4*log(f*x + e)^2/f + 4*(f*x + e)*b^4*p^3*q^3*log(f*x + e)^3*log(c)/f
 - 12*(f*x + e)*b^4*p^3*q^4*log(f*x + e)^2*log(d)/f + 6*(f*x + e)*b^4*p^2*q
^4*log(f*x + e)^2*log(d)^2/f - 24*(f*x + e)*b^4*p^4*q^4*log(f*x + e)/f + 4*
(f*x + e)*a*b^3*p^3*q^3*log(f*x + e)^3/f - 12*(f*x + e)*b^4*p^3*q^3*log(f*x
 + e)^2*log(c)/f + 24*(f*x + e)*b^4*p^3*q^4*log(f*x + e)*log(d)/f + 12*(f*x
 + e)*b^4*p^2*q^3*log(f*x + e)^2*log(c)*log(d)/f - 12*(f*x + e)*b^4*p^2*q^4
*log(f*x + e)*log(d)^2/f + 4*(f*x + e)*b^4*p*q^4*log(f*x + e)*log(d)^3/f +
24*(f*x + e)*b^4*p^4*q^4/f - 12*(f*x + e)*a*b^3*p^3*q^3*log(f*x + e)^2/f +
24*(f*x + e)*b^4*p^3*q^3*log(f*x + e)*log(c)/f + 6*(f*x + e)*b^4*p^2*q^2*lo
g(f*x + e)^2*log(c)^2/f - 24*(f*x + e)*b^4*p^3*q^4*log(d)/f + 12*(f*x + e)*
a*b^3*p^2*q^3*log(f*x + e)^2*log(d)/f - 24*(f*x + e)*b^4*p^2*q^3*log(f*x +
e)*log(c)*log(d)/f + 12*(f*x + e)*b^4*p^2*q^4*log(d)^2/f + 12*(f*x + e)*b^4
*p*q^3*log(f*x + e)*log(c)*log(d)^2/f - 4*(f*x + e)*b^4*p*q^4*log(d)^3/f +
(f*x + e)*b^4*q^4*log(d)^4/f + 24*(f*x + e)*a*b^3*p^3*q^3*log(f*x + e)/f -
24*(f*x + e)*b^4*p^3*q^3*log(c)/f + 12*(f*x + e)*a*b^3*p^2*q^2*log(f*x + e)
^2*log(c)/f - 12*(f*x + e)*b^4*p^2*q^2*log(f*x + e)*log(c)^2/f - 24*(f*x +
e)*a*b^3*p^2*q^3*log(f*x + e)*log(d)/f + 24*(f*x + e)*b^4*p^2*q^3*log(c)*lo
g(d)/f + 12*(f*x + e)*b^4*p*q^2*log(f*x + e)*log(c)^2*log(d)/f + 12*(f*x +
e)*a*b^3*p*q^3*log(f*x + e)*log(d)^2/f - 12*(f*x + e)*b^4*p*q^3*log(c)*log(
d)^2/f + 4*(f*x + e)*b^4*q^3*log(c)*log(d)^3/f - 24*(f*x + e)*a*b^3*p^3*q^3
/f + 6*(f*x + e)*a^2*b^2*p^2*q^2*log(f*x + e)^2/f - 24*(f*x + e)*a*b^3*p^2*
q^2*log(f*x + e)*log(c)/f + 12*(f*x + e)*b^4*p^2*q^2*log(c)^2/f + 4*(f*x +
e)*b^4*p*q*log(f*x + e)*log(c)^3/f + 24*(f*x + e)*a*b^3*p^2*q^3*log(d)/f +
24*(f*x + e)*a*b^3*p*q^2*log(f*x + e)*log(c)*log(d)/f - 12*(f*x + e)*b^4*p*
q^2*log(c)^2*log(d)/f - 12*(f*x + e)*a*b^3*p*q^3*log(d)^2/f + 6*(f*x + e)*b
^4*q^2*log(c)^2*log(d)^2/f + 4*(f*x + e)*a*b^3*q^3*log(d)^3/f - 12*(f*x + e
)*a^2*b^2*p^2*q^2*log(f*x + e)/f + 24*(f*x + e)*a*b^3*p^2*q^2*log(c)/f + 12
*(f*x + e)*a*b^3*p*q*log(f*x + e)*log(c)^2/f - 4*(f*x + e)*b^4*p*q*log(c)^3
/f + 12*(f*x + e)*a^2*b^2*p*q^2*log(f*x + e)*log(d)/f - 24*(f*x + e)*a*b^3*
p*q^2*log(c)*log(d)/f + 4*(f*x + e)*b^4*q*log(c)^3*log(d)/f + 12*(f*x + e)*
a*b^3*q^2*log(c)*log(d)^2/f + 12*(f*x + e)*a^2*b^2*p^2*q^2/f + 12*(f*x + e)
```

```
*a^2*b^2*p*q*log(f*x + e)*log(c)/f - 12*(f*x + e)*a*b^3*p*q*log(c)^2/f + (f
*x + e)*b^4*log(c)^4/f - 12*(f*x + e)*a^2*b^2*p*q^2*log(d)/f + 12*(f*x + e)
*a*b^3*q*log(c)^2*log(d)/f + 6*(f*x + e)*a^2*b^2*q^2*log(d)^2/f + 4*(f*x +
e)*a^3*b*p*q*log(f*x + e)/f - 12*(f*x + e)*a^2*b^2*p*q*log(c)/f + 4*(f*x +
e)*a*b^3*log(c)^3/f + 12*(f*x + e)*a^2*b^2*q*log(c)*log(d)/f - 4*(f*x + e)*
a^3*b*p*q/f + 6*(f*x + e)*a^2*b^2*log(c)^2/f + 4*(f*x + e)*a^3*b*q*log(d)/f
 + 4*(f*x + e)*a^3*b*log(c)/f + (f*x + e)*a^4/f
```

Mupad [B]
time = 0.56, size = 380, normalized size = 2.38

$$\ln\left(c\left(d\left(e+fx\right)^p\right)^q\right)^3\left(\frac{4\left(a\,b^3\,e-b^4\,e\,p\,q\right)}{f}+4\,b^3\,x\left(a-b\,p\,q\right)\right)+\ln\left(c\left(d\left(e+fx\right)^p\right)^q\right)^4\left(b^4\,x+\frac{b^4\,e}{f}\right)+x\left(a^4-4\,a^3\,b\,p\,q+12\,a^2\,b^2\,p^2\,q^2-24\,a\,b^3\,p^3\,q^3+24\,b^4\,p^4\,q^4\right)+\ln\left(c\left(d\left(e+fx\right)^p\right)^q\right)^2\left(\frac{6\left(e\,a^2\,b^2-2\,e\,a\,b^3\,p\,q+2\,e\,b^4\,p^2\,q^2\right)}{f}+6\,b^2\,x\left(a^2-2\,a\,b\,p\,q+2\,b^2\,p^2\,q^2\right)\right)+\frac{\ln\left(c\left(d\left(e+fx\right)^p\right)^q\right)\left(4\,b\,f\left(a^3-3\,a^2\,b\,p\,q+6\,a\,b^2\,p^2\,q^2-6\,b^3\,p^3\,q^3\right)x^2+4\,b\,e\left(a^3-3\,a^2\,b\,p\,q+6\,a\,b^2\,p^2\,q^2-6\,b^3\,p^3\,q^3\right)x\right)}{e+fx}-\frac{\ln\left(e+fx\right)\left(-4\,e\,a^3\,b\,p\,q+12\,e\,a^2\,b^2\,p^2\,q^2-24\,e\,a\,b^3\,p^3\,q^3+24\,e\,b^4\,p^4\,q^4\right)}{f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d*(e + f*x)^p)^q))^4,x)
```

```
[Out] log(c*(d*(e + f*x)^p)^q)^3*((4*(a*b^3*e - b^4*e*p*q))/f + 4*b^3*x*(a - b*p*
q)) + log(c*(d*(e + f*x)^p)^q)^4*(b^4*x + (b^4*e)/f) + x*(a^4 + 24*b^4*p^4*
q^4 - 24*a*b^3*p^3*q^3 - 4*a^3*b*p*q + 12*a^2*b^2*p^2*q^2) + log(c*(d*(e +
f*x)^p)^q)^2*((6*(a^2*b^2*e + 2*b^4*e*p^2*q^2 - 2*a*b^3*e*p*q))/f + 6*b^2*x
*(a^2 + 2*b^2*p^2*q^2 - 2*a*b*p*q)) + (log(c*(d*(e + f*x)^p)^q)*(4*b*e*x*(a
^3 - 6*b^3*p^3*q^3 + 6*a*b^2*p^2*q^2 - 3*a^2*b*p*q) + 4*b*f*x^2*(a^3 - 6*b^
3*p^3*q^3 + 6*a*b^2*p^2*q^2 - 3*a^2*b*p*q)))/(e + f*x) - (log(e + f*x)*(24*
b^4*e*p^4*q^4 - 24*a*b^3*e*p^3*q^3 - 4*a^3*b*e*p*q + 12*a^2*b^2*e*p^2*q^2))
/f
```

3.442 $\int \frac{(a+b\log(c(d(e+fx)^p)^q))^4}{g+hx}\,dx$

Optimal. Leaf size=231

$$\frac{(a+b\log(c(d(e+fx)^p)^q))^4\log\left(\frac{f(g+hx)}{fg-eh}\right)}{h}+\frac{4bpq(a+b\log(c(d(e+fx)^p)^q))^3\operatorname{Li}_2\left(-\frac{h(e+fx)}{fg-eh}\right)}{h}-\frac{12b^2p^2q^2(a+$$

```
[Out] (a+b*ln(c*(d*(f*x+e)^p)^q))^4*ln(f*(h*x+g)/(-e*h+f*g))/h+4*b*p*q*(a+b*ln(c*
(d*(f*x+e)^p)^q))^3*polylog(2,-h*(f*x+e)/(-e*h+f*g))/h-12*b^2*p^2*q^2*(a+b*
ln(c*(d*(f*x+e)^p)^q))^2*polylog(3,-h*(f*x+e)/(-e*h+f*g))/h+24*b^3*p^3*q^3*
(a+b*ln(c*(d*(f*x+e)^p)^q))*polylog(4,-h*(f*x+e)/(-e*h+f*g))/h-24*b^4*p^4*q
^4*polylog(5,-h*(f*x+e)/(-e*h+f*g))/h
```

Rubi [A]
time = 0.36, antiderivative size = 231, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}} = 0.214$, Rules used = {2443, 2481, 2421, 2430, 6724, 2495}

$$\frac{24b^3p^3q^3\text{PolyLog}\left(4,-\frac{h(e+fx)}{fg-eh}\right)(a+b\log(c(d(e+fx)^p)^q))}{h}-\frac{12b^2p^2q^2\text{PolyLog}\left(3,-\frac{h(e+fx)}{fg-eh}\right)(a+b\log(c(d(e+fx)^p)^q))^2}{h}+\frac{4bpq\text{PolyLog}\left(2,-\frac{h(e+fx)}{fg-eh}\right)(a+b\log(c(d(e+fx)^p)^q))^3}{h}-\frac{24b^4p^4q^4\text{PolyLog}\left(5,-\frac{h(e+fx)}{fg-eh}\right)}{h}+\frac{\log\left(\frac{f(g+hx)}{fg-eh}\right)(a+b\log(c(d(e+fx)^p)^q))^4}{h}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])^4/(g + h*x),x]
```

```
[Out] ((a + b*Log[c*(d*(e + f*x)^p)^q])^4*Log[(f*(g + h*x))/(f*g - e*h)])/h + (4*
b*p*q*(a + b*Log[c*(d*(e + f*x)^p)^q])^3*PolyLog[2, -((h*(e + f*x))/(f*g -
e*h))])/h - (12*b^2*p^2*q^2*(a + b*Log[c*(d*(e + f*x)^p)^q])^2*PolyLog[3, -
((h*(e + f*x))/(f*g - e*h))])/h + (24*b^3*p^3*q^3*(a + b*Log[c*(d*(e + f*x)
^p)^q])*PolyLog[4, -((h*(e + f*x))/(f*g - e*h))])/h - (24*b^4*p^4*q^4*PolyL
og[5, -((h*(e + f*x))/(f*g - e*h))])/h
```

Rule 2421

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> Simp[(-PolyLog[2, (-d)*f*x^m])*((a + b*Log[c
*x^n])^p/m), x] + Dist[b*n*(p/m), Int[PolyLog[2, (-d)*f*x^m]*((a + b*Log[c*
x^n])^(p - 1)/x), x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0
] && EqQ[d*e, 1]
```

Rule 2430

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*PolyLog[k_, (e_.)*(x_)^(q_
.)])/(x_), x_Symbol] :> Simp[PolyLog[k + 1, e*x^q]*((a + b*Log[c*x^n])^p/q)
, x] - Dist[b*n*(p/q), Int[PolyLog[k + 1, e*x^q]*((a + b*Log[c*x^n])^(p - 1
)/x), x], x] /; FreeQ[{a, b, c, e, k, n, q}, x] && GtQ[p, 0]
```

Rule 2443

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d
+ e*x)^n])^p/g), x] - Dist[b*e*n*(p/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]*
((a + b*Log[c*(d + e*x)^n])^(p - 1)/(d + e*x)), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2481

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[(k*(x/d))^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + j*(x/e))^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2495

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rule 6724

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(a+b\log(c(d(e+fx)^p)^q))^4}{g+hx}\,dx = \text{Subst}\left(\int \frac{(a+b\log(cd^q(e+fx)^{pq}))^4}{g+hx}\,dx, cd^q(e+fx)^{pq}, c(d(e+fx)^p\right.$$

$$= \frac{(a+b\log(c(d(e+fx)^p)^q))^4\log\left(\frac{f(g+hx)}{fg-eh}\right)}{h} - \text{Subst}\left(\frac{(4bfpq)\int \frac{(a+b\log}{}}{}\right.$$

$$= \frac{(a+b\log(c(d(e+fx)^p)^q))^4\log\left(\frac{f(g+hx)}{fg-eh}\right)}{h} - \text{Subst}\left(\frac{(4bpq)\text{Subst}\left(\int\right.}{}\right.$$

$$= \frac{(a+b\log(c(d(e+fx)^p)^q))^4\log\left(\frac{f(g+hx)}{fg-eh}\right)}{h} + \frac{4bpq(a+b\log(c(d(e+f}{h}$$

$$= \frac{(a+b\log(c(d(e+fx)^p)^q))^4\log\left(\frac{f(g+hx)}{fg-eh}\right)}{h} + \frac{4bpq(a+b\log(c(d(e+f}{h}$$

$$= \frac{(a+b\log(c(d(e+fx)^p)^q))^4\log\left(\frac{f(g+hx)}{fg-eh}\right)}{h} + \frac{4bpq(a+b\log(c(d(e+f}{h}$$

$$= \frac{(a+b\log(c(d(e+fx)^p)^q))^4\log\left(\frac{f(g+hx)}{fg-eh}\right)}{h} + \frac{4bpq(a+b\log(c(d(e+f}{h}$$

Mathematica [**B**] Leaf count is larger than twice the leaf count of optimal. 1095 vs. $2(231) = 462$.
time = 0.23, size = 1095, normalized size = 4.74

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])^4/(g + h*x),x]
```

```
[Out] (a^4*Log[g + h*x] - 4*a^3*b*p*q*Log[e + f*x]*Log[g + h*x] + 6*a^2*b^2*p^2*q
^2*Log[e + f*x]^2*Log[g + h*x] - 4*a*b^3*p^3*q^3*Log[e + f*x]^3*Log[g + h*x
```

```
] + b^4*p^4*q^4*Log[e + f*x]^4*Log[g + h*x] + 4*a^3*b*Log[c*(d*(e + f*x)^p)
^q]*Log[g + h*x] - 12*a^2*b^2*p*q*Log[e + f*x]*Log[c*(d*(e + f*x)^p)^q]*Log
[g + h*x] + 12*a*b^3*p^2*q^2*Log[e + f*x]^2*Log[c*(d*(e + f*x)^p)^q]*Log[g
+ h*x] - 4*b^4*p^3*q^3*Log[e + f*x]^3*Log[c*(d*(e + f*x)^p)^q]*Log[g + h*x]
 + 6*a^2*b^2*Log[c*(d*(e + f*x)^p)^q]^2*Log[g + h*x] - 12*a*b^3*p*q*Log[e +
 f*x]*Log[c*(d*(e + f*x)^p)^q]^2*Log[g + h*x] + 6*b^4*p^2*q^2*Log[e + f*x]^
2*Log[c*(d*(e + f*x)^p)^q]^2*Log[g + h*x] + 4*a*b^3*Log[c*(d*(e + f*x)^p)^q
]^3*Log[g + h*x] - 4*b^4*p*q*Log[e + f*x]*Log[c*(d*(e + f*x)^p)^q]^3*Log[g
+ h*x] + b^4*Log[c*(d*(e + f*x)^p)^q]^4*Log[g + h*x] + 4*a^3*b*p*q*Log[e +
f*x]*Log[(f*(g + h*x))/(f*g - e*h)] - 6*a^2*b^2*p^2*q^2*Log[e + f*x]^2*Log[
(f*(g + h*x))/(f*g - e*h)] + 4*a*b^3*p^3*q^3*Log[e + f*x]^3*Log[(f*(g + h*x
))/(f*g - e*h)] - b^4*p^4*q^4*Log[e + f*x]^4*Log[(f*(g + h*x))/(f*g - e*h)]
 + 12*a^2*b^2*p*q*Log[e + f*x]*Log[c*(d*(e + f*x)^p)^q]*Log[(f*(g + h*x))/(
f*g - e*h)] - 12*a*b^3*p^2*q^2*Log[e + f*x]^2*Log[c*(d*(e + f*x)^p)^q]*Log[
(f*(g + h*x))/(f*g - e*h)] + 4*b^4*p^3*q^3*Log[e + f*x]^3*Log[c*(d*(e + f*x
)^p)^q]*Log[(f*(g + h*x))/(f*g - e*h)] + 12*a*b^3*p*q*Log[e + f*x]*Log[c*(d
*(e + f*x)^p)^q]^2*Log[(f*(g + h*x))/(f*g - e*h)] - 6*b^4*p^2*q^2*Log[e + f
*x]^2*Log[c*(d*(e + f*x)^p)^q]^2*Log[(f*(g + h*x))/(f*g - e*h)] + 4*b^4*p*q
*Log[e + f*x]*Log[c*(d*(e + f*x)^p)^q]^3*Log[(f*(g + h*x))/(f*g - e*h)] + 4
*b*p*q*(a + b*Log[c*(d*(e + f*x)^p)^q])^3*PolyLog[2, (h*(e + f*x))/(-(f*g)
+ e*h)] - 12*b^2*p^2*q^2*(a + b*Log[c*(d*(e + f*x)^p)^q])^2*PolyLog[3, (h*(
e + f*x))/(-(f*g) + e*h)] + 24*a*b^3*p^3*q^3*PolyLog[4, (h*(e + f*x))/(-(f*
g) + e*h)] + 24*b^4*p^3*q^3*Log[c*(d*(e + f*x)^p)^q]*PolyLog[4, (h*(e + f*x
))/(-(f*g) + e*h)] - 24*b^4*p^4*q^4*PolyLog[5, (h*(e + f*x))/(-(f*g) + e*h)
])/h
```

Maple [F]
time = 0.21, size = 0, normalized size = 0.00

$$\int \frac{\left(a+b\ln\left(c\left(d(fx+e)^{p}\right)^{q}\right)\right)^{4}}{hx+g}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(d*(f*x+e)^p)^q))^4/(h*x+g),x)
```

```
[Out] int((a+b*ln(c*(d*(f*x+e)^p)^q))^4/(h*x+g),x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^4/(h*x+g),x, algorithm="maxima")
```

```
[Out] a^4*log(h*x + g)/h + integrate((b^4*log(((f*x + e)^p)^q)^4 + 4*(q*log(d) +
log(c))*a^3*b + 6*(q^2*log(d)^2 + 2*q*log(c)*log(d) + log(c)^2)*a^2*b^2 + 4
```

```
*(q^3*log(d)^3 + 3*q^2*log(c)*log(d)^2 + 3*q*log(c)^2*log(d) + log(c)^3)*a*
b^3 + (q^4*log(d)^4 + 4*q^3*log(c)*log(d)^3 + 6*q^2*log(c)^2*log(d)^2 + 4*q
*log(c)^3*log(d) + log(c)^4)*b^4 + 4*((q*log(d) + log(c))*b^4 + a*b^3)*log(
((f*x + e)^p)^q)^3 + 6*(2*(q*log(d) + log(c))*a*b^3 + (q^2*log(d)^2 + 2*q*l
og(c)*log(d) + log(c)^2)*b^4 + a^2*b^2)*log(((f*x + e)^p)^q)^2 + 4*(3*(q*lo
g(d) + log(c))*a^2*b^2 + 3*(q^2*log(d)^2 + 2*q*log(c)*log(d) + log(c)^2)*a*
b^3 + (q^3*log(d)^3 + 3*q^2*log(c)*log(d)^2 + 3*q*log(c)^2*log(d) + log(c)^
3)*b^4 + a^3*b)*log(((f*x + e)^p)^q))/(h*x + g), x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^4/(h*x+g),x, algorithm="fricas")
[Out] integral((b^4*log(((f*x + e)^p*d)^q*c)^4 + 4*a*b^3*log(((f*x + e)^p*d)^q*c)
^3 + 6*a^2*b^2*log(((f*x + e)^p*d)^q*c)^2 + 4*a^3*b*log(((f*x + e)^p*d)^q*c
) + a^4)/(h*x + g), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(a + b \log{\left(c \left(d \left(e + f x\right)^{p}\right)^{q} \right)}\right)^{4}}{g + h x}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))**4/(h*x+g),x)
[Out] Integral((a + b*log(c*(d*(e + f*x)**p)**q))**4/(g + h*x), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^4/(h*x+g),x, algorithm="giac")
[Out] integrate((b*log(((f*x + e)^p*d)^q*c) + a)^4/(h*x + g), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{{\left(a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)\right)}^4}{g+h\,x} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d*(e + f*x)^p)^q))^4/(g + h*x),x)
[Out] int((a + b*log(c*(d*(e + f*x)^p)^q))^4/(g + h*x), x)
```

3.443 $\int \frac{(a+b\log(c(d(e+fx)^p)^q))^4}{(g+hx)^2} dx$

Optimal. Leaf size=274

$$\frac{(e+fx)\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)^4}{(fg-eh)(g+hx)}-\frac{4bfpq(a+b\log\left(c(d(e+fx)^p)^q\right))^3\log\left(\frac{f(g+hx)}{fg-eh}\right)}{h(fg-eh)}-\frac{12b^2fp^2q^2(a+b\log$$

```
[Out] (f*x+e)*(a+b*ln(c*(d*(f*x+e)^p)^q))^4/(-e*h+f*g)/(h*x+g)-4*b*f*p*q*(a+b*ln(
c*(d*(f*x+e)^p)^q))^3*ln(f*(h*x+g)/(-e*h+f*g))/h/(-e*h+f*g)-12*b^2*f*p^2*q^
2*(a+b*ln(c*(d*(f*x+e)^p)^q))^2*polylog(2,-h*(f*x+e)/(-e*h+f*g))/h/(-e*h+f*
g)+24*b^3*f*p^3*q^3*(a+b*ln(c*(d*(f*x+e)^p)^q))*polylog(3,-h*(f*x+e)/(-e*h+
f*g))/h/(-e*h+f*g)-24*b^4*f*p^4*q^4*polylog(4,-h*(f*x+e)/(-e*h+f*g))/h/(-e*
h+f*g)
```

Rubi [A]
time = 0.35, antiderivative size = 274, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 7, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}} = 0.250$, Rules used = {2444, 2443, 2481, 2421, 2430, 6724, 2495}

$$\frac{24b^3fp^3q^3\text{PolyLog}\left(3,-\frac{h(e+fx)}{fg-eh}\right)\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)}{h(fg-eh)}-\frac{12b^2fp^2q^2\text{PolyLog}\left(2,-\frac{h(e+fx)}{fg-eh}\right)\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)^2}{h(fg-eh)}-\frac{24b^4fp^4q^4\text{PolyLog}\left(4,-\frac{h(e+fx)}{fg-eh}\right)}{h(fg-eh)}-\frac{4bfpq\log\left(\frac{f(g+hx)}{fg-eh}\right)\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)^3}{h(fg-eh)}+\frac{(e+fx)\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)^4}{(g+hx)(fg-eh)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])^4/(g + h*x)^2,x]
```

```
[Out] ((e + f*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^4)/((f*g - e*h)*(g + h*x)) - (4
*b*f*p*q*(a + b*Log[c*(d*(e + f*x)^p)^q])^3*Log[(f*(g + h*x))/(f*g - e*h)])
/(h*(f*g - e*h)) - (12*b^2*f*p^2*q^2*(a + b*Log[c*(d*(e + f*x)^p)^q])^2*Pol
yLog[2, -((h*(e + f*x))/(f*g - e*h))])/(h*(f*g - e*h)) + (24*b^3*f*p^3*q^3*
(a + b*Log[c*(d*(e + f*x)^p)^q])*PolyLog[3, -((h*(e + f*x))/(f*g - e*h))])/
(h*(f*g - e*h)) - (24*b^4*f*p^4*q^4*PolyLog[4, -((h*(e + f*x))/(f*g - e*h))
])/(h*(f*g - e*h))
```

Rule 2421

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> Simp[(-PolyLog[2, (-d)*f*x^m])*((a + b*Log[c
*x^n])^p/m), x] + Dist[b*n*(p/m), Int[PolyLog[2, (-d)*f*x^m]*((a + b*Log[c*
x^n])^(p - 1)/x), x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0
] && EqQ[d*e, 1]
```

Rule 2430

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*PolyLog[k_, (e_.)*(x_)^(q_
.)])/(x_), x_Symbol] :> Simp[PolyLog[k + 1, e*x^q]*((a + b*Log[c*x^n])^p/q)
, x] - Dist[b*n*(p/q), Int[PolyLog[k + 1, e*x^q]*((a + b*Log[c*x^n])^(p - 1
```

```
)/x), x], x] /; FreeQ[{a, b, c, e, k, n, q}, x] && GtQ[p, 0]
```

Rule 2443

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d
+ e*x)^n])^p/g), x] - Dist[b*e*n*(p/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]*
((a + b*Log[c*(d + e*x)^n])^(p - 1)/(d + e*x)), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2444

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_))^2, x_Symbol] :> Simp[(d + e*x)*((a + b*Log[c*(d + e*x)^n])^p/((e*f
- d*g)*(f + g*x))), x] - Dist[b*e*n*(p/(e*f - d*g)), Int[(a + b*Log[c*(d +
e*x)^n])^(p - 1)/(f + g*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] &&
 NeQ[e*f - d*g, 0] && GtQ[p, 0]
```

Rule 2481

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[(k*(x/d))^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + j*(x/e))^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2495

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rule 6724

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(a+b\log(c(d(e+fx)^p)^q))^4}{(g+hx)^2}\,dx = \text{Subst}\left(\int \frac{(a+b\log(cd^q(e+fx)^{pq}))^4}{(g+hx)^2}\,dx, cd^q(e+fx)^{pq}, c(d(e+fx)^p)^q\right.$$

$$= \frac{(e+fx)\,(a+b\log(c(d(e+fx)^p)^q))^4}{(fg-eh)(g+hx)} - \text{Subst}\left(\frac{(4bfpq)\int \frac{(a+b\log(cd^q(e+}{g+hx}}{fg-eh}\right.$$

$$= \frac{(e+fx)\,(a+b\log(c(d(e+fx)^p)^q))^4}{(fg-eh)(g+hx)} - \frac{4bfpq(a+b\log(c(d(e+fx)^p)}{h(fg-eh)}$$

$$= \frac{(e+fx)\,(a+b\log(c(d(e+fx)^p)^q))^4}{(fg-eh)(g+hx)} - \frac{4bfpq(a+b\log(c(d(e+fx)^p)}{h(fg-eh)}$$

$$= \frac{(e+fx)\,(a+b\log(c(d(e+fx)^p)^q))^4}{(fg-eh)(g+hx)} - \frac{4bfpq(a+b\log(c(d(e+fx)^p)}{h(fg-eh)}$$

$$= \frac{(e+fx)\,(a+b\log(c(d(e+fx)^p)^q))^4}{(fg-eh)(g+hx)} - \frac{4bfpq(a+b\log(c(d(e+fx)^p)}{h(fg-eh)}$$

$$= \frac{(e+fx)\,(a+b\log(c(d(e+fx)^p)^q))^4}{(fg-eh)(g+hx)} - \frac{4bfpq(a+b\log(c(d(e+fx)^p)}{h(fg-eh)}$$

Mathematica [B] Leaf count is larger than twice the leaf count of optimal. 1301 vs. $2(274) = 548$.
time = 0.32, size = 1301, normalized size = 4.75

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])^4/(g + h*x)^2,x]
```

```
[Out] (a^4*f*g - a^4*e*h - 4*a^3*b*f*g*p*q*Log[e + f*x] - 4*a^3*b*f*h*p*q*x*Log[e
 + f*x] + 6*a^2*b^2*f*g*p^2*q^2*Log[e + f*x]^2 + 6*a^2*b^2*f*h*p^2*q^2*x*Lo
g[e + f*x]^2 - 4*a*b^3*f*g*p^3*q^3*Log[e + f*x]^3 - 4*a*b^3*f*h*p^3*q^3*x*L
```

```
og[e + f*x]^3 + b^4*f*g*p^4*q^4*Log[e + f*x]^4 + b^4*f*h*p^4*q^4*x*Log[e +
f*x]^4 + 4*a^3*b*f*g*Log[c*(d*(e + f*x)^p)^q] - 4*a^3*b*e*h*Log[c*(d*(e + f
*x)^p)^q] - 12*a^2*b^2*f*g*p*q*Log[e + f*x]*Log[c*(d*(e + f*x)^p)^q] - 12*a
^2*b^2*f*h*p*q*x*Log[e + f*x]*Log[c*(d*(e + f*x)^p)^q] + 12*a*b^3*f*g*p^2*q
^2*Log[e + f*x]^2*Log[c*(d*(e + f*x)^p)^q] + 12*a*b^3*f*h*p^2*q^2*x*Log[e +
 f*x]^2*Log[c*(d*(e + f*x)^p)^q] - 4*b^4*f*g*p^3*q^3*Log[e + f*x]^3*Log[c*(
d*(e + f*x)^p)^q] - 4*b^4*f*h*p^3*q^3*x*Log[e + f*x]^3*Log[c*(d*(e + f*x)^p
)^q] + 6*a^2*b^2*f*g*Log[c*(d*(e + f*x)^p)^q]^2 - 6*a^2*b^2*e*h*Log[c*(d*(e
 + f*x)^p)^q]^2 - 12*a*b^3*f*g*p*q*Log[e + f*x]*Log[c*(d*(e + f*x)^p)^q]^2
- 12*a*b^3*f*h*p*q*x*Log[e + f*x]*Log[c*(d*(e + f*x)^p)^q]^2 + 6*b^4*f*g*p^
2*q^2*Log[e + f*x]^2*Log[c*(d*(e + f*x)^p)^q]^2 + 6*b^4*f*h*p^2*q^2*x*Log[e
 + f*x]^2*Log[c*(d*(e + f*x)^p)^q]^2 + 4*a*b^3*f*g*Log[c*(d*(e + f*x)^p)^q]
^3 - 4*a*b^3*e*h*Log[c*(d*(e + f*x)^p)^q]^3 - 4*b^4*f*g*p*q*Log[e + f*x]*Lo
g[c*(d*(e + f*x)^p)^q]^3 - 4*b^4*f*h*p*q*x*Log[e + f*x]*Log[c*(d*(e + f*x)^
p)^q]^3 + b^4*f*g*Log[c*(d*(e + f*x)^p)^q]^4 - b^4*e*h*Log[c*(d*(e + f*x)^p
)^q]^4 + 4*a^3*b*f*g*p*q*Log[(f*(g + h*x))/(f*g - e*h)] + 4*a^3*b*f*h*p*q*x
*Log[(f*(g + h*x))/(f*g - e*h)] + 12*a^2*b^2*f*g*p*q*Log[c*(d*(e + f*x)^p)^
q]*Log[(f*(g + h*x))/(f*g - e*h)] + 12*a^2*b^2*f*h*p*q*x*Log[c*(d*(e + f*x)
^p)^q]*Log[(f*(g + h*x))/(f*g - e*h)] + 12*a*b^3*f*g*p*q*Log[c*(d*(e + f*x)
^p)^q]^2*Log[(f*(g + h*x))/(f*g - e*h)] + 12*a*b^3*f*h*p*q*x*Log[c*(d*(e +
f*x)^p)^q]^2*Log[(f*(g + h*x))/(f*g - e*h)] + 4*b^4*f*g*p*q*Log[c*(d*(e + f
*x)^p)^q]^3*Log[(f*(g + h*x))/(f*g - e*h)] + 4*b^4*f*h*p*q*x*Log[c*(d*(e +
f*x)^p)^q]^3*Log[(f*(g + h*x))/(f*g - e*h)] + 12*b^2*f*p^2*q^2*(g + h*x)*(a
 + b*Log[c*(d*(e + f*x)^p)^q])^2*PolyLog[2, (h*(e + f*x))/(-(f*g) + e*h)] -
 24*b^3*f*p^3*q^3*(g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])*PolyLog[3, (h*
(e + f*x))/(-(f*g) + e*h)] + 24*b^4*f*g*p^4*q^4*PolyLog[4, (h*(e + f*x))/(-
(f*g) + e*h)] + 24*b^4*f*h*p^4*q^4*x*PolyLog[4, (h*(e + f*x))/(-(f*g) + e*h
)])/(h*(-(f*g) + e*h)*(g + h*x))
```

Maple [F]
time = 0.24, size = 0, normalized size = 0.00

$$\int \frac{\left(a + b \ln \left(c \left(d \left(f x + e\right)^{p}\right)^{q}\right)\right)^{4}}{\left(h x + g\right)^{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(d*(f*x+e)^p)^q))^4/(h*x+g)^2,x)
```

```
[Out] int((a+b*ln(c*(d*(f*x+e)^p)^q))^4/(h*x+g)^2,x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^4/(h*x+g)^2,x, algorithm="maxima")
```

```
[Out] 4*a^3*b*f*p*q*(log(f*x + e)/(f*g*h - h^2*e) - log(h*x + g)/(f*g*h - h^2*e))
 - b^4*log(((f*x + e)^p)^q)^4/(h^2*x + g*h) - 4*a^3*b*log(((f*x + e)^p*d)^q
*c)/(h^2*x + g*h) - a^4/(h^2*x + g*h) + integrate((4*(b^4*f*g*p*q + (a*b^3*
f*h + (f*h*p*q + f*h*q*log(d) + f*h*log(c))*b^4)*x + ((h*q*log(d) + h*log(c
))*b^4 + a*b^3*h)*e)*log(((f*x + e)^p)^q)^3 + 6*((a^2*b^2*f*h + 2*(f*h*q*lo
g(d) + f*h*log(c))*a*b^3 + (f*h*q^2*log(d)^2 + 2*f*h*q*log(c)*log(d) + f*h*
log(c)^2)*b^4)*x + (2*(h*q*log(d) + h*log(c))*a*b^3 + (h*q^2*log(d)^2 + 2*h
*q*log(c)*log(d) + h*log(c)^2)*b^4 + a^2*b^2*h)*e)*log(((f*x + e)^p)^q)^2 +
 (6*(f*h*q^2*log(d)^2 + 2*f*h*q*log(c)*log(d) + f*h*log(c)^2)*a^2*b^2 + 4*(
f*h*q^3*log(d)^3 + 3*f*h*q^2*log(c)*log(d)^2 + 3*f*h*q*log(c)^2*log(d) + f*
h*log(c)^3)*a*b^3 + (f*h*q^4*log(d)^4 + 4*f*h*q^3*log(c)*log(d)^3 + 6*f*h*q
^2*log(c)^2*log(d)^2 + 4*f*h*q*log(c)^3*log(d) + f*h*log(c)^4)*b^4)*x + (6*
(h*q^2*log(d)^2 + 2*h*q*log(c)*log(d) + h*log(c)^2)*a^2*b^2 + 4*(h*q^3*log(
d)^3 + 3*h*q^2*log(c)*log(d)^2 + 3*h*q*log(c)^2*log(d) + h*log(c)^3)*a*b^3
+ (h*q^4*log(d)^4 + 4*h*q^3*log(c)*log(d)^3 + 6*h*q^2*log(c)^2*log(d)^2 + 4
*h*q*log(c)^3*log(d) + h*log(c)^4)*b^4)*e + 4*((3*(f*h*q*log(d) + f*h*log(c
))*a^2*b^2 + 3*(f*h*q^2*log(d)^2 + 2*f*h*q*log(c)*log(d) + f*h*log(c)^2)*a*
b^3 + (f*h*q^3*log(d)^3 + 3*f*h*q^2*log(c)*log(d)^2 + 3*f*h*q*log(c)^2*log(
d) + f*h*log(c)^3)*b^4)*x + (3*(h*q*log(d) + h*log(c))*a^2*b^2 + 3*(h*q^2*l
og(d)^2 + 2*h*q*log(c)*log(d) + h*log(c)^2)*a*b^3 + (h*q^3*log(d)^3 + 3*h*q
^2*log(c)*log(d)^2 + 3*h*q*log(c)^2*log(d) + h*log(c)^3)*b^4)*e)*log(((f*x
+ e)^p)^q))/(f*h^3*x^3 + g^2*h*e + (2*f*g*h^2 + h^3*e)*x^2 + (f*g^2*h + 2*g
*h^2*e)*x), x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^4/(h*x+g)^2,x, algorithm="fricas")
```

```
[Out] integral((b^4*log(((f*x + e)^p*d)^q*c)^4 + 4*a*b^3*log(((f*x + e)^p*d)^q*c)
^3 + 6*a^2*b^2*log(((f*x + e)^p*d)^q*c)^2 + 4*a^3*b*log(((f*x + e)^p*d)^q*c
) + a^4)/(h^2*x^2 + 2*g*h*x + g^2), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(a + b\log\left(c\left(d\left(e + fx\right)^{p}\right)^{q}\right)\right)^{4}}{\left(g + hx\right)^{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))**4/(h*x+g)**2,x)
```

```
[Out] Integral((a + b*log(c*(d*(e + f*x)**p)**q))**4/(g + h*x)**2, x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^4/(h*x+g)^2,x, algorithm="giac")
[Out] integrate((b*log(((f*x + e)^p*d)^q*c) + a)^4/(h*x + g)^2, x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)\right)^4}{{\left(g+h\,x\right)}^2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d*(e + f*x)^p)^q))^4/(g + h*x)^2,x)
[Out] int((a + b*log(c*(d*(e + f*x)^p)^q))^4/(g + h*x)^2, x)
```

3.444 $\int \log \left(c(d(e+fx)^p)^q\right) dx$

Optimal. Leaf size=29

$$-pqx+\frac{(e+fx)\log \left(c(d(e+fx)^p)^q\right)}{f}$$

[Out] -p*q*x+(f*x+e)*ln(c*(d*(f*x+e)^p)^q)/f

Rubi [A]
time = 0.02, antiderivative size = 29, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}} = 0.214$, Rules used = {2436, 2332, 2495}

$$\frac{(e+fx)\log \left(c(d(e+fx)^p)^q\right)}{f}-pqx$$

Antiderivative was successfully verified.

[In] Int[Log[c*(d*(e + f*x)^p)^q],x]

[Out] -(p*q*x) + ((e + f*x)*Log[c*(d*(e + f*x)^p)^q])/f

Rule 2332

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2436

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2495

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \log \left(c(d(e+fx)^p)^q\right) dx = \text{Subst}\left(\int \log \left(cd^q(e+fx)^{pq}\right) dx, cd^q(e+fx)^{pq}, c(d(e+fx)^p)^q\right)$$
$$= \text{Subst}\left(\frac{\text{Subst}\left(\int \log \left(cd^q x^{pq}\right) dx, x, e+fx\right)}{f}, cd^q(e+fx)^{pq}, c(d(e+fx)^p)^q\right)$$
$$= -pqx + \frac{(e+fx)\log \left(c(d(e+fx)^p)^q\right)}{f}$$

Mathematica [A]
time = 0.01, size = 29, normalized size = 1.00

$$-pqx + \frac{(e+fx)\log \left(c(d(e+fx)^p)^q\right)}{f}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[c*(d*(e + f*x)^p)^q],x]
```

```
[Out] -(p*q*x) + ((e + f*x)*Log[c*(d*(e + f*x)^p)^q])/f
```

Maple [A]
time = 0.07, size = 41, normalized size = 1.41

method	result	size
default	$\ln \left(c(d(fx+e)^p)^q\right) x - qpf\left(\frac{x}{f} - \frac{e\ln(fx+e)}{f^2}\right)$	41

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(c*(d*(f*x+e)^p)^q),x,method=_RETURNVERBOSE)
```

```
[Out] ln(c*(d*(f*x+e)^p)^q)*x-q*p*f*(1/f*x-e/f^2*ln(f*x+e))
```

Maxima [A]
time = 0.27, size = 43, normalized size = 1.48

$$-fpq\left(\frac{x}{f} - \frac{e\log (fx+e)}{f^2}\right) + x\log \left(((fx+e)^p d)^q c\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(d*(f*x+e)^p)^q),x, algorithm="maxima")
```

```
[Out] -f*p*q*(x/f - e*log(f*x + e)/f^2) + x*log(((f*x + e)^p*d)^q*c)
```

Fricas [A]
time = 0.35, size = 44, normalized size = 1.52

$$-\frac{fpqx - fqx\log(d) - fx\log(c) - (fpqx + pqe)\log(fx + e)}{f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(d*(f*x+e)^p)^q),x, algorithm="fricas")
[Out] -(f*p*q*x - f*q*x*log(d) - f*x*log(c) - (f*p*q*x + p*q*e)*log(f*x + e))/f
```

Sympy [A]
time = 0.22, size = 48, normalized size = 1.66

$$\begin{cases} \frac{e\log(c(d(e+fx)^p)^q)}{f} - pqx + x\log(c(d(e+fx)^p)^q) & \text{for } f \neq 0 \\ x\log(c(de^p)^q) & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(c*(d*(f*x+e)**p)**q),x)
[Out] Piecewise((e*log(c*(d*(e + f*x)**p)**q)/f - p*q*x + x*log(c*(d*(e + f*x)**p
)**q), Ne(f, 0)), (x*log(c*(d*e**p)**q), True))
```

Giac [A]
time = 4.06, size = 58, normalized size = 2.00

$$\frac{(fx+e)pq\log(fx+e)}{f} - \frac{(fx+e)pq}{f} + \frac{(fx+e)q\log(d)}{f} + \frac{(fx+e)\log(c)}{f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(d*(f*x+e)^p)^q),x, algorithm="giac")
[Out] (f*x + e)*p*q*log(f*x + e)/f - (f*x + e)*p*q/f + (f*x + e)*q*log(d)/f + (f*
x + e)*log(c)/f
```

Mupad [B]
time = 0.07, size = 36, normalized size = 1.24

$$x\ln\left(c\left(d\left(e+f\,x\right)^p\right)^q\right) + \frac{p\,q\,\left(e\,\ln\left(e+f\,x\right) - f\,x\right)}{f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(log(c*(d*(e + f*x)^p)^q),x)
[Out] x*log(c*(d*(e + f*x)^p)^q) + (p*q*(e*log(e + f*x) - f*x))/f
```

3.445 $\int \frac{(g+hx)^2}{a+b\log(c(d(e+fx)^p)^q)}\,dx$

Optimal. Leaf size=279

$$\frac{e^{-\frac{a}{bpq}}(fg-eh)^2(e+fx)\left(c(d(e+fx)^p)^q\right)^{-\frac{1}{pq}}\operatorname{Ei}\left(\frac{a+b\log(c(d(e+fx)^p)^q)}{bpq}\right)}{bf^3pq}+\frac{2e^{-\frac{2a}{bpq}}h(fg-eh)(e+fx)^2\left(c(d(e+\right.}{bf^3}$$

```
[Out] (-e*h+f*g)^2*(f*x+e)*Ei((a+b*ln(c*(d*(f*x+e)^p)^q))/b/p/q)/b/exp(a/b/p/q)/f
^3/p/q/((c*(d*(f*x+e)^p)^q)^(1/p/q))+2*h*(-e*h+f*g)*(f*x+e)^2*Ei(2*(a+b*ln(
c*(d*(f*x+e)^p)^q))/b/p/q)/b/exp(2*a/b/p/q)/f^3/p/q/((c*(d*(f*x+e)^p)^q)^(2
/p/q))+h^2*(f*x+e)^3*Ei(3*(a+b*ln(c*(d*(f*x+e)^p)^q))/b/p/q)/b/exp(3*a/b/p/
q)/f^3/p/q/((c*(d*(f*x+e)^p)^q)^(3/p/q))
```

Rubi [A]
time = 0.53, antiderivative size = 279, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 7, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}} = 0.250$, Rules used = {2446, 2436, 2337, 2209, 2437, 2347, 2495}

$$\frac{2h(e+fx)^2e^{-\frac{2a}{bpq}}(fg-eh)\left(c(d(e+fx)^p)^q\right)^{-\frac{2}{pq}}\operatorname{Ei}\left(\frac{2(a+b\log(c(d(e+fx)^p)^q))}{bpq}\right)}{bf^3pq}+\frac{(e+fx)e^{-\frac{a}{bpq}}(fg-eh)^2\left(c(d(e+fx)^p)^q\right)^{-\frac{1}{pq}}\operatorname{Ei}\left(\frac{a+b\log(c(d(e+fx)^p)^q)}{bpq}\right)}{bf^3pq}+\frac{h^2(e+fx)^3e^{-\frac{3a}{bpq}}\left(c(d(e+fx)^p)^q\right)^{-\frac{3}{pq}}\operatorname{Ei}\left(\frac{3(a+b\log(c(d(e+fx)^p)^q))}{bpq}\right)}{bf^3pq}$$

Antiderivative was successfully verified.

```
[In] Int[(g + h*x)^2/(a + b*Log[c*(d*(e + f*x)^p)^q]),x]
```

```
[Out] ((f*g - e*h)^2*(e + f*x)*ExpIntegralEi[(a + b*Log[c*(d*(e + f*x)^p)^q])/(b*
p*q)])/(b*E^(a/(b*p*q))*f^3*p*q*(c*(d*(e + f*x)^p)^q)^(1/(p*q))) + (2*h*(f*
g - e*h)*(e + f*x)^2*ExpIntegralEi[(2*(a + b*Log[c*(d*(e + f*x)^p)^q]))/(b*
p*q)])/(b*E^((2*a)/(b*p*q))*f^3*p*q*(c*(d*(e + f*x)^p)^q)^(2/(p*q))) + (h^2
*(e + f*x)^3*ExpIntegralEi[(3*(a + b*Log[c*(d*(e + f*x)^p)^q]))/(b*p*q)])/(
b*E^((3*a)/(b*p*q))*f^3*p*q*(c*(d*(e + f*x)^p)^q)^(3/(p*q)))
```

Rule 2209

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/((c_.) + (d_.)*(x_)), x_Symbol] :> Si
mp[(F^(g*(e - c*(f/d)))/d)*ExpIntegralEi[f*g*(c + d*x)*(Log[F]/d)], x] /; F
reeQ[{F, c, d, e, f, g}, x] &&  !TrueQ[$UseGamma]
```

Rule 2337

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2347

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_)*((d_.)*(x_))^(m_.), x_Symbol
] :> Dist[(d*x)^(m + 1)/(d*n*(c*x^n)^((m + 1)/n)), Subst[Int[E^(((m + 1)/n)
```

```
*x)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b, c, d, m, n, p}, x]
```

Rule 2436

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2437

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[(f*(x/d))^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2446

```
Int[((f_.) + (g_.)*(x_))^(q_.)/((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)
]*(b_.)), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q/(a + b*Log[c*(d + e*
x)^n]), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0] &
& IGtQ[q, 0]
```

Rule 2495

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\begin{aligned}
\int \frac{(g+hx)^2}{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}\,dx &= \text{Subst}\left(\int \frac{(g+hx)^2}{a+b\log\left(cd^q(e+fx)^{pq}\right)}\,dx, cd^q(e+fx)^{pq}, c(d(e+fx)^p)^q\right) \\
&= \text{Subst}\left(\int \left(\frac{(fg-eh)^2}{f^2\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)} + \frac{2h(fg-eh)(e+fx)}{f^2\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right.}\right.\right. \\
&= \text{Subst}\left(\frac{h^2\int \frac{(e+fx)^2}{a+b\log(cd^q(e+fx)^{pq})}\,dx}{f^2}, cd^q(e+fx)^{pq}, c(d(e+fx)^p)^q\right) + \text{Subs} \\
&= \text{Subst}\left(\frac{h^2\text{Subst}\left(\int \frac{x^2}{a+b\log(cd^qx^{pq})}\,dx, x, e+fx\right)}{f^3}, cd^q(e+fx)^{pq}, c(d(e+f\right.\right. \\
&= \text{Subst}\left(\frac{\left(h^2(e+fx)^3\left(cd^q(e+fx)^{pq}\right)^{-\frac{3}{pq}}\right)\text{Subst}\left(\int \frac{e^{\frac{3x}{pq}}}{a+bx}\,dx, x, \log\left(cd^q(e\right.\right.}{f^3pq}\right. \\
&= \frac{e^{-\frac{a}{bpq}}(fg-eh)^2(e+fx)\left(c(d(e+fx)^p)^q\right)^{-\frac{1}{pq}}\text{Ei}\left(\frac{a+b\log(c(d(e+fx)^p)^q)}{bpq}\right)}{bf^3pq} + \frac{2}{-}
\end{aligned}$$

Mathematica [A]
time = 0.48, size = 252, normalized size = 0.90

$$\frac{e^{-\frac{3a}{bpq}}(e+fx)\left(c(d(e+fx)^p)^q\right)^{-\frac{3}{pq}}\left(e^{\frac{2a}{bpq}}(fg-eh)^2\left(c(d(e+fx)^p)^q\right)^{\frac{2}{pq}}\text{Ei}\left(\frac{a+b\log(c(d(e+fx)^p)^q)}{bpq}\right)-h(e+fx)\left(-2e^{\frac{a}{bpq}}(fg-eh)\left(c(d(e+fx)^p)^q\right)^{\frac{1}{pq}}\text{Ei}\left(\frac{2(a+b\log(c(d(e+fx)^p)^q))}{bpq}\right)-h(e+fx)\text{Ei}\left(\frac{3(a+b\log(c(d(e+fx)^p)^q))}{bpq}\right)\right)\right)}{bf^3pq}$$

Antiderivative was successfully verified.

```
[In] Integrate[(g + h*x)^2/(a + b*Log[c*(d*(e + f*x)^p)^q]),x]
```

```
[Out] ((e + f*x)*(E^((2*a)/(b*p*q))*(f*g - e*h)^2*(c*(d*(e + f*x)^p)^q)^(2/(p*q))
*ExpIntegralEi[(a + b*Log[c*(d*(e + f*x)^p)^q])/(b*p*q)] - h*(e + f*x)*(-2*
E^(a/(b*p*q))*(f*g - e*h)*(c*(d*(e + f*x)^p)^q)^(1/(p*q))*ExpIntegralEi[(2*
(a + b*Log[c*(d*(e + f*x)^p)^q]))/(b*p*q)] - h*(e + f*x)*ExpIntegralEi[(3*(
a + b*Log[c*(d*(e + f*x)^p)^q]))/(b*p*q)])))/(b*E^((3*a)/(b*p*q))*f^3*p*q*(
c*(d*(e + f*x)^p)^q)^(3/(p*q)))
```

Maple [F]
time = 0.19, size = 0, normalized size = 0.00

$$\int \frac{(hx+g)^2}{a+b\ln\left(c\left(d\left(fx+e\right)^p\right)^q\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x+g)^2/(a+b*ln(c*(d*(f*x+e)^p)^q)),x)
```

```
[Out] int((h*x+g)^2/(a+b*ln(c*(d*(f*x+e)^p)^q)),x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^2/(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="maxima")
```

```
[Out] integrate((h*x + g)^2/(b*log(((f*x + e)^p*d)^q*c) + a), x)
```

Fricas [A]
time = 0.39, size = 244, normalized size = 0.87

$$\frac{\left(h^{2} \mathrm{log\_integral}\left(\left(f^{3} x^{3}+3 f^{2} x^{2} e+3 f x e^{2}+e^{3}\right) e^{\left(\frac{3 \left(b q \log\left(d\right)+b \log\left(c\right)+a\right)}{b p q}\right)}\right)+2 \left(f g h-h^{2} e\right) e^{\left(\frac{b q \log\left(d\right)+b \log\left(c\right)+a}{b p q}\right)} \mathrm{log\_integral}\left(\left(f^{2} x^{2}+2 f x e+e^{2}\right) e^{\left(\frac{2 \left(b q \log\left(d\right)+b \log\left(c\right)+a\right)}{b p q}\right)}\right)+\left(f^{2} g^{2}-2 f g h e+h^{2} e^{2}\right) e^{\left(\frac{2 \left(b q \log\left(d\right)+b \log\left(c\right)+a\right)}{b p q}\right)} \mathrm{log\_integral}\left(\left(f x+e\right) e^{\left(\frac{b q \log\left(d\right)+b \log\left(c\right)+a}{b p q}\right)}\right)\right) e^{\left(-\frac{3 \left(b q \log\left(d\right)+b \log\left(c\right)+a\right)}{b p q}\right)}}{b f^{3} p q}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^2/(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="fricas")
```

```
[Out] (h^2*log_integral((f^3*x^3 + 3*f^2*x^2*e + 3*f*x*e^2 + e^3)*e^(3*(b*q*log(d
) + b*log(c) + a)/(b*p*q))) + 2*(f*g*h - h^2*e)*e^((b*q*log(d) + b*log(c) +
 a)/(b*p*q))*log_integral((f^2*x^2 + 2*f*x*e + e^2)*e^(2*(b*q*log(d) + b*lo
g(c) + a)/(b*p*q))) + (f^2*g^2 - 2*f*g*h*e + h^2*e^2)*e^(2*(b*q*log(d) + b*
log(c) + a)/(b*p*q))*log_integral((f*x + e)*e^((b*q*log(d) + b*log(c) + a)/
(b*p*q))))*e^(-3*(b*q*log(d) + b*log(c) + a)/(b*p*q))/(b*f^3*p*q)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(g + h x\right)^{2}}{a + b \log{\left(c \left(d \left(e + f x\right)^{p}\right)^{q} \right)}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)**2/(a+b*ln(c*(d*(f*x+e)**p)**q)),x)
```

```
[Out] Integral((g + h*x)**2/(a + b*log(c*(d*(e + f*x)**p)**q)), x)
```

Giac [A]
time = 5.19, size = 524, normalized size = 1.88

$$\frac{g^{2} \mathrm{Ei}\left(\frac{\log\left(d\right)}{p}+\frac{\log\left(c\right)}{p q}+\frac{a}{b p q}+\log\left(f x+e\right)\right) e^{\left(-\frac{a}{b p q}\right)}}{b c^{\frac{1}{p q}} d^{\left(\frac{1}{p}\right)} f p q}-\frac{2 \, g h \mathrm{Ei}\left(\frac{\log\left(d\right)}{p}+\frac{\log\left(c\right)}{p q}+\frac{a}{b p q}+\log\left(f x+e\right)\right) e^{\left(-\frac{a}{b p q}+1\right)}}{b c^{\frac{1}{p q}} d^{\left(\frac{1}{p}\right)} f^{2} p q}+\frac{2 \, g h \mathrm{Ei}\left(\frac{2 \, \log\left(d\right)}{p}+\frac{2 \, \log\left(c\right)}{p q}+\frac{2 \, a}{b p q}+2 \, \log\left(f x+e\right)\right) e^{\left(-\frac{2 \, a}{b p q}\right)}}{b c^{\frac{2}{p q}} d^{\frac{2}{p}} f^{2} p q}+\frac{h^{2} \mathrm{Ei}\left(\frac{\log\left(d\right)}{p}+\frac{\log\left(c\right)}{p q}+\frac{a}{b p q}+\log\left(f x+e\right)\right) e^{\left(-\frac{a}{b p q}+2\right)}}{b c^{\frac{1}{p q}} d^{\left(\frac{1}{p}\right)} f^{3} p q}-\frac{2 \, h^{2} \mathrm{Ei}\left(\frac{2 \, \log\left(d\right)}{p}+\frac{2 \, \log\left(c\right)}{p q}+\frac{2 \, a}{b p q}+2 \, \log\left(f x+e\right)\right) e^{\left(-\frac{2 \, a}{b p q}+1\right)}}{b c^{\frac{2}{p q}} d^{\frac{2}{p}} f^{3} p q}+\frac{h^{2} \mathrm{Ei}\left(\frac{3 \, \log\left(d\right)}{p}+\frac{3 \, \log\left(c\right)}{p q}+\frac{3 \, a}{b p q}+3 \, \log\left(f x+e\right)\right) e^{\left(-\frac{3 \, a}{b p q}\right)}}{b c^{\frac{3}{p q}} d^{\frac{3}{p}} f^{3} p q}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^2/(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="giac")
```

```
[Out] g^2*Ei(log(d)/p + log(c)/(p*q) + a/(b*p*q) + log(f*x + e))*e^(-a/(b*p*q))/(
b*c^(1/(p*q))*d^(1/p)*f*p*q) - 2*g*h*Ei(log(d)/p + log(c)/(p*q) + a/(b*p*q)
 + log(f*x + e))*e^(-a/(b*p*q) + 1)/(b*c^(1/(p*q))*d^(1/p)*f^2*p*q) + 2*g*h
*Ei(2*log(d)/p + 2*log(c)/(p*q) + 2*a/(b*p*q) + 2*log(f*x + e))*e^(-2*a/(b*
p*q))/(b*c^(2/(p*q))*d^(2/p)*f^2*p*q) + h^2*Ei(log(d)/p + log(c)/(p*q) + a/
(b*p*q) + log(f*x + e))*e^(-a/(b*p*q) + 2)/(b*c^(1/(p*q))*d^(1/p)*f^3*p*q)
- 2*h^2*Ei(2*log(d)/p + 2*log(c)/(p*q) + 2*a/(b*p*q) + 2*log(f*x + e))*e^(-
2*a/(b*p*q) + 1)/(b*c^(2/(p*q))*d^(2/p)*f^3*p*q) + h^2*Ei(3*log(d)/p + 3*lo
g(c)/(p*q) + 3*a/(b*p*q) + 3*log(f*x + e))*e^(-3*a/(b*p*q))/(b*c^(3/(p*q))*
d^(3/p)*f^3*p*q)
```

Mupad [**F**]

time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(g+h\,x)^2}{a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g + h*x)^2/(a + b*log(c*(d*(e + f*x)^p)^q)),x)
```

```
[Out] int((g + h*x)^2/(a + b*log(c*(d*(e + f*x)^p)^q)), x)
```

3.446 $\int \frac{g+hx}{a+b\log(c(d(e+fx)^p)^q)} dx$

Optimal. Leaf size=179

$$\frac{e^{-\frac{a}{bpq}}(fg-eh)(e+fx)\left(c(d(e+fx)^p)^q\right)^{-\frac{1}{pq}}\operatorname{Ei}\left(\frac{a+b\log(c(d(e+fx)^p)^q)}{bpq}\right)}{bf^2pq}+\frac{e^{-\frac{2a}{bpq}}h(e+fx)^2\left(c(d(e+fx)^p)^q\right)^{-\frac{2}{pq}}\operatorname{Ei}(\ldots)}{bf^2pq}$$

```
[Out] (-e*h+f*g)*(f*x+e)*Ei((a+b*ln(c*(d*(f*x+e)^p)^q))/b/p/q)/b/exp(a/b/p/q)/f^2
/p/q/((c*(d*(f*x+e)^p)^q)^(1/p/q))+h*(f*x+e)^2*Ei(2*(a+b*ln(c*(d*(f*x+e)^p)
^q))/b/p/q)/b/exp(2*a/b/p/q)/f^2/p/q/((c*(d*(f*x+e)^p)^q)^(2/p/q))
```

Rubi [A]
time = 0.30, antiderivative size = 179, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 7, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.269$, Rules used = {2446, 2436, 2337, 2209, 2437, 2347, 2495}

$$\frac{(e+fx)e^{-\frac{a}{bpq}}(fg-eh)\left(c(d(e+fx)^p)^q\right)^{-\frac{1}{pq}}\operatorname{Ei}\left(\frac{a+b\log(c(d(e+fx)^p)^q)}{bpq}\right)}{bf^2pq}+\frac{h(e+fx)^2e^{-\frac{2a}{bpq}}\left(c(d(e+fx)^p)^q\right)^{-\frac{2}{pq}}\operatorname{Ei}\left(\frac{2(a+b\log(c(d(e+fx)^p)^q))}{bpq}\right)}{bf^2pq}$$

Antiderivative was successfully verified.

```
[In] Int[(g + h*x)/(a + b*Log[c*(d*(e + f*x)^p)^q]),x]
```

```
[Out] ((f*g - e*h)*(e + f*x)*ExpIntegralEi[(a + b*Log[c*(d*(e + f*x)^p)^q])/(b*p*
q)])/(b*E^(a/(b*p*q))*f^2*p*q*(c*(d*(e + f*x)^p)^q)^(1/(p*q))) + (h*(e + f*
x)^2*ExpIntegralEi[(2*(a + b*Log[c*(d*(e + f*x)^p)^q]))/(b*p*q)])/(b*E^((2*
a)/(b*p*q))*f^2*p*q*(c*(d*(e + f*x)^p)^q)^(2/(p*q)))
```

Rule 2209

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/((c_.) + (d_.)*(x_)), x_Symbol] :> Si
mp[(F^(g*(e - c*(f/d)))/d)*ExpIntegralEi[f*g*(c + d*x)*(Log[F]/d)], x] /; F
reeQ[{F, c, d, e, f, g}, x] &&  !TrueQ[$UseGamma]
```

Rule 2337

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2347

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_)*((d_.)*(x_))^(m_.), x_Symbol
] :> Dist[(d*x)^(m + 1)/(d*n*(c*x^n)^((m + 1)/n)), Subst[Int[E^(((m + 1)/n)
*x)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b, c, d, m, n, p}, x]
```

Rule 2436

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2437

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[(f*(x/d))^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2446

```
Int[((f_.) + (g_.)*(x_))^(q_.)/((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)
]*(b_.)), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q/(a + b*Log[c*(d + e*
x)^n]), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0] &
& IGtQ[q, 0]
```

Rule 2495

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] && !IntegerQ[n] && !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{g+hx}{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}\,dx = \text{Subst}\left(\int \frac{g+hx}{a+b\log\left(cd^q(e+fx)^{pq}\right)}\,dx, cd^q(e+fx)^{pq}, c(d(e+fx)^p)^q\right)$$
$$= \text{Subst}\left(\int \left(\frac{fg-eh}{f\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)} + \frac{h(e+fx)}{f\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)}\right)\right.$$
$$= \text{Subst}\left(\frac{h\int \frac{e+fx}{a+b\log(cd^q(e+fx)^{pq})}\,dx}{f}, cd^q(e+fx)^{pq}, c(d(e+fx)^p)^q\right) + \text{Subst}\left(\right.$$
$$= \text{Subst}\left(\frac{h\text{Subst}\left(\int \frac{x}{a+b\log(cd^q x^{pq})}\,dx, x, e+fx\right)}{f^2}, cd^q(e+fx)^{pq}, c(d(e+fx)^p\right.$$
$$= \text{Subst}\left(\frac{\left(h(e+fx)^2\left(cd^q(e+fx)^{pq}\right)^{-\frac{2}{pq}}\right)\text{Subst}\left(\int \frac{e^{\frac{2x}{pq}}}{a+bx}\,dx, x, \log\left(cd^q(e+\right.\right.}{f^2pq}\right.$$
$$= \frac{e^{-\frac{a}{bpq}}(fg-eh)(e+fx)\left(c(d(e+fx)^p)^q\right)^{-\frac{1}{pq}}\text{Ei}\left(\frac{a+b\log(c(d(e+fx)^p)^q)}{bpq}\right)}{bf^2pq} + \frac{e^{-\frac{2}{b}}}{}$$

Mathematica [**A**]
time = 0.16, size = 164, normalized size = 0.92

$$\frac{e^{-\frac{2a}{bpq}}(e+fx)\left(c(d(e+fx)^p)^q\right)^{-\frac{2}{pq}}\left(e^{\frac{a}{bpq}}(fg-eh)\left(c(d(e+fx)^p)^q\right)^{\frac{1}{pq}}\text{Ei}\left(\frac{a+b\log(c(d(e+fx)^p)^q)}{bpq}\right) + h(e+fx)\text{Ei}\left(\frac{2(a+b\log(c(d(e+fx)^p)^q))}{bpq}\right)\right)}{bf^2pq}$$

Antiderivative was successfully verified.

```
[In] Integrate[(g + h*x)/(a + b*Log[c*(d*(e + f*x)^p)^q]),x]
```

```
[Out] ((e + f*x)*(E^(a/(b*p*q))*(f*g - e*h)*(c*(d*(e + f*x)^p)^q)^(1/(p*q))*ExpIn
tegralEi[(a + b*Log[c*(d*(e + f*x)^p)^q])/(b*p*q)] + h*(e + f*x)*ExpIntegra
lEi[(2*(a + b*Log[c*(d*(e + f*x)^p)^q]))/(b*p*q)]))/(b*E^((2*a)/(b*p*q))*f^
2*p*q*(c*(d*(e + f*x)^p)^q)^(2/(p*q)))
```

Maple [**F**]
time = 0.04, size = 0, normalized size = 0.00

$$\int \frac{hx+g}{a+b\ln\left(c\left(d\left(fx+e\right)^p\right)^q\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x+g)/(a+b*ln(c*(d*(f*x+e)^p)^q)),x)
```

```
[Out] int((h*x+g)/(a+b*ln(c*(d*(f*x+e)^p)^q)),x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="maxima")
```

```
[Out] integrate((h*x + g)/(b*log(((f*x + e)^p*d)^q*c) + a), x)
```

Fricas [A]
time = 0.42, size = 142, normalized size = 0.79

$$\frac{\left((fg-he)e^{\left(\frac{bq\log(d)+b\log(c)+a}{bpq}\right)}\mathrm{log\_integral}\left((fx+e)e^{\left(\frac{bq\log(d)+b\log(c)+a}{bpq}\right)}\right)+h\,\mathrm{log\_integral}\left((f^2x^2+2\,fxe+e^2)e^{\left(\frac{2\,(bq\log(d)+b\log(c)+a)}{bpq}\right)}\right)\right)e^{\left(-\frac{2\,(bq\log(d)+b\log(c)+a)}{bpq}\right)}}{bf^2pq}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="fricas")
```

```
[Out] ((f*g - h*e)*e^((b*q*log(d) + b*log(c) + a)/(b*p*q))*log_integral((f*x + e)
*e^((b*q*log(d) + b*log(c) + a)/(b*p*q))) + h*log_integral((f^2*x^2 + 2*f*x
*e + e^2)*e^(2*(b*q*log(d) + b*log(c) + a)/(b*p*q))))*e^(-2*(b*q*log(d) + b
*log(c) + a)/(b*p*q))/(b*f^2*p*q)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{g+hx}{a+b\log\left(c\left(d\left(e+fx\right)^{p}\right)^{q}\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)/(a+b*ln(c*(d*(f*x+e)**p)**q)),x)
```

```
[Out] Integral((g + h*x)/(a + b*log(c*(d*(e + f*x)**p)**q)), x)
```

Giac [A]
time = 3.30, size = 252, normalized size = 1.41

$$\frac{g\mathrm{Ei}\left(\frac{\log(d)}{p}+\frac{\log(c)}{pq}+\frac{a}{bpq}+\log\left(fx+e\right)\right)e^{\left(-\frac{a}{bpq}\right)}}{bc^{\frac{1}{pq}}d^{\left(\frac{1}{p}\right)}fpq}-\frac{h\mathrm{Ei}\left(\frac{\log(d)}{p}+\frac{\log(c)}{pq}+\frac{a}{bpq}+\log\left(fx+e\right)\right)e^{\left(-\frac{a}{bpq}+1\right)}}{bc^{\frac{1}{pq}}d^{\left(\frac{1}{p}\right)}f^2pq}+\frac{h\mathrm{Ei}\left(\frac{2\log(d)}{p}+\frac{2\log(c)}{pq}+\frac{2a}{bpq}+2\log\left(fx+e\right)\right)e^{\left(-\frac{2a}{bpq}\right)}}{bc^{\frac{2}{pq}}d^{\frac{2}{p}}f^2pq}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="giac")
```

```
[Out] g*Ei(log(d)/p + log(c)/(p*q) + a/(b*p*q) + log(f*x + e))*e^(-a/(b*p*q))/(b*
c^(1/(p*q))*d^(1/p)*f*p*q) - h*Ei(log(d)/p + log(c)/(p*q) + a/(b*p*q) + log
(f*x + e))*e^(-a/(b*p*q) + 1)/(b*c^(1/(p*q))*d^(1/p)*f^2*p*q) + h*Ei(2*log(
```

```
d)/p + 2*log(c)/(p*q) + 2*a/(b*p*q) + 2*log(f*x + e))*e^(-2*a/(b*p*q))/(b*c
^(2/(p*q))*d^(2/p)*f^2*p*q)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{g+hx}{a+b\ln\left(c\left(d\left(e+fx\right)^p\right)^q\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g + h*x)/(a + b*log(c*(d*(e + f*x)^p)^q)),x)
```

```
[Out] int((g + h*x)/(a + b*log(c*(d*(e + f*x)^p)^q)), x)
```

3.447 $\int \frac{1}{a+b\log(c(d(e+fx)^p)^q)}\,dx$

Optimal. Leaf size=83

$$\frac{e^{-\frac{a}{bpq}}(e+fx)\left(c(d(e+fx)^p)^q\right)^{-\frac{1}{pq}}\operatorname{Ei}\left(\frac{a+b\log(c(d(e+fx)^p)^q)}{bpq}\right)}{bfpq}$$

```
[Out] (f*x+e)*Ei((a+b*ln(c*(d*(f*x+e)^p)^q))/b/p/q)/b/exp(a/b/p/q)/f/p/q/((c*(d*(
f*x+e)^p)^q)^(1/p/q))
```

Rubi [A]
time = 0.09, antiderivative size = 83, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.200$, Rules used = {2436, 2337, 2209, 2495}

$$\frac{(e+fx)e^{-\frac{a}{bpq}}\left(c(d(e+fx)^p)^q\right)^{-\frac{1}{pq}}\operatorname{Ei}\left(\frac{a+b\log(c(d(e+fx)^p)^q)}{bpq}\right)}{bfpq}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])^(-1),x]
```

```
[Out] ((e + f*x)*ExpIntegralEi[(a + b*Log[c*(d*(e + f*x)^p)^q])/(b*p*q)])/(b*E^(a
/(b*p*q))*f*p*q*(c*(d*(e + f*x)^p)^q)^(1/(p*q)))
```

Rule 2209

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/((c_.) + (d_.)*(x_)), x_Symbol] :> Si
mp[(F^(g*(e - c*(f/d)))/d)*ExpIntegralEi[f*g*(c + d*x)*(Log[F]/d)], x] /; F
reeQ[{F, c, d, e, f, g}, x] &&  !TrueQ[$UseGamma]
```

Rule 2337

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2436

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2495

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
```

```
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\begin{aligned}
\int \frac{1}{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}\,dx &= \text{Subst}\left(\int \frac{1}{a+b\log\left(cd^q(e+fx)^{pq}\right)}\,dx, cd^q(e+fx)^{pq}, c(d(e+fx)^p)^q\right)\\
&= \text{Subst}\left(\frac{\text{Subst}\left(\int \frac{1}{a+b\log(cd^qx^{pq})}\,dx, x, e+fx\right)}{f}, cd^q(e+fx)^{pq}, c(d(e+fx)^p)\right.\\
&= \text{Subst}\left(\frac{\left((e+fx)\left(cd^q(e+fx)^{pq}\right)^{-\frac{1}{pq}}\right)\text{Subst}\left(\int \frac{e^{\frac{x}{pq}}}{a+bx}\,dx, x, \log\left(cd^q(e+f\right.\right.}{fpq}\right.\\
&= \frac{e^{-\frac{a}{bpq}}(e+fx)\left(c(d(e+fx)^p)^q\right)^{-\frac{1}{pq}}\text{Ei}\left(\frac{a+b\log(c(d(e+fx)^p)^q)}{bpq}\right)}{bfpq}
\end{aligned}$$

Mathematica [A]
time = 0.04, size = 83, normalized size = 1.00

$$\frac{e^{-\frac{a}{bpq}}(e+fx)\left(c(d(e+fx)^p)^q\right)^{-\frac{1}{pq}}\text{Ei}\left(\frac{a+b\log(c(d(e+fx)^p)^q)}{bpq}\right)}{bfpq}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])^(-1),x]
[Out] ((e + f*x)*ExpIntegralEi[(a + b*Log[c*(d*(e + f*x)^p)^q])/(b*p*q)])/(b*E^(a
/(b*p*q))*f*p*q*(c*(d*(e + f*x)^p)^q)^(1/(p*q)))
```

Maple [F]
time = 0.04, size = 0, normalized size = 0.00

$$\int \frac{1}{a+b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+b*ln(c*(d*(f*x+e)^p)^q)),x)
[Out] int(1/(a+b*ln(c*(d*(f*x+e)^p)^q)),x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="maxima")
[Out] integrate(1/(b*log(((f*x + e)^p*d)^q*c) + a), x)
```

Fricas [A]
time = 0.34, size = 66, normalized size = 0.80

$$\frac{e^{\left(-\frac{bq\log(d)+b\log(c)+a}{bpq}\right)}\,\mathrm{log\_integral}\left((fx+e)e^{\left(\frac{bq\log(d)+b\log(c)+a}{bpq}\right)}\right)}{bfpq}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="fricas")
[Out] e^(-(b*q*log(d) + b*log(c) + a)/(b*p*q))*log_integral((f*x + e)*e^((b*q*log
(d) + b*log(c) + a)/(b*p*q)))/(b*f*p*q)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{1}{a+b\log\left(c\left(d\left(e+fx\right)^{p}\right)^{q}\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*ln(c*(d*(f*x+e)**p)**q)),x)
[Out] Integral(1/(a + b*log(c*(d*(e + f*x)**p)**q)), x)
```

Giac [A]
time = 5.17, size = 79, normalized size = 0.95

$$\frac{\mathrm{Ei}\left(\frac{\log(d)}{p}+\frac{\log(c)}{pq}+\frac{a}{bpq}+\log\left(fx+e\right)\right)e^{\left(-\frac{a}{bpq}\right)}}{bc^{\frac{1}{pq}}d^{\left(\frac{1}{p}\right)}fpq}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="giac")
[Out] Ei(log(d)/p + log(c)/(p*q) + a/(b*p*q) + log(f*x + e))*e^(-a/(b*p*q))/(b*c^
(1/(p*q))*d^(1/p)*f*p*q)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{1}{a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a + b*log(c*(d*(e + f*x)^p)^q)),x)
[Out] int(1/(a + b*log(c*(d*(e + f*x)^p)^q)), x)
```

3.448 $\int \frac{1}{(g+hx)(a+b\log(c(d(e+fx)^p)^q))}\,dx$

Optimal. Leaf size=31

$$\text{Int}\left(\frac{1}{(g+hx)\,(a+b\log\left(c\,(d(e+fx)^p)^q\right))},x\right)$$

```
[Out] Unintegrable(1/(h*x+g)/(a+b*ln(c*(d*(f*x+e)^p)^q)),x)
```

Rubi [A]
time = 0.05, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int \frac{1}{(g+hx)\,(a+b\log\left(c\,(d(e+fx)^p)^q\right))}\,dx$$

Verification is not applicable to the result.

```
[In] Int[1/((g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])),x]
[Out] Defer[Int][1/((g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])), x]
```

Rubi steps

$$\int \frac{1}{(g+hx)\,(a+b\log\left(c\,(d(e+fx)^p)^q\right))}\,dx = \int \frac{1}{(g+hx)\,(a+b\log\left(c\,(d(e+fx)^p)^q\right))}\,dx$$

Mathematica [A]
time = 0.16, size = 0, normalized size = 0.00

$$\int \frac{1}{(g+hx)\,(a+b\log\left(c\,(d(e+fx)^p)^q\right))}\,dx$$

Verification is not applicable to the result.

```
[In] Integrate[1/((g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])),x]
[Out] Integrate[1/((g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])), x]
```

Maple [A]
time = 0.16, size = 0, normalized size = 0.00

$$\int \frac{1}{(hx+g)\,(a+b\ln\left(c\,(d\,(fx+e)^{p})^{q}\right))}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(h*x+g)/(a+b*ln(c*(d*(f*x+e)^p)^q)),x)
[Out] int(1/(h*x+g)/(a+b*ln(c*(d*(f*x+e)^p)^q)),x)
```

Maxima [A]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="maxima")
[Out] integrate(1/((h*x + g)*(b*log(((f*x + e)^p*d)^q*c) + a)), x)
```

Fricas [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="fricas")
[Out] integral(1/(a*h*x + a*g + (b*h*x + b*g)*log(((f*x + e)^p*d)^q*c)), x)
```

Sympy [A]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{(a + b\log (c (d (e + fx)^p)^q)) (g + hx)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(a+b*ln(c*(d*(f*x+e)**p)**q)),x)
[Out] Integral(1/((a + b*log(c*(d*(e + f*x)**p)**q))*(g + h*x)), x)
```

Giac [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="giac")
[Out] integrate(1/((h*x + g)*(b*log(((f*x + e)^p*d)^q*c) + a)), x)
```

Mupad [A]
time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{1}{(g + h\,x)\,\left(a + b\,\ln \left(c\,{\left(d\,{\left(e + f\,x\right)}^p\right)}^q\right)\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((g + h*x)*(a + b*log(c*(d*(e + f*x)^p)^q))),x)
[Out] int(1/((g + h*x)*(a + b*log(c*(d*(e + f*x)^p)^q))), x)
```

3.449 $\int \frac{1}{(g+hx)^2(a+b\log(c(d(e+fx)^p)^q))}\,dx$

Optimal. Leaf size=31

$$\text{Int}\left(\frac{1}{(g+hx)^2\,(a+b\log\left(c\left(d(e+fx)^p\right)^q\right))},x\right)$$

```
[Out] Unintegrable(1/(h*x+g)^2/(a+b*ln(c*(d*(f*x+e)^p)^q)),x)
```

Rubi [A]
time = 0.04, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int \frac{1}{(g+hx)^2\,(a+b\log\left(c\left(d(e+fx)^p\right)^q\right))}\,dx$$

Verification is not applicable to the result.

```
[In] Int[1/((g + h*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])),x]
[Out] Defer[Int][1/((g + h*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])), x]
```

Rubi steps

$$\int \frac{1}{(g+hx)^2\,(a+b\log\left(c\left(d(e+fx)^p\right)^q\right))}\,dx = \int \frac{1}{(g+hx)^2\,(a+b\log\left(c\left(d(e+fx)^p\right)^q\right))}\,dx$$

Mathematica [A]
time = 0.44, size = 0, normalized size = 0.00

$$\int \frac{1}{(g+hx)^2\,(a+b\log\left(c\left(d(e+fx)^p\right)^q\right))}\,dx$$

Verification is not applicable to the result.

```
[In] Integrate[1/((g + h*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])),x]
[Out] Integrate[1/((g + h*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])), x]
```

Maple [A]
time = 0.17, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(hx+g\right)^{2}\left(a+b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(h*x+g)^2/(a+b*ln(c*(d*(f*x+e)^p)^q)),x)
```

```
[Out] int(1/(h*x+g)^2/(a+b*ln(c*(d*(f*x+e)^p)^q)),x)
```

Maxima [A]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)^2/(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="maxima")
```

```
[Out] integrate(1/((h*x + g)^2*(b*log(((f*x + e)^p*d)^q*c) + a)), x)
```

Fricas [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)^2/(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="fricas")
```

```
[Out] integral(1/(a*h^2*x^2 + 2*a*g*h*x + a*g^2 + (b*h^2*x^2 + 2*b*g*h*x + b*g^2)
*log(((f*x + e)^p*d)^q*c)), x)
```

Sympy [A]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(a + b\log\left(c\left(d\left(e + fx\right)^{p}\right)^{q}\right)\right)\left(g + hx\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)**2/(a+b*ln(c*(d*(f*x+e)**p)**q)),x)
```

```
[Out] Integral(1/((a + b*log(c*(d*(e + f*x)**p)**q))*(g + h*x)**2), x)
```

Giac [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)^2/(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="giac")
```

```
[Out] integrate(1/((h*x + g)^2*(b*log(((f*x + e)^p*d)^q*c) + a)), x)
```

Mupad [A]
time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{1}{(g+hx)^2\ (a+b\ln(c(d(e+fx)^p)^q))}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((g + h*x)^2*(a + b*log(c*(d*(e + f*x)^p)^q))),x)
[Out] int(1/((g + h*x)^2*(a + b*log(c*(d*(e + f*x)^p)^q))), x)
```

3.450 $\int \frac{(g+hx)^2}{(a+b\log(c(d(e+fx)^p)^q))^2}\,dx$

Optimal. Leaf size=326

$$\frac{e^{-\frac{a}{bpq}}(fg-eh)^2(e+fx)\left(c(d(e+fx)^p)^q\right)^{-\frac{1}{pq}}\operatorname{Ei}\left(\frac{a+b\log(c(d(e+fx)^p)^q)}{bpq}\right)}{b^2f^3p^2q^2}+\frac{4e^{-\frac{2a}{bpq}}h(fg-eh)(e+fx)^2\left(c(d(e+\right.}{b^2f^3p}$$

```
[Out] (-e*h+f*g)^2*(f*x+e)*Ei((a+b*ln(c*(d*(f*x+e)^p)^q))/b/p/q)/b^2/exp(a/b/p/q)
/f^3/p^2/q^2/((c*(d*(f*x+e)^p)^q)^(1/p/q))+4*h*(-e*h+f*g)*(f*x+e)^2*Ei(2*(a
+b*ln(c*(d*(f*x+e)^p)^q))/b/p/q)/b^2/exp(2*a/b/p/q)/f^3/p^2/q^2/((c*(d*(f*x
+e)^p)^q)^(2/p/q))+3*h^2*(f*x+e)^3*Ei(3*(a+b*ln(c*(d*(f*x+e)^p)^q))/b/p/q)/
b^2/exp(3*a/b/p/q)/f^3/p^2/q^2/((c*(d*(f*x+e)^p)^q)^(3/p/q))-(f*x+e)*(h*x+g
)^2/b/f/p/q/(a+b*ln(c*(d*(f*x+e)^p)^q))
```

Rubi [A]

time = 0.92, antiderivative size = 326, normalized size of antiderivative = 1.00, number of steps used = 21, number of rules used = 8, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}} = 0.286$, Rules used = {2447, 2446, 2436, 2337, 2209, 2437, 2347, 2495}

$$\frac{4h(e+fx)^2e^{-\frac{2a}{bpq}}(fg-eh)\left(c(d(e+fx)^p)^q\right)^{-\frac{2}{pq}}\operatorname{Ei}\left(\frac{2(a+b\log(c(d(e+fx)^p)^q))}{bpq}\right)}{b^2f^3p^2q^2}+\frac{(e+fx)e^{-\frac{a}{bpq}}(fg-eh)^2\left(c(d(e+fx)^p)^q\right)^{-\frac{1}{pq}}\operatorname{Ei}\left(\frac{a+b\log(c(d(e+fx)^p)^q)}{bpq}\right)}{b^2f^3p^2q^2}+\frac{3h^2(e+fx)^3e^{-\frac{3a}{bpq}}\left(c(d(e+fx)^p)^q\right)^{-\frac{3}{pq}}\operatorname{Ei}\left(\frac{3(a+b\log(c(d(e+fx)^p)^q))}{bpq}\right)}{b^2f^3p^2q^2}-\frac{(e+fx)(g+hx)^2}{bfpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}$$

Antiderivative was successfully verified.

```
[In] Int[(g + h*x)^2/(a + b*Log[c*(d*(e + f*x)^p)^q])^2,x]
```

```
[Out] ((f*g - e*h)^2*(e + f*x)*ExpIntegralEi[(a + b*Log[c*(d*(e + f*x)^p)^q])/(b*
p*q)])/(b^2*E^(a/(b*p*q))*f^3*p^2*q^2*(c*(d*(e + f*x)^p)^q)^(1/(p*q))) + (4
*h*(f*g - e*h)*(e + f*x)^2*ExpIntegralEi[(2*(a + b*Log[c*(d*(e + f*x)^p)^q]
))/(b*p*q)])/(b^2*E^((2*a)/(b*p*q))*f^3*p^2*q^2*(c*(d*(e + f*x)^p)^q)^(2/(p
*q))) + (3*h^2*(e + f*x)^3*ExpIntegralEi[(3*(a + b*Log[c*(d*(e + f*x)^p)^q]
))/(b*p*q)])/(b^2*E^((3*a)/(b*p*q))*f^3*p^2*q^2*(c*(d*(e + f*x)^p)^q)^(3/(p
*q))) - ((e + f*x)*(g + h*x)^2)/(b*f*p*q*(a + b*Log[c*(d*(e + f*x)^p)^q]))
```

Rule 2209

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/((c_.) + (d_.)*(x_)), x_Symbol] :> Si
mp[(F^(g*(e - c*(f/d)))/d)*ExpIntegralEi[f*g*(c + d*x)*(Log[F]/d)], x] /; F
reeQ[{F, c, d, e, f, g}, x] &&  !TrueQ[$UseGamma]
```

Rule 2337

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2347

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_)*((d_.)*(x_))^(m_.), x_Symbol
] :> Dist[(d*x)^(m + 1)/(d*n*(c*x^n)^((m + 1)/n)), Subst[Int[E^(((m + 1)/n)
*x)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b, c, d, m, n, p}, x]
```

Rule 2436

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2437

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[(f*(x/d))^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2446

```
Int[((f_.) + (g_.)*(x_))^(q_.)/((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)
]*(b_.)), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q/(a + b*Log[c*(d + e*
x)^n]), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0] &
& IGtQ[q, 0]
```

Rule 2447

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[(d + e*x)*(f + g*x)^q*((a + b*Log[c*(d + e
*x)^n])^(p + 1)/(b*e*n*(p + 1))), x] + (-Dist[(q + 1)/(b*n*(p + 1)), Int[(f
 + g*x)^q*(a + b*Log[c*(d + e*x)^n])^(p + 1), x], x] + Dist[q*((e*f - d*g)/
(b*e*n*(p + 1))), Int[(f + g*x)^(q - 1)*(a + b*Log[c*(d + e*x)^n])^(p + 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0] && LtQ[
p, -1] && GtQ[q, 0]
```

Rule 2495

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{(g+hx)^2}{(a+b\log(c(d(e+fx)^p)^q))^2}\,dx = \text{Subst}\left(\int \frac{(g+hx)^2}{(a+b\log(cd^q(e+fx)^{pq}))^2}\,dx, cd^q(e+fx)^{pq}, c(d(e+fx)^p$$

$$= -\frac{(e+fx)(g+hx)^2}{bfpq(a+b\log(c(d(e+fx)^p)^q))} + \text{Subst}\left(\frac{3\int \frac{(g+hx)^2}{a+b\log(cd^q(e+fx)^{pq})}\,dx}{bpq}\right.$$

$$= -\frac{(e+fx)(g+hx)^2}{bfpq(a+b\log(c(d(e+fx)^p)^q))} + \text{Subst}\left(\frac{3\int\left(\frac{(fg-eh)^2}{f^2(a+b\log(cd^q(e+fx)^{pq}}\right.}{}\right.$$

$$= -\frac{(e+fx)(g+hx)^2}{bfpq(a+b\log(c(d(e+fx)^p)^q))} + \text{Subst}\left(\frac{(3h^2)\int \frac{(e+fx)^2}{a+b\log(cd^q(e+fx)^{pq}}}{bf^2pq}\right.$$

$$= -\frac{(e+fx)(g+hx)^2}{bfpq(a+b\log(c(d(e+fx)^p)^q))} + \text{Subst}\left(\frac{(3h^2)\,\text{Subst}\left(\int \frac{x^2}{a+b\log(cd^q}\right.}{bf^3pq}\right.$$

$$= -\frac{(e+fx)(g+hx)^2}{bfpq(a+b\log(c(d(e+fx)^p)^q))} + \text{Subst}\left(\frac{\left(3h^2(e+fx)^3\left(cd^q(e+\right.\right.}{}\right.$$

$$= \frac{e^{-\frac{a}{bpq}}(fg-eh)^2(e+fx)\left(c(d(e+fx)^p)^q\right)^{-\frac{1}{pq}}\text{Ei}\left(\frac{a+b\log(c(d(e+fx)^p)^q)}{bpq}\right)}{b^2f^3p^2q^2}$$

Mathematica [B] Leaf count is larger than twice the leaf count of optimal. 1310 vs. $2(326) = 652$.
time = 0.55, size = 1310, normalized size = 4.02

Antiderivative was successfully verified.

```
[In] Integrate[(g + h*x)^2/(a + b*Log[c*(d*(e + f*x)^p)^q])^2,x]
```

```
[Out] (-(b*e*E^((3*a)/(b*p*q))*f^2*g^2*p*q*(c*(d*(e + f*x)^p)^q)^(3/(p*q))) - b*E
^((3*a)/(b*p*q))*f^3*g^2*p*q*x*(c*(d*(e + f*x)^p)^q)^(3/(p*q)) - 2*b*e*E^((
3*a)/(b*p*q))*f^2*g*h*p*q*x*(c*(d*(e + f*x)^p)^q)^(3/(p*q)) - 2*b*E^((3*a)/
(b*p*q))*f^3*g*h*p*q*x^2*(c*(d*(e + f*x)^p)^q)^(3/(p*q)) - b*e*E^((3*a)/(b*
p*q))*f^2*h^2*p*q*x^2*(c*(d*(e + f*x)^p)^q)^(3/(p*q)) - b*E^((3*a)/(b*p*q))
*f^3*h^2*p*q*x^3*(c*(d*(e + f*x)^p)^q)^(3/(p*q)) + a*E^((2*a)/(b*p*q))*f^2*
g^2*(e + f*x)*(c*(d*(e + f*x)^p)^q)^(2/(p*q))*ExpIntegralEi[(a + b*Log[c*(d
*(e + f*x)^p)^q])/(b*p*q)] - 2*a*e*E^((2*a)/(b*p*q))*f*g*h*(e + f*x)*(c*(d*
(e + f*x)^p)^q)^(2/(p*q))*ExpIntegralEi[(a + b*Log[c*(d*(e + f*x)^p)^q])/(b
```

```
*p*q)] + a*e^2*E^((2*a)/(b*p*q))*h^2*(e + f*x)*(c*(d*(e + f*x)^p)^q)^(2/(p*
q))*ExpIntegralEi[(a + b*Log[c*(d*(e + f*x)^p)^q])/(b*p*q)] + 4*a*E^(a/(b*p
*q))*f*g*h*(e + f*x)^2*(c*(d*(e + f*x)^p)^q)^(1/(p*q))*ExpIntegralEi[(2*(a
+ b*Log[c*(d*(e + f*x)^p)^q]))/(b*p*q)] - 4*a*e*E^(a/(b*p*q))*h^2*(e + f*x)
^2*(c*(d*(e + f*x)^p)^q)^(1/(p*q))*ExpIntegralEi[(2*(a + b*Log[c*(d*(e + f*
x)^p)^q]))/(b*p*q)] + 3*a*h^2*(e + f*x)^3*ExpIntegralEi[(3*(a + b*Log[c*(d*
(e + f*x)^p)^q]))/(b*p*q)] + b*E^((2*a)/(b*p*q))*f^2*g^2*(e + f*x)*(c*(d*(e
 + f*x)^p)^q)^(2/(p*q))*ExpIntegralEi[(a + b*Log[c*(d*(e + f*x)^p)^q])/(b*p
*q)]*Log[c*(d*(e + f*x)^p)^q] - 2*b*e*E^((2*a)/(b*p*q))*f*g*h*(e + f*x)*(c*
(d*(e + f*x)^p)^q)^(2/(p*q))*ExpIntegralEi[(a + b*Log[c*(d*(e + f*x)^p)^q])
/(b*p*q)]*Log[c*(d*(e + f*x)^p)^q] + b*e^2*E^((2*a)/(b*p*q))*h^2*(e + f*x)*
(c*(d*(e + f*x)^p)^q)^(2/(p*q))*ExpIntegralEi[(a + b*Log[c*(d*(e + f*x)^p)^
q])/(b*p*q)]*Log[c*(d*(e + f*x)^p)^q] + 4*b*E^(a/(b*p*q))*f*g*h*(e + f*x)^2
*(c*(d*(e + f*x)^p)^q)^(1/(p*q))*ExpIntegralEi[(2*(a + b*Log[c*(d*(e + f*x)
^p)^q]))/(b*p*q)]*Log[c*(d*(e + f*x)^p)^q] - 4*b*e*E^(a/(b*p*q))*h^2*(e + f
*x)^2*(c*(d*(e + f*x)^p)^q)^(1/(p*q))*ExpIntegralEi[(2*(a + b*Log[c*(d*(e +
 f*x)^p)^q]))/(b*p*q)]*Log[c*(d*(e + f*x)^p)^q] + 3*b*h^2*(e + f*x)^3*ExpIn
tegralEi[(3*(a + b*Log[c*(d*(e + f*x)^p)^q]))/(b*p*q)]*Log[c*(d*(e + f*x)^p
)^q])/(b^2*E^((3*a)/(b*p*q))*f^3*p^2*q^2*(c*(d*(e + f*x)^p)^q)^(3/(p*q))*(a
 + b*Log[c*(d*(e + f*x)^p)^q]))
```

Maple [**F**]
time = 0.17, size = 0, normalized size = 0.00

$$\int \frac{\left(hx+g\right)^{2}}{\left(a+b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x+g)^2/(a+b*ln(c*(d*(f*x+e)^p)^q))^2,x)
```

```
[Out] int((h*x+g)^2/(a+b*ln(c*(d*(f*x+e)^p)^q))^2,x)
```

Maxima [**F**]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^2/(a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="maxima")
```

```
[Out] -(f*h^2*x^3 + (2*f*g*h + h^2*e)*x^2 + g^2*e + (f*g^2 + 2*g*h*e)*x)/(b^2*f*p
*q*log(((f*x + e)^p)^q) + a*b*f*p*q + (f*p*q^2*log(d) + f*p*q*log(c))*b^2)
+ integrate((3*f*h^2*x^2 + f*g^2 + 2*g*h*e + 2*(2*f*g*h + h^2*e)*x)/(b^2*f*
p*q*log(((f*x + e)^p)^q) + a*b*f*p*q + (f*p*q^2*log(d) + f*p*q*log(c))*b^2)
, x)
```

Fricas [A]
time = 0.36, size = 595, normalized size = 1.83

$$\frac{\left(4 \left(afgh - ah^2e + \left(bfghpq - bh^2pqe\right)\log\left(fx+e\right) + \left(bfgh - bh^2e\right)\log\left(c\right) + \left(bfghq - bh^2qe\right)\log\left(d\right)\right)e^{\left(\frac{bq\log(d)+b\log(c)+a}{bpq}\right)}\operatorname{log\_integral}\left(\left(f^2x^2+2fxe+e^2\right)e^{\left(\frac{2(bq\log(d)+b\log(c)+a)}{bpq}\right)}\right) + \left(af^2g^2 - 2afghe + ah^2e^2 + \left(bf^2g^2pq - 2bfghpqe + bh^2pqe^2\right)\log\left(fx+e\right) + \left(bf^2g^2 - 2bfghe + bh^2e^2\right)\log\left(c\right) + \left(bf^2g^2q - 2bfghqe + bh^2qe^2\right)\log\left(d\right)\right)e^{\left(\frac{2(bq\log(d)+b\log(c)+a)}{bpq}\right)}\operatorname{log\_integral}\left(\left(fx+e\right)e^{\left(\frac{bq\log(d)+b\log(c)+a}{bpq}\right)}\right) - \left(bf^3h^2pqx^3 + 2bf^3ghpqx^2 + bf^3g^2pqx + \left(bf^2h^2pqx^2 + 2bf^2ghpqx + bf^2g^2pq\right)e\right)e^{\left(\frac{3(bq\log(d)+b\log(c)+a)}{bpq}\right)} + 3\left(bh^2pq\log\left(fx+e\right) + bh^2q\log\left(d\right) + bh^2\log\left(c\right) + ah^2\right)\operatorname{log\_integral}\left(\left(f^3x^3+3f^2x^2e+3fxe^2+e^3\right)e^{\left(\frac{3(bq\log(d)+b\log(c)+a)}{bpq}\right)}\right)\right)e^{\left(-\frac{3(bq\log(d)+b\log(c)+a)}{bpq}\right)}}{b^3f^3p^3q^3\log\left(fx+e\right) + b^3f^3p^2q^3\log\left(d\right) + b^3f^3p^2q^2\log\left(c\right) + ab^2f^3p^2q^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^2/(a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="fricas")
```

```
[Out] (4*(a*f*g*h - a*h^2*e + (b*f*g*h*p*q - b*h^2*p*q*e)*log(f*x + e) + (b*f*g*h
 - b*h^2*e)*log(c) + (b*f*g*h*q - b*h^2*q*e)*log(d))*e^((b*q*log(d) + b*log
(c) + a)/(b*p*q))*log_integral((f^2*x^2 + 2*f*x*e + e^2)*e^(2*(b*q*log(d) +
 b*log(c) + a)/(b*p*q))) + (a*f^2*g^2 - 2*a*f*g*h*e + a*h^2*e^2 + (b*f^2*g^
2*p*q - 2*b*f*g*h*p*q*e + b*h^2*p*q*e^2)*log(f*x + e) + (b*f^2*g^2 - 2*b*f*
g*h*e + b*h^2*e^2)*log(c) + (b*f^2*g^2*q - 2*b*f*g*h*q*e + b*h^2*q*e^2)*log
(d))*e^(2*(b*q*log(d) + b*log(c) + a)/(b*p*q))*log_integral((f*x + e)*e^((b
*q*log(d) + b*log(c) + a)/(b*p*q))) - (b*f^3*h^2*p*q*x^3 + 2*b*f^3*g*h*p*q*
x^2 + b*f^3*g^2*p*q*x + (b*f^2*h^2*p*q*x^2 + 2*b*f^2*g*h*p*q*x + b*f^2*g^2*
p*q)*e)*e^(3*(b*q*log(d) + b*log(c) + a)/(b*p*q)) + 3*(b*h^2*p*q*log(f*x +
e) + b*h^2*q*log(d) + b*h^2*log(c) + a*h^2)*log_integral((f^3*x^3 + 3*f^2*x
^2*e + 3*f*x*e^2 + e^3)*e^(3*(b*q*log(d) + b*log(c) + a)/(b*p*q))))*e^(-3*(
b*q*log(d) + b*log(c) + a)/(b*p*q))/(b^3*f^3*p^3*q^3*log(f*x + e) + b^3*f^3
*p^2*q^3*log(d) + b^3*f^3*p^2*q^2*log(c) + a*b^2*f^3*p^2*q^2)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(g + hx\right)^{2}}{\left(a + b\log{\left(c\left(d\left(e + fx\right)^{p}\right)^{q} \right)}\right)^{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)**2/(a+b*ln(c*(d*(f*x+e)**p)**q))**2,x)
```

```
[Out] Integral((g + h*x)**2/(a + b*log(c*(d*(e + f*x)**p)**q))**2, x)
```

Giac [B] Leaf count of result is larger than twice the leaf count of optimal. 4046 vs. 2(341) = 682.
time = 4.92, size = 4046, normalized size = 12.41

Too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^2/(a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="giac")
```

```
[Out] -(f*x + e)*b*f^2*g^2*p*q/(b^3*f^3*p^3*q^3*log(f*x + e) + b^3*f^3*p^2*q^3*lo
g(d) + b^3*f^3*p^2*q^2*log(c) + a*b^2*f^3*p^2*q^2) - 2*(f*x + e)^2*b*f*g*h*
```

p*q/(b^3*f^3*p^3*q^3*log(f*x + e) + b^3*f^3*p^2*q^3*log(d) + b^3*f^3*p^2*q^
2*log(c) + a*b^2*f^3*p^2*q^2) - (f*x + e)^3*b*h^2*p*q/(b^3*f^3*p^3*q^3*log(
f*x + e) + b^3*f^3*p^2*q^3*log(d) + b^3*f^3*p^2*q^2*log(c) + a*b^2*f^3*p^2*
q^2) + 2*(f*x + e)*b*f*g*h*p*q*e/(b^3*f^3*p^3*q^3*log(f*x + e) + b^3*f^3*p^
2*q^3*log(d) + b^3*f^3*p^2*q^2*log(c) + a*b^2*f^3*p^2*q^2) + 2*(f*x + e)^2*
b*h^2*p*q*e/(b^3*f^3*p^3*q^3*log(f*x + e) + b^3*f^3*p^2*q^3*log(d) + b^3*f^
3*p^2*q^2*log(c) + a*b^2*f^3*p^2*q^2) + b*f^2*g^2*p*q*Ei(log(d)/p + log(c)/
(p*q) + a/(b*p*q) + log(f*x + e))*e^(-a/(b*p*q))*log(f*x + e)/((b^3*f^3*p^3
*q^3*log(f*x + e) + b^3*f^3*p^2*q^3*log(d) + b^3*f^3*p^2*q^2*log(c) + a*b^2
*f^3*p^2*q^2)*c^(1/(p*q))*d^(1/p)) - (f*x + e)*b*h^2*p*q*e^2/(b^3*f^3*p^3*q
^3*log(f*x + e) + b^3*f^3*p^2*q^3*log(d) + b^3*f^3*p^2*q^2*log(c) + a*b^2*f
^3*p^2*q^2) - 2*b*f*g*h*p*q*Ei(log(d)/p + log(c)/(p*q) + a/(b*p*q) + log(f*
x + e))*e^(-a/(b*p*q) + 1)*log(f*x + e)/((b^3*f^3*p^3*q^3*log(f*x + e) + b^
3*f^3*p^2*q^3*log(d) + b^3*f^3*p^2*q^2*log(c) + a*b^2*f^3*p^2*q^2)*c^(1/(p*
q))*d^(1/p)) + 4*b*f*g*h*p*q*Ei(2*log(d)/p + 2*log(c)/(p*q) + 2*a/(b*p*q) +
 2*log(f*x + e))*e^(-2*a/(b*p*q))*log(f*x + e)/((b^3*f^3*p^3*q^3*log(f*x +
e) + b^3*f^3*p^2*q^3*log(d) + b^3*f^3*p^2*q^2*log(c) + a*b^2*f^3*p^2*q^2)*c
^(2/(p*q))*d^(2/p)) + b*f^2*g^2*q*Ei(log(d)/p + log(c)/(p*q) + a/(b*p*q) +
log(f*x + e))*e^(-a/(b*p*q))*log(d)/((b^3*f^3*p^3*q^3*log(f*x + e) + b^3*f^
3*p^2*q^3*log(d) + b^3*f^3*p^2*q^2*log(c) + a*b^2*f^3*p^2*q^2)*c^(1/(p*q))*
d^(1/p)) + b*h^2*p*q*Ei(log(d)/p + log(c)/(p*q) + a/(b*p*q) + log(f*x + e))
*e^(-a/(b*p*q) + 2)*log(f*x + e)/((b^3*f^3*p^3*q^3*log(f*x + e) + b^3*f^3*p
^2*q^3*log(d) + b^3*f^3*p^2*q^2*log(c) + a*b^2*f^3*p^2*q^2)*c^(1/(p*q))*d^(
1/p)) - 4*b*h^2*p*q*Ei(2*log(d)/p + 2*log(c)/(p*q) + 2*a/(b*p*q) + 2*log(f*
x + e))*e^(-2*a/(b*p*q) + 1)*log(f*x + e)/((b^3*f^3*p^3*q^3*log(f*x + e) +
b^3*f^3*p^2*q^3*log(d) + b^3*f^3*p^2*q^2*log(c) + a*b^2*f^3*p^2*q^2)*c^(2/(
p*q))*d^(2/p)) + 3*b*h^2*p*q*Ei(3*log(d)/p + 3*log(c)/(p*q) + 3*a/(b*p*q) +
 3*log(f*x + e))*e^(-3*a/(b*p*q))*log(f*x + e)/((b^3*f^3*p^3*q^3*log(f*x +
e) + b^3*f^3*p^2*q^3*log(d) + b^3*f^3*p^2*q^2*log(c) + a*b^2*f^3*p^2*q^2)*c
^(3/(p*q))*d^(3/p)) + b*f^2*g^2*Ei(log(d)/p + log(c)/(p*q) + a/(b*p*q) + lo
g(f*x + e))*e^(-a/(b*p*q))*log(c)/((b^3*f^3*p^3*q^3*log(f*x + e) + b^3*f^3*
p^2*q^3*log(d) + b^3*f^3*p^2*q^2*log(c) + a*b^2*f^3*p^2*q^2)*c^(1/(p*q))*d^
(1/p)) - 2*b*f*g*h*q*Ei(log(d)/p + log(c)/(p*q) + a/(b*p*q) + log(f*x + e))
*e^(-a/(b*p*q) + 1)*log(d)/((b^3*f^3*p^3*q^3*log(f*x + e) + b^3*f^3*p^2*q^3
*log(d) + b^3*f^3*p^2*q^2*log(c) + a*b^2*f^3*p^2*q^2)*c^(1/(p*q))*d^(1/p))
+ 4*b*f*g*h*q*Ei(2*log(d)/p + 2*log(c)/(p*q) + 2*a/(b*p*q) + 2*log(f*x + e)
)*e^(-2*a/(b*p*q))*log(d)/((b^3*f^3*p^3*q^3*log(f*x + e) + b^3*f^3*p^2*q^3*
log(d) + b^3*f^3*p^2*q^2*log(c) + a*b^2*f^3*p^2*q^2)*c^(2/(p*q))*d^(2/p)) +
 a*f^2*g^2*Ei(log(d)/p + log(c)/(p*q) + a/(b*p*q) + log(f*x + e))*e^(-a/(b*
p*q))/((b^3*f^3*p^3*q^3*log(f*x + e) + b^3*f^3*p^2*q^3*log(d) + b^3*f^3*p^2
*q^2*log(c) + a*b^2*f^3*p^2*q^2)*c^(1/(p*q))*d^(1/p)) - 2*b*f*g*h*Ei(log(d)
/p + log(c)/(p*q) + a/(b*p*q) + log(f*x + e))*e^(-a/(b*p*q) + 1)*log(c)/((b
^3*f^3*p^3*q^3*log(f*x + e) + b^3*f^3*p^2*q^3*log(d) + b^3*f^3*p^2*q^2*log(
c) + a*b^2*f^3*p^2*q^2)*c^(1/(p*q))*d^(1/p)) + 4*b*f*g*h*Ei(2*log(d)/p + 2*
log(c)/(p*q) + 2*a/(b*p*q) + 2*log(f*x + e))*e^(-2*a/(b*p*q))*log(c)/((b^3*

```
f^3*p^3*q^3*log(f*x + e) + b^3*f^3*p^2*q^3*log(d) + b^3*f^3*p^2*q^2*log(c)
+ a*b^2*f^3*p^2*q^2)*c^(2/(p*q))*d^(2/p)) + b*h^2*q*Ei(log(d)/p + log(c)/(p
*q) + a/(b*p*q) + log(f*x + e))*e^(-a/(b*p*q) + 2)*log(d)/((b^3*f^3*p^3*q^3
*log(f*x + e) + b^3*f^3*p^2*q^3*log(d) + b^3*f^3*p^2*q^2*log(c) + a*b^2*f^3
*p^2*q^2)*c^(1/(p*q))*d^(1/p)) - 4*b*h^2*q*Ei(2*log(d)/p + 2*log(c)/(p*q) +
 2*a/(b*p*q) + 2*log(f*x + e))*e^(-2*a/(b*p*q) + 1)*log(d)/((b^3*f^3*p^3*q^
3*log(f*x + e) + b^3*f^3*p^2*q^3*log(d) + b^3*f^3*p^2*q^2*log(c) + a*b^2*f^
3*p^2*q^2)*c^(2/(p*q))*d^(2/p)) + 3*b*h^2*q*Ei(3*log(d)/p + 3*log(c)/(p*q)
+ 3*a/(b*p*q) + 3*log(f*x + e))*e^(-3*a/(b*p*q))*log(d)/((b^3*f^3*p^3*q^3*l
og(f*x + e) + b^3*f^3*p^2*q^3*log(d) + b^3*f^3*p^2*q^2*log(c) + a*b^2*f^3*p
^2*q^2)*c^(3/(p*q))*d^(3/p)) - 2*a*f*g*h*Ei(log(d)/p + log(c)/(p*q) + a/(b*
p*q) + log(f*x + e))*e^(-a/(b*p*q) + 1)/((b^3*f^3*p^3*q^3*log(f*x + e) + b^
3*f^3*p^2*q^3*log(d) + b^3*f^3*p^2*q^2*log(c) + a*b^2*f^3*p^2*q^2)*c^(1/(p*
q))*d^(1/p)) + 4*a*f*g*h*Ei(2*log(d)/p + 2*log(c)/(p*q) + 2*a/(b*p*q) + 2*l
og(f*x + e))*e^(-2*a/(b*p*q))/((b^3*f^3*p^3*q^3*log(f*x + e) + b^3*f^3*p^2*
q^3*log(d) + b^3*f^3*p^2*q^2*log(c) + a*b^2*f^3*p^2*q^2)*c^(2/(p*q))*d^(2/p
)) + b*h^2*Ei(log(d)/p + log(c)/(p*q) + a/(b*p*q) + log(f*x + e))*e^(-a/(b*
p*q) + 2)*log(c)/((b^3*f^3*p^3*q^3*log(f*x + e) + b^3*f^3*p^2*q^3*log(d) +
b^3*f^3*p^2*q^2*log(c) + a*b^2*f^3*p^2*q^2)*c^(1/(p*q))*d^(1/p)) - 4*b*h^2*
Ei(2*log(d)/p + 2*log(c)/(p*q) + 2*a/(b*p*q) + ...
```

Mupad [F]

time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(g+h\,x)^2}{(a+b\,\ln(c\,(d\,(e+f\,x)^p)^q))^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g + h*x)^2/(a + b*log(c*(d*(e + f*x)^p)^q))^2,x)
```

```
[Out] int((g + h*x)^2/(a + b*log(c*(d*(e + f*x)^p)^q))^2, x)
```

3.451 $\int \frac{g+hx}{(a+b\log(c(d(e+fx)^p)^q))^2}\,dx$

Optimal. Leaf size=224

$$\frac{e^{-\frac{a}{bpq}}(fg-eh)(e+fx)\left(c(d(e+fx)^p)^q\right)^{-\frac{1}{pq}}\operatorname{Ei}\left(\frac{a+b\log(c(d(e+fx)^p)^q)}{bpq}\right)}{b^2f^2p^2q^2}+\frac{2e^{-\frac{2a}{bpq}}h(e+fx)^2\left(c(d(e+fx)^p)^q\right)^{-\frac{2}{pq}}\text{E}}{b^2f^2p^2q^2}$$

```
[Out] (-e*h+f*g)*(f*x+e)*Ei((a+b*ln(c*(d*(f*x+e)^p)^q))/b/p/q)/b^2/exp(a/b/p/q)/f
^2/p^2/q^2/((c*(d*(f*x+e)^p)^q)^(1/p/q))+2*h*(f*x+e)^2*Ei(2*(a+b*ln(c*(d*(f
*x+e)^p)^q))/b/p/q)/b^2/exp(2*a/b/p/q)/f^2/p^2/q^2/((c*(d*(f*x+e)^p)^q)^(2/
p/q))-(f*x+e)*(h*x+g)/b/f/p/q/(a+b*ln(c*(d*(f*x+e)^p)^q))
```

Rubi [A]

time = 0.45, antiderivative size = 224, normalized size of antiderivative = 1.00, number of steps used = 13, number of rules used = 8, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.308, Rules used = {2447, 2446, 2436, 2337, 2209, 2437, 2347, 2495}

$$\frac{(e+fx)e^{-\frac{a}{bpq}}(fg-eh)\left(c(d(e+fx)^p)^q\right)^{-\frac{1}{pq}}\operatorname{Ei}\left(\frac{a+b\log(c(d(e+fx)^p)^q)}{bpq}\right)}{b^2f^2p^2q^2}+\frac{2h(e+fx)^2e^{-\frac{2a}{bpq}}\left(c(d(e+fx)^p)^q\right)^{-\frac{2}{pq}}\operatorname{Ei}\left(\frac{2(a+b\log(c(d(e+fx)^p)^q))}{bpq}\right)}{b^2f^2p^2q^2}-\frac{(e+fx)(g+hx)}{bfpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}$$

Antiderivative was successfully verified.

```
[In] Int[(g + h*x)/(a + b*Log[c*(d*(e + f*x)^p)^q])^2,x]
```

```
[Out] ((f*g - e*h)*(e + f*x)*ExpIntegralEi[(a + b*Log[c*(d*(e + f*x)^p)^q])/(b*p*
q)])/(b^2*E^(a/(b*p*q))*f^2*p^2*q^2*(c*(d*(e + f*x)^p)^q)^(1/(p*q))) + (2*h
*(e + f*x)^2*ExpIntegralEi[(2*(a + b*Log[c*(d*(e + f*x)^p)^q]))/(b*p*q)])/(
b^2*E^((2*a)/(b*p*q))*f^2*p^2*q^2*(c*(d*(e + f*x)^p)^q)^(2/(p*q))) - ((e +
f*x)*(g + h*x))/(b*f*p*q*(a + b*Log[c*(d*(e + f*x)^p)^q]))
```

Rule 2209

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/((c_.) + (d_.)*(x_)), x_Symbol] :> Si
mp[(F^(g*(e - c*(f/d)))/d)*ExpIntegralEi[f*g*(c + d*x)*(Log[F]/d)], x] /; F
reeQ[{F, c, d, e, f, g}, x] &&  !TrueQ[$UseGamma]
```

Rule 2337

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2347

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_)*((d_.)*(x_))^(m_.), x_Symbol
] :> Dist[(d*x)^(m + 1)/(d*n*(c*x^n)^((m + 1)/n)), Subst[Int[E^(((m + 1)/n)
*x)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b, c, d, m, n, p}, x]
```

Rule 2436

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2437

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[(f*(x/d))^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2446

```
Int[((f_.) + (g_.)*(x_))^(q_.)/((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)
]*(b_.)), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q/(a + b*Log[c*(d + e*
x)^n]), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0] &
& IGtQ[q, 0]
```

Rule 2447

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[(d + e*x)*(f + g*x)^q*((a + b*Log[c*(d + e
*x)^n])^(p + 1)/(b*e*n*(p + 1))), x] + (-Dist[(q + 1)/(b*n*(p + 1)), Int[(f
 + g*x)^q*(a + b*Log[c*(d + e*x)^n])^(p + 1), x], x] + Dist[q*((e*f - d*g)/
(b*e*n*(p + 1))), Int[(f + g*x)^(q - 1)*(a + b*Log[c*(d + e*x)^n])^(p + 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0] && LtQ[
p, -1] && GtQ[q, 0]
```

Rule 2495

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{g+hx}{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}\,dx = \text{Subst}\left(\int \frac{g+hx}{\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^2}\,dx, cd^q(e+fx)^{pq}, c(d(e+fx)^p)^q\right.$$

$$= -\frac{(e+fx)(g+hx)}{bfpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)} + \text{Subst}\left(\frac{2\int \frac{g+hx}{a+b\log(cd^q(e+fx)^{pq})}\,dx}{bpq}, \right.$$

$$= -\frac{(e+fx)(g+hx)}{bfpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)} + \text{Subst}\left(\frac{2\int \left(\frac{fg-eh}{f(a+b\log(cd^q(e+fx)^{pq}))}\right.}{b}\right.$$

$$= -\frac{(e+fx)(g+hx)}{bfpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)} + \text{Subst}\left(\frac{(2h)\int \frac{e+fx}{a+b\log(cd^q(e+fx)^{pq})}\,d}{bfpq}\right.$$

$$= -\frac{e^{-\frac{a}{bpq}}(fg-eh)(e+fx)\left(c(d(e+fx)^p)^q\right)^{-\frac{1}{pq}}\text{Ei}\left(\frac{a+b\log(c(d(e+fx)^p)^q)}{bpq}\right)}{b^2f^2p^2q^2} -$$

$$= -\frac{e^{-\frac{a}{bpq}}(fg-eh)(e+fx)\left(c(d(e+fx)^p)^q\right)^{-\frac{1}{pq}}\text{Ei}\left(\frac{a+b\log(c(d(e+fx)^p)^q)}{bpq}\right)}{b^2f^2p^2q^2} -$$

$$= \frac{e^{-\frac{a}{bpq}}(fg-eh)(e+fx)\left(c(d(e+fx)^p)^q\right)^{-\frac{1}{pq}}\text{Ei}\left(\frac{a+b\log(c(d(e+fx)^p)^q)}{bpq}\right)}{b^2f^2p^2q^2} + \frac{2}{}$$

Mathematica [A]
time = 0.28, size = 269, normalized size = 1.20

$$-\frac{e^{-\frac{2a}{bpq}}(e+fx)\left(c(d(e+fx)^p)^q\right)^{-\frac{2}{pq}}\left(be^{\frac{2a}{bpq}}fpq\left(c(d(e+fx)^p)^q\right)^{\frac{2}{pq}}(g+hx)-e^{\frac{a}{bpq}}(fg-eh)\left(c(d(e+fx)^p)^q\right)^{\frac{1}{pq}}\text{Ei}\left(\frac{a+b\log(c(d(e+fx)^p)^q)}{bpq}\right)\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)-2h(e+fx)\text{Ei}\left(\frac{2(a+b\log(c(d(e+fx)^p)^q))}{bpq}\right)\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)\right)}{b^2f^2p^2q^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(g + h*x)/(a + b*Log[c*(d*(e + f*x)^p)^q])^2,x]
```

```
[Out] -(((e + f*x)*(b*E^((2*a)/(b*p*q))*f*p*q*(c*(d*(e + f*x)^p)^q)^(2/(p*q))*(g
+ h*x) - E^(a/(b*p*q))*(f*g - e*h)*(c*(d*(e + f*x)^p)^q)^(1/(p*q))*ExpInteg
ralEi[(a + b*Log[c*(d*(e + f*x)^p)^q])/(b*p*q)]*(a + b*Log[c*(d*(e + f*x)^p
)^q]) - 2*h*(e + f*x)*ExpIntegralEi[(2*(a + b*Log[c*(d*(e + f*x)^p)^q]))/(b
*p*q)]*(a + b*Log[c*(d*(e + f*x)^p)^q])))/(b^2*E^((2*a)/(b*p*q))*f^2*p^2*q^
2*(c*(d*(e + f*x)^p)^q)^(2/(p*q))*(a + b*Log[c*(d*(e + f*x)^p)^q])))
```

Maple [F]
time = 0.04, size = 0, normalized size = 0.00

$$\int \frac{hx+g}{\left(a+b\ln\left(c\left(d\left(fx+e\right)^p\right)^q\right)\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x+g)/(a+b*ln(c*(d*(f*x+e)^p)^q))^2,x)
```

```
[Out] int((h*x+g)/(a+b*ln(c*(d*(f*x+e)^p)^q))^2,x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="maxima")
```

```
[Out] -(f*h*x^2 + (f*g + h*e)*x + g*e)/(b^2*f*p*q*log(((f*x + e)^p)^q) + a*b*f*p*
q + (f*p*q^2*log(d) + f*p*q*log(c))*b^2) + integrate((2*f*h*x + f*g + h*e)/
(b^2*f*p*q*log(((f*x + e)^p)^q) + a*b*f*p*q + (f*p*q^2*log(d) + f*p*q*log(c
))*b^2), x)
```

Fricas [A]
time = 0.35, size = 342, normalized size = 1.53

$$\frac{\left((afg - ahe + (bfgpq - bhpqe)\log(fx+e) + (bfg - bhe)\log(c) + (bfgq - bhqe)\log(d))e^{\left(\frac{bq\log(d)+b\log(c)+a}{bpq}\right)}\operatorname{log\_integral}\left((fx+e)e^{\left(\frac{bq\log(d)+b\log(c)+a}{bpq}\right)}\right) - (bf^2hpqx^2 + bf^2gpqx + (bfhpqx + bfgpq)e)e^{\left(\frac{2(bq\log(d)+b\log(c)+a)}{bpq}\right)} + 2(bhpq\log(fx+e) + bhq\log(d) + bh\log(c) + ah)\operatorname{log\_integral}\left((f^2x^2 + 2fxe + e^2)e^{\left(\frac{2(bq\log(d)+b\log(c)+a)}{bpq}\right)}\right)\right)e^{\left(-\frac{2(bq\log(d)+b\log(c)+a)}{bpq}\right)}}{b^3f^2p^3q^3\log(fx+e) + b^3f^2p^2q^3\log(d) + b^3f^2p^2q^2\log(c) + ab^2f^2p^2q^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="fricas")
```

```
[Out] ((a*f*g - a*h*e + (b*f*g*p*q - b*h*p*q*e)*log(f*x + e) + (b*f*g - b*h*e)*lo
g(c) + (b*f*g*q - b*h*q*e)*log(d))*e^((b*q*log(d) + b*log(c) + a)/(b*p*q))*
log_integral((f*x + e)*e^((b*q*log(d) + b*log(c) + a)/(b*p*q))) - (b*f^2*h*
p*q*x^2 + b*f^2*g*p*q*x + (b*f*h*p*q*x + b*f*g*p*q)*e)*e^(2*(b*q*log(d) + b
*log(c) + a)/(b*p*q)) + 2*(b*h*p*q*log(f*x + e) + b*h*q*log(d) + b*h*log(c)
 + a*h)*log_integral((f^2*x^2 + 2*f*x*e + e^2)*e^(2*(b*q*log(d) + b*log(c)
+ a)/(b*p*q))))*e^(-2*(b*q*log(d) + b*log(c) + a)/(b*p*q))/(b^3*f^2*p^3*q^3
*log(f*x + e) + b^3*f^2*p^2*q^3*log(d) + b^3*f^2*p^2*q^2*log(c) + a*b^2*f^2
*p^2*q^2)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{g + hx}{\left(a + b\log\left(c\left(d\left(e + fx\right)^{p}\right)^{q}\right)\right)^{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)/(a+b*ln(c*(d*(f*x+e)**p)**q))**2,x)
```

```
[Out] Integral((g + h*x)/(a + b*log(c*(d*(e + f*x)**p)**q))**2, x)
```

Giac [**B**] Leaf count of result is larger than twice the leaf count of optimal. 1968 vs. $2(234) = 468$.

time = 4.99, size = 1968, normalized size = 8.79

Too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="giac")
```

```
[Out] -(f*x + e)*b*f*g*p*q/(b^3*f^2*p^3*q^3*log(f*x + e) + b^3*f^2*p^2*q^3*log(d)
 + b^3*f^2*p^2*q^2*log(c) + a*b^2*f^2*p^2*q^2) - (f*x + e)^2*b*h*p*q/(b^3*f
^2*p^3*q^3*log(f*x + e) + b^3*f^2*p^2*q^3*log(d) + b^3*f^2*p^2*q^2*log(c) +
 a*b^2*f^2*p^2*q^2) + (f*x + e)*b*h*p*q*e/(b^3*f^2*p^3*q^3*log(f*x + e) + b
^3*f^2*p^2*q^3*log(d) + b^3*f^2*p^2*q^2*log(c) + a*b^2*f^2*p^2*q^2) + b*f*g
*p*q*Ei(log(d)/p + log(c)/(p*q) + a/(b*p*q) + log(f*x + e))*e^(-a/(b*p*q))*
log(f*x + e)/((b^3*f^2*p^3*q^3*log(f*x + e) + b^3*f^2*p^2*q^3*log(d) + b^3*
f^2*p^2*q^2*log(c) + a*b^2*f^2*p^2*q^2)*c^(1/(p*q))*d^(1/p)) - b*h*p*q*Ei(l
og(d)/p + log(c)/(p*q) + a/(b*p*q) + log(f*x + e))*e^(-a/(b*p*q) + 1)*log(f
*x + e)/((b^3*f^2*p^3*q^3*log(f*x + e) + b^3*f^2*p^2*q^3*log(d) + b^3*f^2*p
^2*q^2*log(c) + a*b^2*f^2*p^2*q^2)*c^(1/(p*q))*d^(1/p)) + 2*b*h*p*q*Ei(2*lo
g(d)/p + 2*log(c)/(p*q) + 2*a/(b*p*q) + 2*log(f*x + e))*e^(-2*a/(b*p*q))*lo
g(f*x + e)/((b^3*f^2*p^3*q^3*log(f*x + e) + b^3*f^2*p^2*q^3*log(d) + b^3*f^
2*p^2*q^2*log(c) + a*b^2*f^2*p^2*q^2)*c^(2/(p*q))*d^(2/p)) + b*f*g*q*Ei(log
(d)/p + log(c)/(p*q) + a/(b*p*q) + log(f*x + e))*e^(-a/(b*p*q))*log(d)/((b^
3*f^2*p^3*q^3*log(f*x + e) + b^3*f^2*p^2*q^3*log(d) + b^3*f^2*p^2*q^2*log(c
) + a*b^2*f^2*p^2*q^2)*c^(1/(p*q))*d^(1/p)) + b*f*g*Ei(log(d)/p + log(c)/(p
*q) + a/(b*p*q) + log(f*x + e))*e^(-a/(b*p*q))*log(c)/((b^3*f^2*p^3*q^3*log
(f*x + e) + b^3*f^2*p^2*q^3*log(d) + b^3*f^2*p^2*q^2*log(c) + a*b^2*f^2*p^2
*q^2)*c^(1/(p*q))*d^(1/p)) - b*h*q*Ei(log(d)/p + log(c)/(p*q) + a/(b*p*q) +
 log(f*x + e))*e^(-a/(b*p*q) + 1)*log(d)/((b^3*f^2*p^3*q^3*log(f*x + e) + b
^3*f^2*p^2*q^3*log(d) + b^3*f^2*p^2*q^2*log(c) + a*b^2*f^2*p^2*q^2)*c^(1/(p
*q))*d^(1/p)) + 2*b*h*q*Ei(2*log(d)/p + 2*log(c)/(p*q) + 2*a/(b*p*q) + 2*lo
g(f*x + e))*e^(-2*a/(b*p*q))*log(d)/((b^3*f^2*p^3*q^3*log(f*x + e) + b^3*f^
2*p^2*q^3*log(d) + b^3*f^2*p^2*q^2*log(c) + a*b^2*f^2*p^2*q^2)*c^(2/(p*q))*
d^(2/p)) + a*f*g*Ei(log(d)/p + log(c)/(p*q) + a/(b*p*q) + log(f*x + e))*e^(
-a/(b*p*q))/((b^3*f^2*p^3*q^3*log(f*x + e) + b^3*f^2*p^2*q^3*log(d) + b^3*f
^2*p^2*q^2*log(c) + a*b^2*f^2*p^2*q^2)*c^(1/(p*q))*d^(1/p)) - b*h*Ei(log(d)
/p + log(c)/(p*q) + a/(b*p*q) + log(f*x + e))*e^(-a/(b*p*q) + 1)*log(c)/((b
^3*f^2*p^3*q^3*log(f*x + e) + b^3*f^2*p^2*q^3*log(d) + b^3*f^2*p^2*q^2*log(
c) + a*b^2*f^2*p^2*q^2)*c^(1/(p*q))*d^(1/p)) + 2*b*h*Ei(2*log(d)/p + 2*log(
c)/(p*q) + 2*a/(b*p*q) + 2*log(f*x + e))*e^(-2*a/(b*p*q))*log(c)/((b^3*f^2*
p^3*q^3*log(f*x + e) + b^3*f^2*p^2*q^3*log(d) + b^3*f^2*p^2*q^2*log(c) + a*
b^2*f^2*p^2*q^2)*c^(2/(p*q))*d^(2/p)) - a*h*Ei(log(d)/p + log(c)/(p*q) + a/
(b*p*q) + log(f*x + e))*e^(-a/(b*p*q) + 1)/((b^3*f^2*p^3*q^3*log(f*x + e) +
 b^3*f^2*p^2*q^3*log(d) + b^3*f^2*p^2*q^2*log(c) + a*b^2*f^2*p^2*q^2)*c^(1/
```

```
(p*q))*d^(1/p)) + 2*a*h*Ei(2*log(d)/p + 2*log(c)/(p*q) + 2*a/(b*p*q) + 2*lo
g(f*x + e))*e^(-2*a/(b*p*q))/((b^3*f^2*p^3*q^3*log(f*x + e) + b^3*f^2*p^2*q
^3*log(d) + b^3*f^2*p^2*q^2*log(c) + a*b^2*f^2*p^2*q^2)*c^(2/(p*q))*d^(2/p)
)
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{g+h\,x}{\left(a+b\,\ln\left(c\,\left(d\,\left(e+f\,x\right)^p\right)^q\right)\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g + h*x)/(a + b*log(c*(d*(e + f*x)^p)^q))^2,x)
[Out] int((g + h*x)/(a + b*log(c*(d*(e + f*x)^p)^q))^2, x)
```

3.452 $\int \frac{1}{(a+b\log(c(d(e+fx)^p)^q))^2}\,dx$

Optimal. Leaf size=123

$$\frac{e^{-\frac{a}{bpq}}(e+fx)\left(c(d(e+fx)^p)^q\right)^{-\frac{1}{pq}}\operatorname{Ei}\left(\frac{a+b\log(c(d(e+fx)^p)^q)}{bpq}\right)}{b^2fp^2q^2}-\frac{e+fx}{bfpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}$$

```
[Out] (f*x+e)*Ei((a+b*ln(c*(d*(f*x+e)^p)^q))/b/p/q)/b^2/exp(a/b/p/q)/f/p^2/q^2/((
c*(d*(f*x+e)^p)^q)^(1/p/q))+(-f*x-e)/b/f/p/q/(a+b*ln(c*(d*(f*x+e)^p)^q))
```

Rubi [A]
time = 0.12, antiderivative size = 123, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {2436, 2334, 2337, 2209, 2495}

$$\frac{(e+fx)e^{-\frac{a}{bpq}}\left(c(d(e+fx)^p)^q\right)^{-\frac{1}{pq}}\operatorname{Ei}\left(\frac{a+b\log(c(d(e+fx)^p)^q)}{bpq}\right)}{b^2fp^2q^2}-\frac{e+fx}{bfpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])^(-2),x]
```

```
[Out] ((e + f*x)*ExpIntegralEi[(a + b*Log[c*(d*(e + f*x)^p)^q])/(b*p*q)])/(b^2*E^
(a/(b*p*q))*f*p^2*q^2*(c*(d*(e + f*x)^p)^q)^(1/(p*q))) - (e + f*x)/(b*f*p*q
*(a + b*Log[c*(d*(e + f*x)^p)^q]))
```

Rule 2209

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/((c_.) + (d_.)*(x_)), x_Symbol] :> Si
mp[(F^(g*(e - c*(f/d)))/d)*ExpIntegralEi[f*g*(c + d*x)*(Log[F]/d)], x] /; F
reeQ[{F, c, d, e, f, g}, x] &&  !TrueQ[$UseGamma]
```

Rule 2334

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Simp[x*((a + b
*Log[c*x^n])^(p + 1)/(b*n*(p + 1))), x] - Dist[1/(b*n*(p + 1)), Int[(a + b*
Log[c*x^n])^(p + 1), x], x] /; FreeQ[{a, b, c, n}, x] && LtQ[p, -1] && Inte
gerQ[2*p]
```

Rule 2337

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2436

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2495

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{1}{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}\,dx = \text{Subst}\left(\int \frac{1}{\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^2}\,dx, cd^q(e+fx)^{pq}, c(d(e+fx)^p$$

$$= \text{Subst}\left(\frac{\text{Subst}\left(\int \frac{1}{(a+b\log(cd^q x^{pq}))^2}\,dx, x, e+fx\right)}{f}, cd^q(e+fx)^{pq}, c(d(e+$$

$$= -\frac{e+fx}{bfpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)} + \text{Subst}\left(\frac{\text{Subst}\left(\int \frac{1}{a+b\log(cd^q x^{pq})}\,d\right.}{bfpq}\right.$$

$$= -\frac{e+fx}{bfpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)} + \text{Subst}\left(\left((e+fx)\left(cd^q(e+fx)\right.\right.\right.$$

$$= \frac{e^{-\frac{a}{bpq}}(e+fx)\left(c(d(e+fx)^p)^q\right)^{-\frac{1}{pq}}\,\text{Ei}\left(\frac{a+b\log(c(d(e+fx)^p)^q)}{bpq}\right)}{b^2fp^2q^2} - \frac{}{bfpq\,(a+}$$

Mathematica [A]
time = 0.08, size = 163, normalized size = 1.33

$$-\frac{e^{-\frac{a}{bpq}}(e+fx)\left(c(d(e+fx)^p)^q\right)^{-\frac{1}{pq}}\left(be^{\frac{a}{bpq}}pq\left(c(d(e+fx)^p)^q\right)^{\frac{1}{pq}}-\text{Ei}\left(\frac{a+b\log(c(d(e+fx)^p)^q)}{bpq}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)\right)}{b^2fp^2q^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])^(-2),x]
```

```
[Out] -(((e + f*x)*(b*E^(a/(b*p*q))*p*q*(c*(d*(e + f*x)^p)^q)^(1/(p*q)) - ExpInte
gralEi[(a + b*Log[c*(d*(e + f*x)^p)^q])/(b*p*q)]*(a + b*Log[c*(d*(e + f*x)^
p)^q])))/(b^2*E^(a/(b*p*q))*f*p^2*q^2*(c*(d*(e + f*x)^p)^q)^(1/(p*q))*(a +
b*Log[c*(d*(e + f*x)^p)^q])))
```

Maple [F]
time = 0.04, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(a+b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+b*ln(c*(d*(f*x+e)^p)^q))^2,x)
```

```
[Out] int(1/(a+b*ln(c*(d*(f*x+e)^p)^q))^2,x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="maxima")
```

```
[Out] -(f*x + e)/(b^2*f*p*q*log(((f*x + e)^p)^q) + a*b*f*p*q + (f*p*q^2*log(d) +
f*p*q*log(c))*b^2) + integrate(1/(b^2*p*q*log(((f*x + e)^p)^q) + a*b*p*q +
(p*q^2*log(d) + p*q*log(c))*b^2), x)
```

Fricas [A]
time = 0.38, size = 175, normalized size = 1.42

$$-\frac{\left((bfpqx+bpqe)e^{\left(\frac{bq\log(d)+b\log(c)+a}{bpq}\right)}-(bpq\log\left(fx+e\right)+bq\log\left(d\right)+b\log\left(c\right)+a)\operatorname{log\_integral}\left((fx+e)e^{\left(\frac{bq\log(d)+b\log(c)+a}{bpq}\right)}\right)\right)e^{\left(-\frac{bq\log(d)+b\log(c)+a}{bpq}\right)}}{b^{3}fp^{3}q^{3}\log\left(fx+e\right)+b^{3}fp^{2}q^{3}\log\left(d\right)+b^{3}fp^{2}q^{2}\log\left(c\right)+ab^{2}fp^{2}q^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="fricas")
```

```
[Out] -((b*f*p*q*x + b*p*q*e)*e^((b*q*log(d) + b*log(c) + a)/(b*p*q)) - (b*p*q*lo
g(f*x + e) + b*q*log(d) + b*log(c) + a)*log_integral((f*x + e)*e^((b*q*log(
d) + b*log(c) + a)/(b*p*q))))*e^(-(b*q*log(d) + b*log(c) + a)/(b*p*q))/(b^3
*f*p^3*q^3*log(f*x + e) + b^3*f*p^2*q^3*log(d) + b^3*f*p^2*q^2*log(c) + a*b
^2*f*p^2*q^2)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(a+b\log\left(c\left(d\left(e+fx\right)^{p}\right)^{q}\right)\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*ln(c*(d*(f*x+e)**p)**q))**2,x)
```

```
[Out] Integral((a + b*log(c*(d*(e + f*x)**p)**q))**(-2), x)
```

Giac [B] Leaf count of result is larger than twice the leaf count of optimal. 593 vs. 2(128) = 256.
time = 4.28, size = 593, normalized size = 4.82

$$-\frac{(fx+e)bpq}{b^3fp^3q^3\log(fx+e)+b^3fp^2q^3\log(d)+b^3fp^2q^2\log(c)+ab^2fp^2q^2}+\frac{bpq\mathrm{Ei}\left(\frac{\log(d)}{p}+\frac{\log(c)}{pq}+\frac{a}{bpq}+\log(fx+e)\right)e^{\left(-\frac{a}{bpq}\right)}\log(fx+e)}{(b^3fp^3q^3\log(fx+e)+b^3fp^2q^3\log(d)+b^3fp^2q^2\log(c)+ab^2fp^2q^2)c^{\frac{1}{pq}}d^{\left(\frac{1}{p}\right)}}+\frac{bq\mathrm{Ei}\left(\frac{\log(d)}{p}+\frac{\log(c)}{pq}+\frac{a}{bpq}+\log(fx+e)\right)e^{\left(-\frac{a}{bpq}\right)}\log(d)}{(b^3fp^3q^3\log(fx+e)+b^3fp^2q^3\log(d)+b^3fp^2q^2\log(c)+ab^2fp^2q^2)c^{\frac{1}{pq}}d^{\left(\frac{1}{p}\right)}}+\frac{b\mathrm{Ei}\left(\frac{\log(d)}{p}+\frac{\log(c)}{pq}+\frac{a}{bpq}+\log(fx+e)\right)e^{\left(-\frac{a}{bpq}\right)}\log(c)}{(b^3fp^3q^3\log(fx+e)+b^3fp^2q^3\log(d)+b^3fp^2q^2\log(c)+ab^2fp^2q^2)c^{\frac{1}{pq}}d^{\left(\frac{1}{p}\right)}}+\frac{a\mathrm{Ei}\left(\frac{\log(d)}{p}+\frac{\log(c)}{pq}+\frac{a}{bpq}+\log(fx+e)\right)e^{\left(-\frac{a}{bpq}\right)}}{(b^3fp^3q^3\log(fx+e)+b^3fp^2q^3\log(d)+b^3fp^2q^2\log(c)+ab^2fp^2q^2)c^{\frac{1}{pq}}d^{\left(\frac{1}{p}\right)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="giac")
```

```
[Out] -(f*x + e)*b*p*q/(b^3*f*p^3*q^3*log(f*x + e) + b^3*f*p^2*q^3*log(d) + b^3*f
*p^2*q^2*log(c) + a*b^2*f*p^2*q^2) + b*p*q*Ei(log(d)/p + log(c)/(p*q) + a/(
b*p*q) + log(f*x + e))*e^(-a/(b*p*q))*log(f*x + e)/((b^3*f*p^3*q^3*log(f*x
+ e) + b^3*f*p^2*q^3*log(d) + b^3*f*p^2*q^2*log(c) + a*b^2*f*p^2*q^2)*c^(1/
(p*q))*d^(1/p)) + b*q*Ei(log(d)/p + log(c)/(p*q) + a/(b*p*q) + log(f*x + e)
)*e^(-a/(b*p*q))*log(d)/((b^3*f*p^3*q^3*log(f*x + e) + b^3*f*p^2*q^3*log(d)
 + b^3*f*p^2*q^2*log(c) + a*b^2*f*p^2*q^2)*c^(1/(p*q))*d^(1/p)) + b*Ei(log(
d)/p + log(c)/(p*q) + a/(b*p*q) + log(f*x + e))*e^(-a/(b*p*q))*log(c)/((b^3
*f*p^3*q^3*log(f*x + e) + b^3*f*p^2*q^3*log(d) + b^3*f*p^2*q^2*log(c) + a*b
^2*f*p^2*q^2)*c^(1/(p*q))*d^(1/p)) + a*Ei(log(d)/p + log(c)/(p*q) + a/(b*p*
q) + log(f*x + e))*e^(-a/(b*p*q))/((b^3*f*p^3*q^3*log(f*x + e) + b^3*f*p^2*
q^3*log(d) + b^3*f*p^2*q^2*log(c) + a*b^2*f*p^2*q^2)*c^(1/(p*q))*d^(1/p))
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{1}{{\left(a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)\right)}^2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a + b*log(c*(d*(e + f*x)^p)^q))^2,x)
```

```
[Out] int(1/(a + b*log(c*(d*(e + f*x)^p)^q))^2, x)
```

3.453 $\int \frac{1}{(g+hx)(a+b\log(c(d(e+fx)^p)^q))^2} dx$

Optimal. Leaf size=31

$$\operatorname{Int}\left(\frac{1}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2},x\right)$$

```
[Out] Unintegrable(1/(h*x+g)/(a+b*ln(c*(d*(f*x+e)^p)^q))^2,x)
```

Rubi [A]
time = 0.04, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int \frac{1}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2} dx$$

Verification is not applicable to the result.

```
[In] Int[1/((g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^2),x]
```

```
[Out] Defer[Int][1/((g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^2), x]
```

Rubi steps

$$\int \frac{1}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2} dx = \int \frac{1}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2} dx$$

Mathematica [A]
time = 0.74, size = 0, normalized size = 0.00

$$\int \frac{1}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2} dx$$

Verification is not applicable to the result.

```
[In] Integrate[1/((g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^2),x]
```

```
[Out] Integrate[1/((g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^2), x]
```

Maple [A]
time = 0.22, size = 0, normalized size = 0.00

$$\int \frac{1}{(hx+g)\left(a+b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)\right)^{2}} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(h*x+g)/(a+b*ln(c*(d*(f*x+e)^p)^q))^2,x)
```

```
[Out] int(1/(h*x+g)/(a+b*ln(c*(d*(f*x+e)^p)^q))^2,x)
```

Maxima [A]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="maxima")
```

```
[Out] (f*g - h*e)*integrate(1/(a*b*f*g^2*p*q + (f*g^2*p*q^2*log(d) + f*g^2*p*q*lo
g(c))*b^2 + (a*b*f*h^2*p*q + (f*h^2*p*q^2*log(d) + f*h^2*p*q*log(c))*b^2)*x
^2 + 2*(a*b*f*g*h*p*q + (f*g*h*p*q^2*log(d) + f*g*h*p*q*log(c))*b^2)*x + (b
^2*f*h^2*p*q*x^2 + 2*b^2*f*g*h*p*q*x + b^2*f*g^2*p*q)*log(((f*x + e)^p)^q))
, x) - (f*x + e)/(a*b*f*g*p*q + (f*g*p*q^2*log(d) + f*g*p*q*log(c))*b^2 + (
a*b*f*h*p*q + (f*h*p*q^2*log(d) + f*h*p*q*log(c))*b^2)*x + (b^2*f*h*p*q*x +
 b^2*f*g*p*q)*log(((f*x + e)^p)^q))
```

Fricas [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="fricas")
```

```
[Out] integral(1/(a^2*h*x + a^2*g + (b^2*h*x + b^2*g)*log(((f*x + e)^p*d)^q*c)^2
+ 2*(a*b*h*x + a*b*g)*log(((f*x + e)^p*d)^q*c)), x)
```

Sympy [A]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(a + b \log \left(c \left(d \left(e + f x\right)^{p}\right)^{q}\right)\right)^{2} \left(g + h x\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(a+b*ln(c*(d*(f*x+e)**p)**q))**2,x)
```

```
[Out] Integral(1/((a + b*log(c*(d*(e + f*x)**p)**q))**2*(g + h*x)), x)
```

Giac [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="giac")
```

```
[Out] integrate(1/((h*x + g)*(b*log(((f*x + e)^p*d)^q*c) + a)^2), x)
```

Mupad [A]
time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{1}{(g+h\,x)\,\left(a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((g + h*x)*(a + b*log(c*(d*(e + f*x)^p)^q))^2),x)
```

```
[Out] int(1/((g + h*x)*(a + b*log(c*(d*(e + f*x)^p)^q))^2), x)
```

3.454 $\int \frac{1}{(g+hx)^2(a+b\log(c(d(e+fx)^p)^q))^2}\,dx$

Optimal. Leaf size=31

$$\text{Int}\left(\frac{1}{(g+hx)^2\,(a+b\log\left(c\left(d(e+fx)^p\right)^q\right))^2},x\right)$$

```
[Out] Unintegrable(1/(h*x+g)^2/(a+b*ln(c*(d*(f*x+e)^p)^q))^2,x)
```

Rubi [A]
time = 0.04, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int \frac{1}{(g+hx)^2\,(a+b\log\left(c\left(d(e+fx)^p\right)^q\right))^2}\,dx$$

Verification is not applicable to the result.

```
[In] Int[1/((g + h*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])^2),x]
[Out] Defer[Int][1/((g + h*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])^2), x]
```

Rubi steps

$$\int \frac{1}{(g+hx)^2\,(a+b\log\left(c\left(d(e+fx)^p\right)^q\right))^2}\,dx = \int \frac{1}{(g+hx)^2\,(a+b\log\left(c\left(d(e+fx)^p\right)^q\right))^2}\,dx$$

Mathematica [A]
time = 9.22, size = 0, normalized size = 0.00

$$\int \frac{1}{(g+hx)^2\,(a+b\log\left(c\left(d(e+fx)^p\right)^q\right))^2}\,dx$$

Verification is not applicable to the result.

```
[In] Integrate[1/((g + h*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])^2),x]
[Out] Integrate[1/((g + h*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])^2), x]
```

Maple [A]
time = 0.17, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(hx+g\right)^{2}\left(a+b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(h*x+g)^2/(a+b*ln(c*(d*(f*x+e)^p)^q))^2,x)
```

```
[Out] int(1/(h*x+g)^2/(a+b*ln(c*(d*(f*x+e)^p)^q))^2,x)
```

Maxima [A]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)^2/(a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="maxima")
```

```
[Out] -(f*x + e)/(a*b*f*g^2*p*q + (f*g^2*p*q^2*log(d) + f*g^2*p*q*log(c))*b^2 + (
a*b*f*h^2*p*q + (f*h^2*p*q^2*log(d) + f*h^2*p*q*log(c))*b^2)*x^2 + 2*(a*b*f
*g*h*p*q + (f*g*h*p*q^2*log(d) + f*g*h*p*q*log(c))*b^2)*x + (b^2*f*h^2*p*q*
x^2 + 2*b^2*f*g*h*p*q*x + b^2*f*g^2*p*q)*log(((f*x + e)^p)^q)) - integrate(
(f*h*x - f*g + 2*h*e)/(a*b*f*g^3*p*q + (a*b*f*h^3*p*q + (f*h^3*p*q^2*log(d)
 + f*h^3*p*q*log(c))*b^2)*x^3 + (f*g^3*p*q^2*log(d) + f*g^3*p*q*log(c))*b^2
 + 3*(a*b*f*g*h^2*p*q + (f*g*h^2*p*q^2*log(d) + f*g*h^2*p*q*log(c))*b^2)*x^
2 + 3*(a*b*f*g^2*h*p*q + (f*g^2*h*p*q^2*log(d) + f*g^2*h*p*q*log(c))*b^2)*x
 + (b^2*f*h^3*p*q*x^3 + 3*b^2*f*g*h^2*p*q*x^2 + 3*b^2*f*g^2*h*p*q*x + b^2*f
*g^3*p*q)*log(((f*x + e)^p)^q)), x)
```

Fricas [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)^2/(a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="fricas")
```

```
[Out] integral(1/(a^2*h^2*x^2 + 2*a^2*g*h*x + a^2*g^2 + (b^2*h^2*x^2 + 2*b^2*g*h*
x + b^2*g^2)*log(((f*x + e)^p*d)^q*c)^2 + 2*(a*b*h^2*x^2 + 2*a*b*g*h*x + a*
b*g^2)*log(((f*x + e)^p*d)^q*c)), x)
```

Sympy [A]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(a + b \log \left(c \left(d \left(e + f x\right)^{p}\right)^{q}\right)\right)^{2} \left(g + h x\right)^{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)**2/(a+b*ln(c*(d*(f*x+e)**p)**q))**2,x)
```

```
[Out] Integral(1/((a + b*log(c*(d*(e + f*x)**p)**q))**2*(g + h*x)**2), x)
```

Giac [**A**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)^2/(a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="giac")
```

```
[Out] integrate(1/((h*x + g)^2*(b*log(((f*x + e)^p*d)^q*c) + a)^2), x)
```

Mupad [**A**]
time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{1}{(g+h\,x)^2\,\left(a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((g + h*x)^2*(a + b*log(c*(d*(e + f*x)^p)^q))^2),x)
```

```
[Out] int(1/((g + h*x)^2*(a + b*log(c*(d*(e + f*x)^p)^q))^2), x)
```

3.455 $\int \frac{(g+hx)^2}{(a+b\log(c(d(e+fx)^p)^q))^3}\,dx$

Optimal. Leaf size=432

$$\frac{e^{-\frac{a}{bpq}}(fg-eh)^2(e+fx)\left(c(d(e+fx)^p)^q\right)^{-\frac{1}{pq}}\operatorname{Ei}\left(\frac{a+b\log(c(d(e+fx)^p)^q)}{bpq}\right)}{2b^3f^3p^3q^3}+\frac{4e^{-\frac{2a}{bpq}}h(fg-eh)(e+fx)^2\left(c(d(e+fx\right.}{b^3f^3p^3}$$

```
[Out] 1/2*(-e*h+f*g)^2*(f*x+e)*Ei((a+b*ln(c*(d*(f*x+e)^p)^q))/b/p/q)/b^3/exp(a/b/
p/q)/f^3/p^3/q^3/((c*(d*(f*x+e)^p)^q)^(1/p/q))+4*h*(-e*h+f*g)*(f*x+e)^2*Ei(
2*(a+b*ln(c*(d*(f*x+e)^p)^q))/b/p/q)/b^3/exp(2*a/b/p/q)/f^3/p^3/q^3/((c*(d*
(f*x+e)^p)^q)^(2/p/q))+9/2*h^2*(f*x+e)^3*Ei(3*(a+b*ln(c*(d*(f*x+e)^p)^q))/b
/p/q)/b^3/exp(3*a/b/p/q)/f^3/p^3/q^3/((c*(d*(f*x+e)^p)^q)^(3/p/q))-1/2*(f*x
+e)*(h*x+g)^2/b/f/p/q/(a+b*ln(c*(d*(f*x+e)^p)^q))^2+(-e*h+f*g)*(f*x+e)*(h*x
+g)/b^2/f^2/p^2/q^2/(a+b*ln(c*(d*(f*x+e)^p)^q))-3/2*(f*x+e)*(h*x+g)^2/b^2/f
/p^2/q^2/(a+b*ln(c*(d*(f*x+e)^p)^q))
```

Rubi [A]
time = 1.49, antiderivative size = 432, normalized size of antiderivative = 1.00, number of steps used = 34, number of rules used = 8, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}} = 0.286$, Rules used = {2447, 2446, 2436, 2337, 2209, 2437, 2347, 2495}

$$\frac{4h(e+fx)^2e^{-\frac{2a}{bpq}}(fg-eh)\left(c(d(e+fx)^p)^q\right)^{-\frac{2}{pq}}\operatorname{Ei}\left(\frac{2(a+b\log(c(d(e+fx)^p)^q))}{bpq}\right)}{b^3f^3p^3q^3}+\frac{(e+fx)e^{-\frac{a}{bpq}}(fg-eh)^2\left(c(d(e+fx)^p)^q\right)^{-\frac{1}{pq}}\operatorname{Ei}\left(\frac{a+b\log(c(d(e+fx)^p)^q)}{bpq}\right)}{2b^3f^3p^3q^3}+\frac{9h^2(e+fx)^3e^{-\frac{3a}{bpq}}\left(c(d(e+fx)^p)^q\right)^{-\frac{3}{pq}}\operatorname{Ei}\left(\frac{3(a+b\log(c(d(e+fx)^p)^q))}{bpq}\right)}{2b^3f^3p^3q^3}+\frac{(e+fx)(g+hx)(fg-eh)}{b^2f^2p^2q^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}-\frac{3(e+fx)(g+hx)^2}{2b^2fp^2q^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}-\frac{(e+fx)(g+hx)^2}{2bfpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(g + h*x)^2/(a + b*Log[c*(d*(e + f*x)^p)^q])^3,x]
```

```
[Out] ((f*g - e*h)^2*(e + f*x)*ExpIntegralEi[(a + b*Log[c*(d*(e + f*x)^p)^q])/(b*
p*q)])/(2*b^3*E^(a/(b*p*q))*f^3*p^3*q^3*(c*(d*(e + f*x)^p)^q)^(1/(p*q))) +
(4*h*(f*g - e*h)*(e + f*x)^2*ExpIntegralEi[(2*(a + b*Log[c*(d*(e + f*x)^p)^
q]))/(b*p*q)])/(b^3*E^((2*a)/(b*p*q))*f^3*p^3*q^3*(c*(d*(e + f*x)^p)^q)^(2/
(p*q))) + (9*h^2*(e + f*x)^3*ExpIntegralEi[(3*(a + b*Log[c*(d*(e + f*x)^p)^
q]))/(b*p*q)])/(2*b^3*E^((3*a)/(b*p*q))*f^3*p^3*q^3*(c*(d*(e + f*x)^p)^q)^(
3/(p*q))) - ((e + f*x)*(g + h*x)^2)/(2*b*f*p*q*(a + b*Log[c*(d*(e + f*x)^p)
^q])^2) + ((f*g - e*h)*(e + f*x)*(g + h*x))/(b^2*f^2*p^2*q^2*(a + b*Log[c*(
d*(e + f*x)^p)^q])) - (3*(e + f*x)*(g + h*x)^2)/(2*b^2*f*p^2*q^2*(a + b*Log
[c*(d*(e + f*x)^p)^q]))
```

Rule 2209

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/((c_.) + (d_.)*(x_)), x_Symbol] :> Si
mp[(F^(g*(e - c*(f/d)))/d)*ExpIntegralEi[f*g*(c + d*x)*(Log[F]/d)], x] /; F
reeQ[{F, c, d, e, f, g}, x] &&  !TrueQ[$UseGamma]
```

Rule 2337

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2347

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_)*((d_.)*(x_))^(m_.), x_Symbol
] :> Dist[(d*x)^(m + 1)/(d*n*(c*x^n)^((m + 1)/n)), Subst[Int[E^(((m + 1)/n)
*x)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b, c, d, m, n, p}, x]
```

Rule 2436

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2437

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[(f*(x/d))^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2446

```
Int[((f_.) + (g_.)*(x_))^(q_.)/((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)
]*(b_.)), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q/(a + b*Log[c*(d + e*
x)^n]), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0] &
& IGtQ[q, 0]
```

Rule 2447

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[(d + e*x)*(f + g*x)^q*((a + b*Log[c*(d + e
*x)^n])^(p + 1)/(b*e*n*(p + 1))), x] + (-Dist[(q + 1)/(b*n*(p + 1)), Int[(f
 + g*x)^q*(a + b*Log[c*(d + e*x)^n])^(p + 1), x], x] + Dist[q*((e*f - d*g)/
(b*e*n*(p + 1))), Int[(f + g*x)^(q - 1)*(a + b*Log[c*(d + e*x)^n])^(p + 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0] && LtQ[
p, -1] && GtQ[q, 0]
```

Rule 2495

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] && !IntegerQ[n] && !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
```

```
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{(g+hx)^2}{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3}\,dx = \text{Subst}\left(\int \frac{(g+hx)^2}{\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^3}\,dx, cd^q(e+fx)^{pq}, c(d(e+fx)^p)^q$$

$$= -\frac{(e+fx)(g+hx)^2}{2bfpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2} + \text{Subst}\left(\frac{3\int \frac{(g+hx)^2}{(a+b\log(cd^q(e+fx)^{pq}))^2}}{2bpq}\right.$$

$$= -\frac{(e+fx)(g+hx)^2}{2bfpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2} + \frac{(fg-eh)(e+fx)(g+hx}{b^2f^2p^2q^2\left(a+b\log\left(c\left(d(e+fx\right.\right.\right.}$$

$$= -\frac{(e+fx)(g+hx)^2}{2bfpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2} + \frac{(fg-eh)(e+fx)(g+hx}{b^2f^2p^2q^2\left(a+b\log\left(c\left(d(e+fx\right.\right.\right.}$$

$$= -\frac{(e+fx)(g+hx)^2}{2bfpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2} + \frac{(fg-eh)(e+fx)(g+hx}{b^2f^2p^2q^2\left(a+b\log\left(c\left(d(e+fx\right.\right.\right.}$$

$$= \frac{e^{-\frac{a}{bpq}}(fg-eh)^2(e+fx)\left(c(d(e+fx)^p)^q\right)^{-\frac{1}{pq}}\text{Ei}\left(\frac{a+b\log(c(d(e+fx)^p)^q)}{bpq}\right)}{b^3f^3p^3q^3} -$$

$$= \frac{e^{-\frac{a}{bpq}}(fg-eh)^2(e+fx)\left(c(d(e+fx)^p)^q\right)^{-\frac{1}{pq}}\text{Ei}\left(\frac{a+b\log(c(d(e+fx)^p)^q)}{bpq}\right)}{b^3f^3p^3q^3} -$$

$$= \frac{e^{-\frac{a}{bpq}}(fg-eh)^2(e+fx)\left(c(d(e+fx)^p)^q\right)^{-\frac{1}{pq}}\text{Ei}\left(\frac{a+b\log(c(d(e+fx)^p)^q)}{bpq}\right)}{2b^3f^3p^3q^3} +$$

Mathematica [A]
time = 1.45, size = 438, normalized size = 1.01

$$\frac{e^{-\frac{3a}{bpq}}(e+fx)\left(c(d(e+fx)^p)^q\right)^{-\frac{3}{pq}}\left(e^{\frac{2a}{bpq}}(fg-eh)^2\left(c(d(e+fx)^p)^q\right)^{\frac{2}{pq}}\text{Ei}\left(\frac{a+b\log(c(d(e+fx)^p)^q)}{bpq}\right)\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)^2 - 8e^{\frac{a}{bpq}}h(-fg+eh)(e+fx)\left(c(d(e+fx)^p)^q\right)^{\frac{1}{pq}}\text{Ei}\left(\frac{2(a+b\log(c(d(e+fx)^p)^q))}{bpq}\right)\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)^2 + 9h^2(e+fx)^2\text{Ei}\left(\frac{3(a+b\log(c(d(e+fx)^p)^q))}{bpq}\right)\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)^2 - be^{\frac{3a}{bpq}}fpq\left(c(d(e+fx)^p)^q\right)^{\frac{3}{pq}}(g+hx)\left(bfpq(g+hx)+a(fg+2eh+3fhx)+b(2eh+f(g+3hx))\log\left(c(d(e+fx)^p)^q\right)\right)\right)}{2b^3f^3p^3q^3\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(g + h*x)^2/(a + b*Log[c*(d*(e + f*x)^p)^q])^3,x]
```

```
[Out] ((e + f*x)*(E^((2*a)/(b*p*q))*(f*g - e*h)^2*(c*(d*(e + f*x)^p)^q)^(2/(p*q))
*ExpIntegralEi[(a + b*Log[c*(d*(e + f*x)^p)^q])/(b*p*q)]*(a + b*Log[c*(d*(e
 + f*x)^p)^q])^2 - 8*E^(a/(b*p*q))*h*(-(f*g) + e*h)*(e + f*x)*(c*(d*(e + f*
```

```
x)^p)^q)^(1/(p*q))*ExpIntegralEi[(2*(a + b*Log[c*(d*(e + f*x)^p)^q]))/(b*p*
q)]*(a + b*Log[c*(d*(e + f*x)^p)^q])^2 + 9*h^2*(e + f*x)^2*ExpIntegralEi[(3
*(a + b*Log[c*(d*(e + f*x)^p)^q]))/(b*p*q)]*(a + b*Log[c*(d*(e + f*x)^p)^q]
)^2 - b*E^((3*a)/(b*p*q))*f*p*q*(c*(d*(e + f*x)^p)^q)^(3/(p*q))*(g + h*x)*(
b*f*p*q*(g + h*x) + a*(f*g + 2*e*h + 3*f*h*x) + b*(2*e*h + f*(g + 3*h*x))*L
og[c*(d*(e + f*x)^p)^q])))/(2*b^3*E^((3*a)/(b*p*q))*f^3*p^3*q^3*(c*(d*(e +
f*x)^p)^q)^(3/(p*q))*(a + b*Log[c*(d*(e + f*x)^p)^q])^2)
```

Maple [**F**]
time = 0.16, size = 0, normalized size = 0.00

$$\int \frac{(hx+g)^2}{(a+b\ln(c(d(fx+e)^p)^q))^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x+g)^2/(a+b*ln(c*(d*(f*x+e)^p)^q))^3,x)
```

```
[Out] int((h*x+g)^2/(a+b*ln(c*(d*(f*x+e)^p)^q))^3,x)
```

Maxima [**F**]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^2/(a+b*log(c*(d*(f*x+e)^p)^q))^3,x, algorithm="maxima")
```

```
[Out] -1/2*((3*a*f^2*h^2 + (f^2*h^2*p*q + 3*f^2*h^2*q*log(d) + 3*f^2*h^2*log(c))*
b)*x^3 + (4*a*f^2*g*h + 2*(f^2*g*h*p*q + 2*f^2*g*h*q*log(d) + 2*f^2*g*h*log
(c))*b + (5*a*f*h^2 + (f*h^2*p*q + 5*f*h^2*q*log(d) + 5*f*h^2*log(c))*b)*e)
*x^2 + (a*f^2*g^2 + (f^2*g^2*p*q + f^2*g^2*q*log(d) + f^2*g^2*log(c))*b + 2
*(a*h^2 + (h^2*q*log(d) + h^2*log(c))*b)*e^2 + 2*(3*a*f*g*h + (f*g*h*p*q +
3*f*g*h*q*log(d) + 3*f*g*h*log(c))*b)*e)*x + 2*(a*g*h + (g*h*q*log(d) + g*h
*log(c))*b)*e^2 + (a*f*g^2 + (f*g^2*p*q + f*g^2*q*log(d) + f*g^2*log(c))*b)
*e + (3*b*f^2*h^2*x^3 + b*f*g^2*e + 2*b*g*h*e^2 + (4*b*f^2*g*h + 5*b*f*h^2*
e)*x^2 + (b*f^2*g^2 + 6*b*f*g*h*e + 2*b*h^2*e^2)*x)*log(((f*x + e)^p)^q))/(
b^4*f^2*p^2*q^2*log(((f*x + e)^p)^q)^2 + a^2*b^2*f^2*p^2*q^2 + 2*(f^2*p^2*q
^3*log(d) + f^2*p^2*q^2*log(c))*a*b^3 + (f^2*p^2*q^4*log(d)^2 + 2*f^2*p^2*q
^3*log(c)*log(d) + f^2*p^2*q^2*log(c)^2)*b^4 + 2*(a*b^3*f^2*p^2*q^2 + (f^2*
p^2*q^3*log(d) + f^2*p^2*q^2*log(c))*b^4)*log(((f*x + e)^p)^q)) + integrate
(1/2*(9*f^2*h^2*x^2 + f^2*g^2 + 6*f*g*h*e + 2*h^2*e^2 + 2*(4*f^2*g*h + 5*f*
h^2*e)*x)/(b^3*f^2*p^2*q^2*log(((f*x + e)^p)^q) + a*b^2*f^2*p^2*q^2 + (f^2*
p^2*q^3*log(d) + f^2*p^2*q^2*log(c))*b^3), x)
```

Fricas [**B**] Leaf count of result is larger than twice the leaf count of optimal. 1803 vs. $2(444) = 888$.

time = 0.39, size = 1803, normalized size = 4.17

Too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^2/(a+b*log(c*(d*(f*x+e)^p)^q))^3,x, algorithm="fricas")
```

```
[Out] 1/2*(8*(a^2*f*g*h - a^2*h^2*e + (b^2*f*g*h*p^2*q^2 - b^2*h^2*p^2*q^2*e)*log
(f*x + e)^2 + (b^2*f*g*h - b^2*h^2*e)*log(c)^2 + (b^2*f*g*h*q^2 - b^2*h^2*q
^2*e)*log(d)^2 + 2*(a*b*f*g*h*p*q - a*b*h^2*p*q*e + (b^2*f*g*h*p*q - b^2*h^
2*p*q*e)*log(c) + (b^2*f*g*h*p*q^2 - b^2*h^2*p*q^2*e)*log(d))*log(f*x + e)
+ 2*(a*b*f*g*h - a*b*h^2*e)*log(c) + 2*(a*b*f*g*h*q - a*b*h^2*q*e + (b^2*f*
g*h*q - b^2*h^2*q*e)*log(c))*log(d))*e^((b*q*log(d) + b*log(c) + a)/(b*p*q)
)*log_integral((f^2*x^2 + 2*f*x*e + e^2)*e^(2*(b*q*log(d) + b*log(c) + a)/(
b*p*q))) + (a^2*f^2*g^2 - 2*a^2*f*g*h*e + a^2*h^2*e^2 + (b^2*f^2*g^2*p^2*q^
2 - 2*b^2*f*g*h*p^2*q^2*e + b^2*h^2*p^2*q^2*e^2)*log(f*x + e)^2 + (b^2*f^2*
g^2 - 2*b^2*f*g*h*e + b^2*h^2*e^2)*log(c)^2 + (b^2*f^2*g^2*q^2 - 2*b^2*f*g*
h*q^2*e + b^2*h^2*q^2*e^2)*log(d)^2 + 2*(a*b*f^2*g^2*p*q - 2*a*b*f*g*h*p*q*
e + a*b*h^2*p*q*e^2 + (b^2*f^2*g^2*p*q - 2*b^2*f*g*h*p*q*e + b^2*h^2*p*q*e^
2)*log(c) + (b^2*f^2*g^2*p*q^2 - 2*b^2*f*g*h*p*q^2*e + b^2*h^2*p*q^2*e^2)*l
og(d))*log(f*x + e) + 2*(a*b*f^2*g^2 - 2*a*b*f*g*h*e + a*b*h^2*e^2)*log(c)
+ 2*(a*b*f^2*g^2*q - 2*a*b*f*g*h*q*e + a*b*h^2*q*e^2 + (b^2*f^2*g^2*q - 2*b
^2*f*g*h*q*e + b^2*h^2*q*e^2)*log(c))*log(d))*e^(2*(b*q*log(d) + b*log(c) +
 a)/(b*p*q))*log_integral((f*x + e)*e^((b*q*log(d) + b*log(c) + a)/(b*p*q))
) - ((b^2*f^3*h^2*p^2*q^2 + 3*a*b*f^3*h^2*p*q)*x^3 + 2*(b^2*f^3*g*h*p^2*q^2
 + 2*a*b*f^3*g*h*p*q)*x^2 + (b^2*f^3*g^2*p^2*q^2 + a*b*f^3*g^2*p*q)*x + 2*(
a*b*f*h^2*p*q*x + a*b*f*g*h*p*q)*e^2 + (b^2*f^2*g^2*p^2*q^2 + a*b*f^2*g^2*p
*q + (b^2*f^2*h^2*p^2*q^2 + 5*a*b*f^2*h^2*p*q)*x^2 + 2*(b^2*f^2*g*h*p^2*q^2
 + 3*a*b*f^2*g*h*p*q)*x)*e + (3*b^2*f^3*h^2*p^2*q^2*x^3 + 4*b^2*f^3*g*h*p^2
*q^2*x^2 + b^2*f^3*g^2*p^2*q^2*x + 2*(b^2*f*h^2*p^2*q^2*x + b^2*f*g*h*p^2*q
^2)*e^2 + (5*b^2*f^2*h^2*p^2*q^2*x^2 + 6*b^2*f^2*g*h*p^2*q^2*x + b^2*f^2*g^
2*p^2*q^2)*e)*log(f*x + e) + (3*b^2*f^3*h^2*p*q*x^3 + 4*b^2*f^3*g*h*p*q*x^2
 + b^2*f^3*g^2*p*q*x + 2*(b^2*f*h^2*p*q*x + b^2*f*g*h*p*q)*e^2 + (5*b^2*f^2
*h^2*p*q*x^2 + 6*b^2*f^2*g*h*p*q*x + b^2*f^2*g^2*p*q)*e)*log(c) + (3*b^2*f^
3*h^2*p*q^2*x^3 + 4*b^2*f^3*g*h*p*q^2*x^2 + b^2*f^3*g^2*p*q^2*x + 2*(b^2*f*
h^2*p*q^2*x + b^2*f*g*h*p*q^2)*e^2 + (5*b^2*f^2*h^2*p*q^2*x^2 + 6*b^2*f^2*g
*h*p*q^2*x + b^2*f^2*g^2*p*q^2)*e)*log(d))*e^(3*(b*q*log(d) + b*log(c) + a)
/(b*p*q)) + 9*(b^2*h^2*p^2*q^2*log(f*x + e)^2 + b^2*h^2*q^2*log(d)^2 + b^2*
h^2*log(c)^2 + 2*a*b*h^2*log(c) + a^2*h^2 + 2*(b^2*h^2*p*q^2*log(d) + b^2*h
^2*p*q*log(c) + a*b*h^2*p*q)*log(f*x + e) + 2*(b^2*h^2*q*log(c) + a*b*h^2*q
)*log(d))*log_integral((f^3*x^3 + 3*f^2*x^2*e + 3*f*x*e^2 + e^3)*e^(3*(b*q*
log(d) + b*log(c) + a)/(b*p*q))))*e^(-3*(b*q*log(d) + b*log(c) + a)/(b*p*q)
)/(b^5*f^3*p^5*q^5*log(f*x + e)^2 + b^5*f^3*p^3*q^5*log(d)^2 + b^5*f^3*p^3*
q^3*log(c)^2 + 2*a*b^4*f^3*p^3*q^3*log(c) + a^2*b^3*f^3*p^3*q^3 + 2*(b^5*f^
```

```
3*p^4*q^5*log(d) + b^5*f^3*p^4*q^4*log(c) + a*b^4*f^3*p^4*q^4)*log(f*x + e)
 + 2*(b^5*f^3*p^3*q^4*log(c) + a*b^4*f^3*p^3*q^4)*log(d))
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(g+hx)^2}{(a+b\log\left(c\left(d\left(e+fx\right)^p\right)^q\right))^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)**2/(a+b*ln(c*(d*(f*x+e)**p)**q))**3,x)
```

```
[Out] Integral((g + h*x)**2/(a + b*log(c*(d*(e + f*x)**p)**q))**3, x)
```

Giac [B] Leaf count of result is larger than twice the leaf count of optimal. 6028 vs. $2(444) = 888$.
time = 3.75, size = 6028, normalized size = 13.95

Too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^2/(a+b*log(c*(d*(f*x+e)^p)^q))^3,x, algorithm="giac")
```

```
[Out] -1/2*((f*x + e)*b^2*f^2*g^2*p^2*q^2*log(f*x + e) + 4*(f*x + e)^2*b^2*f*g*h*
p^2*q^2*log(f*x + e) + 3*(f*x + e)^3*b^2*h^2*p^2*q^2*log(f*x + e) - 2*(f*x
+ e)*b^2*f*g*h*p^2*q^2*e*log(f*x + e) - 4*(f*x + e)^2*b^2*h^2*p^2*q^2*e*log
(f*x + e) - b^2*f^2*g^2*p^2*q^2*Ei(log(d)/p + log(c)/(p*q) + a/(b*p*q) + lo
g(f*x + e))*e^(-a/(b*p*q))*log(f*x + e)^2/(c^(1/(p*q))*d^(1/p)) + (f*x + e)
*b^2*f^2*g^2*p^2*q^2 + 2*(f*x + e)^2*b^2*f*g*h*p^2*q^2 + (f*x + e)^3*b^2*h^
2*p^2*q^2 - 2*(f*x + e)*b^2*f*g*h*p^2*q^2*e - 2*(f*x + e)^2*b^2*h^2*p^2*q^2
*e + (f*x + e)*b^2*h^2*p^2*q^2*e^2*log(f*x + e) + 2*b^2*f*g*h*p^2*q^2*Ei(lo
g(d)/p + log(c)/(p*q) + a/(b*p*q) + log(f*x + e))*e^(-a/(b*p*q) + 1)*log(f*
x + e)^2/(c^(1/(p*q))*d^(1/p)) - 8*b^2*f*g*h*p^2*q^2*Ei(2*log(d)/p + 2*log(
c)/(p*q) + 2*a/(b*p*q) + 2*log(f*x + e))*e^(-2*a/(b*p*q))*log(f*x + e)^2/(c
^(2/(p*q))*d^(2/p)) + (f*x + e)*b^2*f^2*g^2*p*q^2*log(d) + 4*(f*x + e)^2*b^
2*f*g*h*p*q^2*log(d) + 3*(f*x + e)^3*b^2*h^2*p*q^2*log(d) - 2*(f*x + e)*b^2
*f*g*h*p*q^2*e*log(d) - 4*(f*x + e)^2*b^2*h^2*p*q^2*e*log(d) - 2*b^2*f^2*g^
2*p*q^2*Ei(log(d)/p + log(c)/(p*q) + a/(b*p*q) + log(f*x + e))*e^(-a/(b*p*q
))*log(f*x + e)*log(d)/(c^(1/(p*q))*d^(1/p)) + (f*x + e)*b^2*h^2*p^2*q^2*e^
2 - b^2*h^2*p^2*q^2*Ei(log(d)/p + log(c)/(p*q) + a/(b*p*q) + log(f*x + e))*
e^(-a/(b*p*q) + 2)*log(f*x + e)^2/(c^(1/(p*q))*d^(1/p)) + 8*b^2*h^2*p^2*q^2
*Ei(2*log(d)/p + 2*log(c)/(p*q) + 2*a/(b*p*q) + 2*log(f*x + e))*e^(-2*a/(b*
p*q) + 1)*log(f*x + e)^2/(c^(2/(p*q))*d^(2/p)) - 9*b^2*h^2*p^2*q^2*Ei(3*log
(d)/p + 3*log(c)/(p*q) + 3*a/(b*p*q) + 3*log(f*x + e))*e^(-3*a/(b*p*q))*log
(f*x + e)^2/(c^(3/(p*q))*d^(3/p)) + (f*x + e)*b^2*f^2*g^2*p*q*log(c) + 4*(f
*x + e)^2*b^2*f*g*h*p*q*log(c) + 3*(f*x + e)^3*b^2*h^2*p*q*log(c) - 2*(f*x
```

```
+ e)*b^2*f*g*h*p*q*e*log(c) - 4*(f*x + e)^2*b^2*h^2*p*q*e*log(c) - 2*b^2*f^
2*g^2*p*q*Ei(log(d)/p + log(c)/(p*q) + a/(b*p*q) + log(f*x + e))*e^(-a/(b*p
*q))*log(f*x + e)*log(c)/(c^(1/(p*q))*d^(1/p)) + (f*x + e)*b^2*h^2*p*q^2*e^
2*log(d) + 4*b^2*f*g*h*p*q^2*Ei(log(d)/p + log(c)/(p*q) + a/(b*p*q) + log(f
*x + e))*e^(-a/(b*p*q) + 1)*log(f*x + e)*log(d)/(c^(1/(p*q))*d^(1/p)) - 16*
b^2*f*g*h*p*q^2*Ei(2*log(d)/p + 2*log(c)/(p*q) + 2*a/(b*p*q) + 2*log(f*x +
e))*e^(-2*a/(b*p*q))*log(f*x + e)*log(d)/(c^(2/(p*q))*d^(2/p)) - b^2*f^2*g^
2*q^2*Ei(log(d)/p + log(c)/(p*q) + a/(b*p*q) + log(f*x + e))*e^(-a/(b*p*q))
*log(d)^2/(c^(1/(p*q))*d^(1/p)) + (f*x + e)*a*b*f^2*g^2*p*q + 4*(f*x + e)^2
*a*b*f*g*h*p*q + 3*(f*x + e)^3*a*b*h^2*p*q - 2*(f*x + e)*a*b*f*g*h*p*q*e -
4*(f*x + e)^2*a*b*h^2*p*q*e - 2*a*b*f^2*g^2*p*q*Ei(log(d)/p + log(c)/(p*q)
+ a/(b*p*q) + log(f*x + e))*e^(-a/(b*p*q))*log(f*x + e)/(c^(1/(p*q))*d^(1/p
)) + (f*x + e)*b^2*h^2*p*q*e^2*log(c) + 4*b^2*f*g*h*p*q*Ei(log(d)/p + log(c
)/(p*q) + a/(b*p*q) + log(f*x + e))*e^(-a/(b*p*q) + 1)*log(f*x + e)*log(c)/
(c^(1/(p*q))*d^(1/p)) - 16*b^2*f*g*h*p*q*Ei(2*log(d)/p + 2*log(c)/(p*q) + 2
*a/(b*p*q) + 2*log(f*x + e))*e^(-2*a/(b*p*q))*log(f*x + e)*log(c)/(c^(2/(p*
q))*d^(2/p)) - 2*b^2*h^2*p*q^2*Ei(log(d)/p + log(c)/(p*q) + a/(b*p*q) + log
(f*x + e))*e^(-a/(b*p*q) + 2)*log(f*x + e)*log(d)/(c^(1/(p*q))*d^(1/p)) + 1
6*b^2*h^2*p*q^2*Ei(2*log(d)/p + 2*log(c)/(p*q) + 2*a/(b*p*q) + 2*log(f*x +
e))*e^(-2*a/(b*p*q) + 1)*log(f*x + e)*log(d)/(c^(2/(p*q))*d^(2/p)) - 18*b^2
*h^2*p*q^2*Ei(3*log(d)/p + 3*log(c)/(p*q) + 3*a/(b*p*q) + 3*log(f*x + e))*e
^(-3*a/(b*p*q))*log(f*x + e)*log(d)/(c^(3/(p*q))*d^(3/p)) - 2*b^2*f^2*g^2*q
*Ei(log(d)/p + log(c)/(p*q) + a/(b*p*q) + log(f*x + e))*e^(-a/(b*p*q))*log(
c)*log(d)/(c^(1/(p*q))*d^(1/p)) + 2*b^2*f*g*h*q^2*Ei(log(d)/p + log(c)/(p*q
) + a/(b*p*q) + log(f*x + e))*e^(-a/(b*p*q) + 1)*log(d)^2/(c^(1/(p*q))*d^(1
/p)) - 8*b^2*f*g*h*q^2*Ei(2*log(d)/p + 2*log(c)/(p*q) + 2*a/(b*p*q) + 2*log
(f*x + e))*e^(-2*a/(b*p*q))*log(d)^2/(c^(2/(p*q))*d^(2/p)) + (f*x + e)*a*b*
h^2*p*q*e^2 + 4*a*b*f*g*h*p*q*Ei(log(d)/p + log(c)/(p*q) + a/(b*p*q) + log(
f*x + e))*e^(-a/(b*p*q) + 1)*log(f*x + e)/(c^(1/(p*q))*d^(1/p)) - 16*a*b*f*
g*h*p*q*Ei(2*log(d)/p + 2*log(c)/(p*q) + 2*a/(b*p*q) + 2*log(f*x + e))*e^(-
2*a/(b*p*q))*log(f*x + e)/(c^(2/(p*q))*d^(2/p)) - 2*b^2*h^2*p*q*Ei(log(d)/p
 + log(c)/(p*q) + a/(b*p*q) + log(f*x + e))*e^(-a/(b*p*q) + 2)*log(f*x + e)
*log(c)/(c^(1/(p*q))*d^(1/p)) + 16*b^2*h^2*p*q*Ei(2*log(d)/p + 2*log(c)/(p*
q) + 2*a/(b*p*q) + 2*log(f*x + e))*e^(-2*a/(b*p*q) + 1)*log(f*x + e)*log(c)
/(c^(2/(p*q))*d^(2/p)) - 18*b^2*h^2*p*q*Ei(3*log(d)/p + 3*log(c)/(p*q) + 3*
a/(b*p*q) + 3*log(f*x + e))*e^(-3*a/(b*p*q))*log(f*x + e)*log(c)/(c^(3/(p*q
))*d^(3/p)) - b^2*f^2*g^2*Ei(log(d)/p + log(c)/(p*q) + a/(b*p*q) + log(f*x
+ e))*e^(-a/(b*p*q))*log(c)^2/(c^(1/(p*q))*d^(1/p)) - 2*a*b*f^2*g^2*q*Ei(lo
g(d)/p + log(c)/(p*q) + a/(b*p*q) + log(f*x + e))*e^(-a/(b*p*q))*log(d)/(c^
(1/(p*q))*d^(1/p)) + 4*b^2*f*g*h*q*Ei(log(d)/p + log(c)/(p*q) + a/(b*p*q) +
 log(f*x + e))*e^(-a/(b*p*q) + 1)*log(c)*log(d)/(c^(1/(p*q))*d^(1/p)) - 16*
b^2*f*g*h*q*Ei(2*log(d)/p + 2*log(c)/(p*q) + 2*a/(b*p*q) + 2*log(f*x + e))*
e^(-2*a/(b*p*q))*log(c)*log(d)/(c^(2/(p*q))*d^(2/p)) - b^2*h^2*q^2*Ei(log(d
)/p + log(c)/(p*q) + a/(b*p*q) + log(f*x + e))*...
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(g+hx)^2}{(a+b\ln(c(d(e+fx)^p)^q))^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g + h*x)^2/(a + b*log(c*(d*(e + f*x)^p)^q))^3,x)
[Out] int((g + h*x)^2/(a + b*log(c*(d*(e + f*x)^p)^q))^3, x)
```

3.456 $\int \frac{g+hx}{(a+b\log(c(d(e+fx)^p)^q))^3}\,dx$

Optimal. Leaf size=322

$$\frac{e^{-\frac{a}{bpq}}(fg-eh)(e+fx)\left(c(d(e+fx)^p)^q\right)^{-\frac{1}{pq}}\text{Ei}\left(\frac{a+b\log(c(d(e+fx)^p)^q)}{bpq}\right)}{2b^3f^2p^3q^3}+\frac{2e^{-\frac{2a}{bpq}}h(e+fx)^2\left(c(d(e+fx)^p)^q\right)^{-\frac{2}{pq}}\text{E}}{b^3f^2p^3q^3}$$

```
[Out] 1/2*(-e*h+f*g)*(f*x+e)*Ei((a+b*ln(c*(d*(f*x+e)^p)^q))/b/p/q)/b^3/exp(a/b/p/
q)/f^2/p^3/q^3/((c*(d*(f*x+e)^p)^q)^(1/p/q))+2*h*(f*x+e)^2*Ei(2*(a+b*ln(c*(
d*(f*x+e)^p)^q))/b/p/q)/b^3/exp(2*a/b/p/q)/f^2/p^3/q^3/((c*(d*(f*x+e)^p)^q)
^(2/p/q))-1/2*(f*x+e)*(h*x+g)/b/f/p/q/(a+b*ln(c*(d*(f*x+e)^p)^q))^2+1/2*(-e
*h+f*g)*(f*x+e)/b^2/f^2/p^2/q^2/(a+b*ln(c*(d*(f*x+e)^p)^q))-(f*x+e)*(h*x+g)
/b^2/f/p^2/q^2/(a+b*ln(c*(d*(f*x+e)^p)^q))
```

Rubi [A]
time = 0.65, antiderivative size = 322, normalized size of antiderivative = 1.00, number of steps used = 18, number of rules used = 9, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.346$, Rules used = {2447, 2446, 2436, 2337, 2209, 2437, 2347, 2334, 2495}

$$\frac{(e+fx)e^{-\frac{a}{bpq}}(fg-eh)\left(c(d(e+fx)^p)^q\right)^{-\frac{1}{pq}}\text{Ei}\left(\frac{a+b\log(c(d(e+fx)^p)^q)}{bpq}\right)}{2b^3f^2p^3q^3}+\frac{2h(e+fx)^2e^{-\frac{2a}{bpq}}\left(c(d(e+fx)^p)^q\right)^{-\frac{2}{pq}}\text{Ei}\left(\frac{2(a+b\log(c(d(e+fx)^p)^q))}{bpq}\right)}{b^3f^2p^3q^3}+\frac{(e+fx)(fg-eh)}{2b^2f^2p^2q^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}-\frac{(e+fx)(g+hx)}{b^2fp^2q^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}-\frac{(e+fx)(g+hx)}{2bfpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(g + h*x)/(a + b*Log[c*(d*(e + f*x)^p)^q])^3,x]
```

```
[Out] ((f*g - e*h)*(e + f*x)*ExpIntegralEi[(a + b*Log[c*(d*(e + f*x)^p)^q])/(b*p*
q)])/(2*b^3*E^(a/(b*p*q))*f^2*p^3*q^3*(c*(d*(e + f*x)^p)^q)^(1/(p*q))) + (2
*h*(e + f*x)^2*ExpIntegralEi[(2*(a + b*Log[c*(d*(e + f*x)^p)^q]))/(b*p*q)])
/(b^3*E^((2*a)/(b*p*q))*f^2*p^3*q^3*(c*(d*(e + f*x)^p)^q)^(2/(p*q))) - ((e
+ f*x)*(g + h*x))/(2*b*f*p*q*(a + b*Log[c*(d*(e + f*x)^p)^q])^2) + ((f*g -
e*h)*(e + f*x))/(2*b^2*f^2*p^2*q^2*(a + b*Log[c*(d*(e + f*x)^p)^q])) - ((e
+ f*x)*(g + h*x))/(b^2*f*p^2*q^2*(a + b*Log[c*(d*(e + f*x)^p)^q]))
```

Rule 2209

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/((c_.) + (d_.)*(x_)), x_Symbol] :> Si
mp[(F^(g*(e - c*(f/d)))/d)*ExpIntegralEi[f*g*(c + d*x)*(Log[F]/d)], x] /; F
reeQ[{F, c, d, e, f, g}, x] &&  !TrueQ[$UseGamma]
```

Rule 2334

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Simp[x*((a + b
*Log[c*x^n])^(p + 1)/(b*n*(p + 1))), x] - Dist[1/(b*n*(p + 1)), Int[(a + b*
Log[c*x^n])^(p + 1), x], x] /; FreeQ[{a, b, c, n}, x] && LtQ[p, -1] && Inte
gerQ[2*p]
```

Rule 2337

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2347

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_)*((d_.)*(x_))^(m_.), x_Symbol
] :> Dist[(d*x)^(m + 1)/(d*n*(c*x^n)^((m + 1)/n)), Subst[Int[E^(((m + 1)/n)
*x)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b, c, d, m, n, p}, x]
```

Rule 2436

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2437

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[(f*(x/d))^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2446

```
Int[((f_.) + (g_.)*(x_))^(q_.)/((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)
]*(b_.)), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q/(a + b*Log[c*(d + e*
x)^n]), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0] &
& IGtQ[q, 0]
```

Rule 2447

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[(d + e*x)*(f + g*x)^q*((a + b*Log[c*(d + e
*x)^n])^(p + 1)/(b*e*n*(p + 1))), x] + (-Dist[(q + 1)/(b*n*(p + 1)), Int[(f
 + g*x)^q*(a + b*Log[c*(d + e*x)^n])^(p + 1), x], x] + Dist[q*((e*f - d*g)/
(b*e*n*(p + 1))), Int[(f + g*x)^(q - 1)*(a + b*Log[c*(d + e*x)^n])^(p + 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0] && LtQ[
p, -1] && GtQ[q, 0]
```

Rule 2495

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
```

```
n, p}, x] && !IntegerQ[n] && !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$
\begin{aligned}
\int \frac{g+hx}{(a+b\log(c(d(e+fx)^p)^q))^3}\,dx &= \text{Subst}\left(\int \frac{g+hx}{(a+b\log(cd^q(e+fx)^{pq}))^3}\,dx, cd^q(e+fx)^{pq}, c(d(e+fx)^p)^q\right. \\
&= -\frac{(e+fx)(g+hx)}{2bfpq(a+b\log(c(d(e+fx)^p)^q))^2}+\text{Subst}\left(\frac{\int \frac{g+hx}{(a+b\log(cd^q(e+fx)^{pq}))^2}\,dx}{bpq}\right. \\
&= -\frac{(e+fx)(g+hx)}{2bfpq(a+b\log(c(d(e+fx)^p)^q))^2}-\frac{(e+fx)(g+hx)}{b^2fp^2q^2(a+b\log(c(d(e+fx)\ldots}} \\
&= -\frac{(e+fx)(g+hx)}{2bfpq(a+b\log(c(d(e+fx)^p)^q))^2}+\frac{(fg-eh)(e+fx)}{2b^2f^2p^2q^2(a+b\log(c(d(e+\ldots}} \\
&= -\frac{(e+fx)(g+hx)}{2bfpq(a+b\log(c(d(e+fx)^p)^q))^2}+\frac{(fg-eh)(e+fx)}{2b^2f^2p^2q^2(a+b\log(c(d(e+\ldots}} \\
&= -\frac{3e^{-\frac{a}{bpq}}(fg-eh)(e+fx)(c(d(e+fx)^p)^q)^{-\frac{1}{pq}}\text{Ei}\left(\frac{a+b\log(c(d(e+fx)^p)^q)}{bpq}\right)}{2b^3f^2p^3q^3} \\
&= -\frac{3e^{-\frac{a}{bpq}}(fg-eh)(e+fx)(c(d(e+fx)^p)^q)^{-\frac{1}{pq}}\text{Ei}\left(\frac{a+b\log(c(d(e+fx)^p)^q)}{bpq}\right)}{2b^3f^2p^3q^3} \\
&= \frac{e^{-\frac{a}{bpq}}(fg-eh)(e+fx)(c(d(e+fx)^p)^q)^{-\frac{1}{pq}}\text{Ei}\left(\frac{a+b\log(c(d(e+fx)^p)^q)}{bpq}\right)}{2b^3f^2p^3q^3}+\ldots
\end{aligned}
$$

Mathematica [A]
time = 0.46, size = 322, normalized size = 1.00

$$
-\frac{e^{-\frac{2a}{bpq}}(e+fx)\left(c(d(e+fx)^p)^q\right)^{-\frac{2}{pq}}\left(-e^{\frac{a}{bpq}}(fg-eh)\left(c(d(e+fx)^p)^q\right)^{\frac{1}{pq}}\text{Ei}\left(\frac{a+b\log(c(d(e+fx)^p)^q)}{bpq}\right)\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)^2-4h(e+fx)\text{Ei}\left(\frac{2(a+b\log(c(d(e+fx)^p)^q))}{bpq}\right)\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)^2+be^{\frac{2a}{bpq}}pq\left(c(d(e+fx)^p)^q\right)^{\frac{2}{pq}}\left(bfpq(g+hx)+a(fg+eh+2fhx)+b(eh+f(g+2hx))\log\left(c(d(e+fx)^p)^q\right)\right)\right)}{2b^3f^2p^3q^3\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(g + h*x)/(a + b*Log[c*(d*(e + f*x)^p)^q])^3,x]
```

```
[Out] -1/2*((e + f*x)*(-(E^(a/(b*p*q))*(f*g - e*h)*(c*(d*(e + f*x)^p)^q)^(1/(p*q)
)*ExpIntegralEi[(a + b*Log[c*(d*(e + f*x)^p)^q])/(b*p*q)]*(a + b*Log[c*(d*(
```

```
e + f*x)^p)^q])^2) - 4*h*(e + f*x)*ExpIntegralEi[(2*(a + b*Log[c*(d*(e + f*
x)^p)^q]))/(b*p*q)]*(a + b*Log[c*(d*(e + f*x)^p)^q])^2 + b*E^((2*a)/(b*p*q)
)*p*q*(c*(d*(e + f*x)^p)^q)^(2/(p*q))*(b*f*p*q*(g + h*x) + a*(f*g + e*h + 2
*f*h*x) + b*(e*h + f*(g + 2*h*x))*Log[c*(d*(e + f*x)^p)^q])))/(b^3*E^((2*a)
/(b*p*q))*f^2*p^3*q^3*(c*(d*(e + f*x)^p)^q)^(2/(p*q))*(a + b*Log[c*(d*(e +
f*x)^p)^q])^2)
```

Maple [F]
time = 0.04, size = 0, normalized size = 0.00

$$\int \frac{hx+g}{\left(a+b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)\right)^{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x+g)/(a+b*ln(c*(d*(f*x+e)^p)^q))^3,x)
[Out] int((h*x+g)/(a+b*ln(c*(d*(f*x+e)^p)^q))^3,x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q))^3,x, algorithm="maxima")
[Out] -1/2*((2*a*f^2*h + (f^2*h*p*q + 2*f^2*h*q*log(d) + 2*f^2*h*log(c))*b)*x^2 +
 (a*f^2*g + (f^2*g*p*q + f^2*g*q*log(d) + f^2*g*log(c))*b + (3*a*f*h + (f*h
*p*q + 3*f*h*q*log(d) + 3*f*h*log(c))*b)*e)*x + ((h*q*log(d) + h*log(c))*b
+ a*h)*e^2 + (a*f*g + (f*g*p*q + f*g*q*log(d) + f*g*log(c))*b)*e + (2*b*f^2
*h*x^2 + b*f*g*e + b*h*e^2 + (b*f^2*g + 3*b*f*h*e)*x)*log(((f*x + e)^p)^q))
/(b^4*f^2*p^2*q^2*log(((f*x + e)^p)^q)^2 + a^2*b^2*f^2*p^2*q^2 + 2*(f^2*p^2
*q^3*log(d) + f^2*p^2*q^2*log(c))*a*b^3 + (f^2*p^2*q^4*log(d)^2 + 2*f^2*p^2
*q^3*log(c)*log(d) + f^2*p^2*q^2*log(c)^2)*b^4 + 2*(a*b^3*f^2*p^2*q^2 + (f^
2*p^2*q^3*log(d) + f^2*p^2*q^2*log(c))*b^4)*log(((f*x + e)^p)^q)) + integra
te(1/2*(4*f*h*x + f*g + 3*h*e)/(b^3*f*p^2*q^2*log(((f*x + e)^p)^q) + a*b^2*
f*p^2*q^2 + (f*p^2*q^3*log(d) + f*p^2*q^2*log(c))*b^3), x)
```

Fricas [B] Leaf count of result is larger than twice the leaf count of optimal. 988 vs. $2(331) = 662$.
time = 0.37, size = 988, normalized size = 3.07

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q))^3,x, algorithm="fricas")
```

```
[Out] 1/2*((a^2*f*g - a^2*h*e + (b^2*f*g*p^2*q^2 - b^2*h*p^2*q^2*e)*log(f*x + e)^
2 + (b^2*f*g - b^2*h*e)*log(c)^2 + (b^2*f*g*q^2 - b^2*h*q^2*e)*log(d)^2 + 2
*(a*b*f*g*p*q - a*b*h*p*q*e + (b^2*f*g*p*q - b^2*h*p*q*e)*log(c) + (b^2*f*g
*p*q^2 - b^2*h*p*q^2*e)*log(d))*log(f*x + e) + 2*(a*b*f*g - a*b*h*e)*log(c)
 + 2*(a*b*f*g*q - a*b*h*q*e + (b^2*f*g*q - b^2*h*q*e)*log(c))*log(d))*e^((b
*q*log(d) + b*log(c) + a)/(b*p*q))*log_integral((f*x + e)*e^((b*q*log(d) +
b*log(c) + a)/(b*p*q))) - (a*b*h*p*q*e^2 + (b^2*f^2*h*p^2*q^2 + 2*a*b*f^2*h
*p*q)*x^2 + (b^2*f^2*g*p^2*q^2 + a*b*f^2*g*p*q)*x + (b^2*f*g*p^2*q^2 + a*b*
f*g*p*q + (b^2*f*h*p^2*q^2 + 3*a*b*f*h*p*q)*x)*e + (2*b^2*f^2*h*p^2*q^2*x^2
 + b^2*f^2*g*p^2*q^2*x + b^2*h*p^2*q^2*e^2 + (3*b^2*f*h*p^2*q^2*x + b^2*f*g
*p^2*q^2)*e)*log(f*x + e) + (2*b^2*f^2*h*p*q*x^2 + b^2*f^2*g*p*q*x + b^2*h*
p*q*e^2 + (3*b^2*f*h*p*q*x + b^2*f*g*p*q)*e)*log(c) + (2*b^2*f^2*h*p*q^2*x^
2 + b^2*f^2*g*p*q^2*x + b^2*h*p*q^2*e^2 + (3*b^2*f*h*p*q^2*x + b^2*f*g*p*q^
2)*e)*log(d))*e^(2*(b*q*log(d) + b*log(c) + a)/(b*p*q)) + 4*(b^2*h*p^2*q^2*
log(f*x + e)^2 + b^2*h*q^2*log(d)^2 + b^2*h*log(c)^2 + 2*a*b*h*log(c) + a^2
*h + 2*(b^2*h*p*q^2*log(d) + b^2*h*p*q*log(c) + a*b*h*p*q)*log(f*x + e) + 2
*(b^2*h*q*log(c) + a*b*h*q)*log(d))*log_integral((f^2*x^2 + 2*f*x*e + e^2)*
e^(2*(b*q*log(d) + b*log(c) + a)/(b*p*q))))*e^(-2*(b*q*log(d) + b*log(c) +
a)/(b*p*q))/(b^5*f^2*p^5*q^5*log(f*x + e)^2 + b^5*f^2*p^3*q^5*log(d)^2 + b^
5*f^2*p^3*q^3*log(c)^2 + 2*a*b^4*f^2*p^3*q^3*log(c) + a^2*b^3*f^2*p^3*q^3 +
 2*(b^5*f^2*p^4*q^5*log(d) + b^5*f^2*p^4*q^4*log(c) + a*b^4*f^2*p^4*q^4)*lo
g(f*x + e) + 2*(b^5*f^2*p^3*q^4*log(c) + a*b^4*f^2*p^3*q^4)*log(d))
```

Sympy [**F**]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{g+hx}{\left(a+b\log\left(c\left(d\left(e+fx\right)^{p}\right)^{q}\right)\right)^{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)/(a+b*ln(c*(d*(f*x+e)**p)**q))**3,x)
```

```
[Out] Integral((g + h*x)/(a + b*log(c*(d*(e + f*x)**p)**q))**3, x)
```

Giac [**B**] Leaf count of result is larger than twice the leaf count of optimal. 11533 vs. 2(331) = 662.
time = 5.02, size = 11533, normalized size = 35.82

Too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q))^3,x, algorithm="giac")
```

```
[Out] -1/2*(f*x + e)*b^2*f*g*p^2*q^2*log(f*x + e)/(b^5*f^2*p^5*q^5*log(f*x + e)^2
 + 2*b^5*f^2*p^4*q^5*log(f*x + e)*log(d) + 2*b^5*f^2*p^4*q^4*log(f*x + e)*l
og(c) + b^5*f^2*p^3*q^5*log(d)^2 + 2*a*b^4*f^2*p^4*q^4*log(f*x + e) + 2*b^5
```

```
*f^2*p^3*q^4*log(c)*log(d) + b^5*f^2*p^3*q^3*log(c)^2 + 2*a*b^4*f^2*p^3*q^4
*log(d) + 2*a*b^4*f^2*p^3*q^3*log(c) + a^2*b^3*f^2*p^3*q^3) - (f*x + e)^2*b
^2*h*p^2*q^2*log(f*x + e)/(b^5*f^2*p^5*q^5*log(f*x + e)^2 + 2*b^5*f^2*p^4*q
^5*log(f*x + e)*log(d) + 2*b^5*f^2*p^4*q^4*log(f*x + e)*log(c) + b^5*f^2*p^
3*q^5*log(d)^2 + 2*a*b^4*f^2*p^4*q^4*log(f*x + e) + 2*b^5*f^2*p^3*q^4*log(c
)*log(d) + b^5*f^2*p^3*q^3*log(c)^2 + 2*a*b^4*f^2*p^3*q^4*log(d) + 2*a*b^4*
f^2*p^3*q^3*log(c) + a^2*b^3*f^2*p^3*q^3) + 1/2*(f*x + e)*b^2*h*p^2*q^2*e*l
og(f*x + e)/(b^5*f^2*p^5*q^5*log(f*x + e)^2 + 2*b^5*f^2*p^4*q^5*log(f*x + e
)*log(d) + 2*b^5*f^2*p^4*q^4*log(f*x + e)*log(c) + b^5*f^2*p^3*q^5*log(d)^2
 + 2*a*b^4*f^2*p^4*q^4*log(f*x + e) + 2*b^5*f^2*p^3*q^4*log(c)*log(d) + b^5
*f^2*p^3*q^3*log(c)^2 + 2*a*b^4*f^2*p^3*q^4*log(d) + 2*a*b^4*f^2*p^3*q^3*lo
g(c) + a^2*b^3*f^2*p^3*q^3) + 1/2*b^2*f*g*p^2*q^2*Ei(log(d)/p + log(c)/(p*q
) + a/(b*p*q) + log(f*x + e))*e^(-a/(b*p*q))*log(f*x + e)^2/((b^5*f^2*p^5*q
^5*log(f*x + e)^2 + 2*b^5*f^2*p^4*q^5*log(f*x + e)*log(d) + 2*b^5*f^2*p^4*q
^4*log(f*x + e)*log(c) + b^5*f^2*p^3*q^5*log(d)^2 + 2*a*b^4*f^2*p^4*q^4*log
(f*x + e) + 2*b^5*f^2*p^3*q^4*log(c)*log(d) + b^5*f^2*p^3*q^3*log(c)^2 + 2*
a*b^4*f^2*p^3*q^4*log(d) + 2*a*b^4*f^2*p^3*q^3*log(c) + a^2*b^3*f^2*p^3*q^3
)*c^(1/(p*q))*d^(1/p)) - 1/2*(f*x + e)*b^2*f*g*p^2*q^2/(b^5*f^2*p^5*q^5*log
(f*x + e)^2 + 2*b^5*f^2*p^4*q^5*log(f*x + e)*log(d) + 2*b^5*f^2*p^4*q^4*log
(f*x + e)*log(c) + b^5*f^2*p^3*q^5*log(d)^2 + 2*a*b^4*f^2*p^4*q^4*log(f*x +
 e) + 2*b^5*f^2*p^3*q^4*log(c)*log(d) + b^5*f^2*p^3*q^3*log(c)^2 + 2*a*b^4*
f^2*p^3*q^4*log(d) + 2*a*b^4*f^2*p^3*q^3*log(c) + a^2*b^3*f^2*p^3*q^3) - 1/
2*(f*x + e)^2*b^2*h*p^2*q^2/(b^5*f^2*p^5*q^5*log(f*x + e)^2 + 2*b^5*f^2*p^4
*q^5*log(f*x + e)*log(d) + 2*b^5*f^2*p^4*q^4*log(f*x + e)*log(c) + b^5*f^2*
p^3*q^5*log(d)^2 + 2*a*b^4*f^2*p^4*q^4*log(f*x + e) + 2*b^5*f^2*p^3*q^4*log
(c)*log(d) + b^5*f^2*p^3*q^3*log(c)^2 + 2*a*b^4*f^2*p^3*q^4*log(d) + 2*a*b^
4*f^2*p^3*q^3*log(c) + a^2*b^3*f^2*p^3*q^3) + 1/2*(f*x + e)*b^2*h*p^2*q^2*e
/(b^5*f^2*p^5*q^5*log(f*x + e)^2 + 2*b^5*f^2*p^4*q^5*log(f*x + e)*log(d) +
2*b^5*f^2*p^4*q^4*log(f*x + e)*log(c) + b^5*f^2*p^3*q^5*log(d)^2 + 2*a*b^4*
f^2*p^4*q^4*log(f*x + e) + 2*b^5*f^2*p^3*q^4*log(c)*log(d) + b^5*f^2*p^3*q^
3*log(c)^2 + 2*a*b^4*f^2*p^3*q^4*log(d) + 2*a*b^4*f^2*p^3*q^3*log(c) + a^2*
b^3*f^2*p^3*q^3) - 1/2*b^2*h*p^2*q^2*Ei(log(d)/p + log(c)/(p*q) + a/(b*p*q)
 + log(f*x + e))*e^(-a/(b*p*q) + 1)*log(f*x + e)^2/((b^5*f^2*p^5*q^5*log(f*
x + e)^2 + 2*b^5*f^2*p^4*q^5*log(f*x + e)*log(d) + 2*b^5*f^2*p^4*q^4*log(f*
x + e)*log(c) + b^5*f^2*p^3*q^5*log(d)^2 + 2*a*b^4*f^2*p^4*q^4*log(f*x + e)
 + 2*b^5*f^2*p^3*q^4*log(c)*log(d) + b^5*f^2*p^3*q^3*log(c)^2 + 2*a*b^4*f^2
*p^3*q^4*log(d) + 2*a*b^4*f^2*p^3*q^3*log(c) + a^2*b^3*f^2*p^3*q^3)*c^(1/(p
*q))*d^(1/p)) + 2*b^2*h*p^2*q^2*Ei(2*log(d)/p + 2*log(c)/(p*q) + 2*a/(b*p*q
) + 2*log(f*x + e))*e^(-2*a/(b*p*q))*log(f*x + e)^2/((b^5*f^2*p^5*q^5*log(f
*x + e)^2 + 2*b^5*f^2*p^4*q^5*log(f*x + e)*log(d) + 2*b^5*f^2*p^4*q^4*log(f
*x + e)*log(c) + b^5*f^2*p^3*q^5*log(d)^2 + 2*a*b^4*f^2*p^4*q^4*log(f*x + e
) + 2*b^5*f^2*p^3*q^4*log(c)*log(d) + b^5*f^2*p^3*q^3*log(c)^2 + 2*a*b^4*f^
2*p^3*q^4*log(d) + 2*a*b^4*f^2*p^3*q^3*log(c) + a^2*b^3*f^2*p^3*q^3)*c^(2/(
p*q))*d^(2/p)) - 1/2*(f*x + e)*b^2*f*g*p*q^2*log(d)/(b^5*f^2*p^5*q^5*log(f*
x + e)^2 + 2*b^5*f^2*p^4*q^5*log(f*x + e)*log(d) + 2*b^5*f^2*p^4*q^4*log(f*
```

```
x + e)*log(c) + b^5*f^2*p^3*q^5*log(d)^2 + 2*a*b^4*f^2*p^4*q^4*log(f*x + e)
 + 2*b^5*f^2*p^3*q^4*log(c)*log(d) + b^5*f^2*p^3*q^3*log(c)^2 + 2*a*b^4*f^2
*p^3*q^4*log(d) + 2*a*b^4*f^2*p^3*q^3*log(c) + a^2*b^3*f^2*p^3*q^3) - (f*x
+ e)^2*b^2*h*p*q^2*log(d)/(b^5*f^2*p^5*q^5*log(f*x + e)^2 + 2*b^5*f^2*p^4*q
^5*log(f*x + e)*log(d) + 2*b^5*f^2*p^4*q^4*log(f*x + e)*log(c) + b^5*f^2*p^
3*q^5*log(d)^2 + 2*a*b^4*f^2*p^4*q^4*log(f*x + e) + 2*b^5*f^2*p^3*q^4*log(c
)*log(d) + b^5*f^2*p^3*q^3*log(c)^2 + 2*a*b^4*f^2*p^3*q^4*log(d) + 2*a*b^4*
f^2*p^3*q^3*log(c) + a^2*b^3*f^2*p^3*q^3) + 1/2*(f*x + e)*b^2*h*p*q^2*e*log
(d)/(b^5*f^2*p^5*q^5*log(f*x + e)^2 + 2*b^5*f^2*p^4*q^5*log(f*x + e)*log(d)
 + 2*b^5*f^2*p^4*q^4*log(f*x + e)*log(c) + b^5*f^2*p^3*q^5*log(d)^2 + 2*a*b
^4*f^2*p^4*q^4*log(f*x + e) + 2*b^5*f^2*p^3*q^4*log(c)*log(d) + b^5*f^2*p^3
*q^3*log(c)^2 + 2*a*b^4*f^2*p^3*q^4*log(d) + 2*a*b^4*f^2*p^3*q^3*log(c) + a
^2*b^3*f^2*p^3*q^3) + b^2*f*g*p*q^2*Ei(log(d)/p + log(c)/(p*q) + a/(b*p*q)
+ log(f*x + e))*e^(-a/(b*p*q))*log(f*x + e)*log(d)/((b^5*f^2*p^5*q^5*log(f*
x + e)^2 + 2*b^5*f^2*p^4*q^5*log(f*x + e)*log(d) + 2*b^5*f^2*p^4*q^4*log(f*
x + e)*log(c) + b^5*f^2*p^3*q^5*log(d)^2 + 2*a*b^4*f^2*p^4*q^4*log(f*x + e)
 + 2*b^5*f^2*p^3*q^4*log(c)*log(d) + b^5*f^2*p^3*q^3*log(c)^2 + 2*a*b^4*f^2
*p^3*q^4*log(d) + 2*a*b^4*f^2*p^3*q^3*log(c) + a^2*b^3*f^2*p^3*q^3)*c^(1/(p
*q))*d^(1/p)) - 1/2*(f*x + e)*b^2*f*g*p*q*log(c...
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{g+h\,x}{{\left(a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)\right)}^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g + h*x)/(a + b*log(c*(d*(e + f*x)^p)^q))^3,x)
[Out] int((g + h*x)/(a + b*log(c*(d*(e + f*x)^p)^q))^3, x)
```

3.457 $\int \frac{1}{(a+b\log(c(d(e+fx)^p)^q))^3} dx$

Optimal. Leaf size=169

$$\frac{e^{-\frac{a}{bpq}}(e+fx)\left(c(d(e+fx)^p)^q\right)^{-\frac{1}{pq}}\operatorname{Ei}\left(\frac{a+b\log(c(d(e+fx)^p)^q)}{bpq}\right)}{2b^3fp^3q^3}-\frac{e+fx}{2bfpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}-\frac{}{2b^2fp^2q^2\,(a}$$

```
[Out] 1/2*(f*x+e)*Ei((a+b*ln(c*(d*(f*x+e)^p)^q))/b/p/q)/b^3/exp(a/b/p/q)/f/p^3/q^
3/((c*(d*(f*x+e)^p)^q)^(1/p/q))+1/2*(-f*x-e)/b/f/p/q/(a+b*ln(c*(d*(f*x+e)^p
)^q))^2+1/2*(-f*x-e)/b^2/f/p^2/q^2/(a+b*ln(c*(d*(f*x+e)^p)^q))
```

Rubi [A]
time = 0.15, antiderivative size = 169, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.250$, Rules used = {2436, 2334, 2337, 2209, 2495}

$$\frac{(e+fx)e^{-\frac{a}{bpq}}\left(c(d(e+fx)^p)^q\right)^{-\frac{1}{pq}}\operatorname{Ei}\left(\frac{a+b\log(c(d(e+fx)^p)^q)}{bpq}\right)}{2b^3fp^3q^3}-\frac{e+fx}{2b^2fp^2q^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}-\frac{e+fx}{2bfpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])^(-3),x]
```

```
[Out] ((e + f*x)*ExpIntegralEi[(a + b*Log[c*(d*(e + f*x)^p)^q])/(b*p*q)])/(2*b^3*
E^(a/(b*p*q))*f*p^3*q^3*(c*(d*(e + f*x)^p)^q)^(1/(p*q))) - (e + f*x)/(2*b*f
*p*q*(a + b*Log[c*(d*(e + f*x)^p)^q])^2) - (e + f*x)/(2*b^2*f*p^2*q^2*(a +
b*Log[c*(d*(e + f*x)^p)^q]))
```

Rule 2209

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/((c_.) + (d_.)*(x_)), x_Symbol] :> Si
mp[(F^(g*(e - c*(f/d)))/d)*ExpIntegralEi[f*g*(c + d*x)*(Log[F]/d)], x] /; F
reeQ[{F, c, d, e, f, g}, x] &&  !TrueQ[$UseGamma]
```

Rule 2334

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Simp[x*((a + b
*Log[c*x^n])^(p + 1)/(b*n*(p + 1))), x] - Dist[1/(b*n*(p + 1)), Int[(a + b*
Log[c*x^n])^(p + 1), x], x] /; FreeQ[{a, b, c, n}, x] && LtQ[p, -1] && Inte
gerQ[2*p]
```

Rule 2337

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2436

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2495

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{1}{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3}\,dx = \text{Subst}\left(\int \frac{1}{\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^3}\,dx, cd^q(e+fx)^{pq}, c(d(e+fx)^p)^q$$

$$= \text{Subst}\left(\frac{\text{Subst}\left(\int \frac{1}{(a+b\log(cd^qx^{pq}))^3}\,dx, x, e+fx\right)}{f}, cd^q(e+fx)^{pq}, c(d(e+$$

$$= -\frac{e+fx}{2bfpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2} + \text{Subst}\left(\frac{\text{Subst}\left(\int \frac{1}{(a+b\log(cd^qx^{pq}))}\right.}{2bfpq}\right.$$

$$= -\frac{e+fx}{2bfpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2} - \frac{e+fx}{2b^2fp^2q^2\left(a+b\log\left(c\left(d(e+f\right.\right.\right.}$$

$$= -\frac{e+fx}{2bfpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2} - \frac{e+fx}{2b^2fp^2q^2\left(a+b\log\left(c\left(d(e+f\right.\right.\right.}$$

$$= \frac{e^{-\frac{a}{bpq}}(e+fx)\left(c(d(e+fx)^p)^q\right)^{-\frac{1}{pq}}\text{Ei}\left(\frac{a+b\log(c(d(e+fx)^p)^q)}{bpq}\right)}{2b^3fp^3q^3} - \frac{}{2bfpq\,(a+}$$

Mathematica [A]
time = 0.14, size = 189, normalized size = 1.12

$$-\frac{e^{-\frac{a}{bpq}}(e+fx)\left(c(d(e+fx)^p)^q\right)^{-\frac{1}{pq}}\left(-\text{Ei}\left(\frac{a+b\log(c(d(e+fx)^p)^q)}{bpq}\right)\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)^2+be^{\frac{a}{bpq}}pq\left(c(d(e+fx)^p)^q\right)^{\frac{1}{pq}}\left(a+bpq+b\log\left(c(d(e+fx)^p)^q\right)\right)\right)}{2b^3fp^3q^3\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])^(-3),x]
```

```
[Out] -1/2*((e + f*x)*(-(ExpIntegralEi[(a + b*Log[c*(d*(e + f*x)^p)^q])/(b*p*q)]*
(a + b*Log[c*(d*(e + f*x)^p)^q])^2) + b*E^(a/(b*p*q))*p*q*(c*(d*(e + f*x)^p
)^q)^(1/(p*q))*(a + b*p*q + b*Log[c*(d*(e + f*x)^p)^q])))/(b^3*E^(a/(b*p*q)
)*f*p^3*q^3*(c*(d*(e + f*x)^p)^q)^(1/(p*q))*(a + b*Log[c*(d*(e + f*x)^p)^q]
)^2)
```

Maple [F]
time = 0.04, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(a+b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)\right)^{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+b*ln(c*(d*(f*x+e)^p)^q))^3,x)
```

```
[Out] int(1/(a+b*ln(c*(d*(f*x+e)^p)^q))^3,x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(d*(f*x+e)^p)^q))^3,x, algorithm="maxima")
```

```
[Out] -1/2*(((f*p*q + f*q*log(d) + f*log(c))*b + a*f)*x + ((p*q + q*log(d) + log(
c))*b + a)*e + (b*f*x + b*e)*log(((f*x + e)^p)^q))/(b^4*f*p^2*q^2*log(((f*x
 + e)^p)^q)^2 + a^2*b^2*f*p^2*q^2 + 2*(f*p^2*q^3*log(d) + f*p^2*q^2*log(c))
*a*b^3 + (f*p^2*q^4*log(d)^2 + 2*f*p^2*q^3*log(c)*log(d) + f*p^2*q^2*log(c)
^2)*b^4 + 2*(a*b^3*f*p^2*q^2 + (f*p^2*q^3*log(d) + f*p^2*q^2*log(c))*b^4)*l
og(((f*x + e)^p)^q)) + integrate(1/2/(b^3*p^2*q^2*log(((f*x + e)^p)^q) + a*
b^2*p^2*q^2 + (p^2*q^3*log(d) + p^2*q^2*log(c))*b^3), x)
```

Fricas [B] Leaf count of result is larger than twice the leaf count of optimal. 455 vs. 2(170) = 340.
time = 0.35, size = 455, normalized size = 2.69

$$-\frac{\left(\left(\left(b^{2} f p^{2} q^{2}+a b f p q\right) x+\left(b^{2} p^{2} q^{2}+a b p q\right) e+\left(b^{2} f p^{2} q^{2} x+b^{2} p^{2} q^{2} e\right) \log\left(f x+e\right)+\left(b^{2} f p q x+b^{2} p q e\right) \log\left(c\right)+\left(b^{2} f p q^{2} x+b^{2} p q^{2} e\right) \log\left(d\right)\right) e^{\left(\frac{b q \log(d)+b \log(c)+a}{b p q}\right)}-\left(b^{2} p^{2} q^{2} \log\left(f x+e\right)^{2}+b^{2} q^{2} \log\left(d\right)^{2}+b^{2} \log\left(c\right)^{2}+2 a b \log\left(c\right)+a^{2}+2 \left(b^{2} p q^{2} \log\left(d\right)+b^{2} p q \log\left(c\right)+a b p q\right) \log\left(f x+e\right)+2 \left(b^{2} q \log\left(c\right)+a b q\right) \log\left(d\right)\right) \text{log\_integral}\left(\left(f x+e\right) e^{\left(\frac{b q \log(d)+b \log(c)+a}{b p q}\right)}\right)\right) e^{\left(-\frac{b q \log(d)+b \log(c)+a}{b p q}\right)}}{2 \left(b^{5} f p^{5} q^{5} \log\left(f x+e\right)^{2}+b^{5} f p^{3} q^{5} \log\left(d\right)^{2}+b^{5} f p^{3} q^{3} \log\left(c\right)^{2}+2 a b^{4} f p^{3} q^{3} \log\left(c\right)+a^{2} b^{3} f p^{3} q^{3}+2 \left(b^{5} f p^{4} q^{5} \log\left(d\right)+b^{5} f p^{4} q^{4} \log\left(c\right)+a b^{4} f p^{4} q^{4}\right) \log\left(f x+e\right)+2 \left(b^{5} f p^{3} q^{4} \log\left(c\right)+a b^{4} f p^{3} q^{4}\right) \log\left(d\right)\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(d*(f*x+e)^p)^q))^3,x, algorithm="fricas")
```

```
[Out] -1/2*(((b^2*f*p^2*q^2 + a*b*f*p*q)*x + (b^2*p^2*q^2 + a*b*p*q)*e + (b^2*f*p
^2*q^2*x + b^2*p^2*q^2*e)*log(f*x + e) + (b^2*f*p*q*x + b^2*p*q*e)*log(c) +
 (b^2*f*p*q^2*x + b^2*p*q^2*e)*log(d))*e^((b*q*log(d) + b*log(c) + a)/(b*p*
q)) - (b^2*p^2*q^2*log(f*x + e)^2 + b^2*q^2*log(d)^2 + b^2*log(c)^2 + 2*a*b
```

```
*log(c) + a^2 + 2*(b^2*p*q^2*log(d) + b^2*p*q*log(c) + a*b*p*q)*log(f*x + e
) + 2*(b^2*q*log(c) + a*b*q)*log(d))*log_integral((f*x + e)*e^((b*q*log(d)
+ b*log(c) + a)/(b*p*q))))*e^(-(b*q*log(d) + b*log(c) + a)/(b*p*q))/(b^5*f*
p^5*q^5*log(f*x + e)^2 + b^5*f*p^3*q^5*log(d)^2 + b^5*f*p^3*q^3*log(c)^2 +
2*a*b^4*f*p^3*q^3*log(c) + a^2*b^3*f*p^3*q^3 + 2*(b^5*f*p^4*q^5*log(d) + b^
5*f*p^4*q^4*log(c) + a*b^4*f*p^4*q^4)*log(f*x + e) + 2*(b^5*f*p^3*q^4*log(c
) + a*b^4*f*p^3*q^4)*log(d))
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{(a+b\log(c(d(e+fx)^p)^q))^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*ln(c*(d*(f*x+e)**p)**q))**3,x)
```

```
[Out] Integral((a + b*log(c*(d*(e + f*x)**p)**q))**(-3), x)
```

Giac [B] Leaf count of result is larger than twice the leaf count of optimal. 3481 vs. $2(170) = 340$.
time = 5.91, size = 3481, normalized size = 20.60

Too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(d*(f*x+e)^p)^q))^3,x, algorithm="giac")
```

```
[Out] -1/2*(f*x + e)*b^2*p^2*q^2*log(f*x + e)/(b^5*f*p^5*q^5*log(f*x + e)^2 + 2*b
^5*f*p^4*q^5*log(f*x + e)*log(d) + 2*b^5*f*p^4*q^4*log(f*x + e)*log(c) + b^
5*f*p^3*q^5*log(d)^2 + 2*a*b^4*f*p^4*q^4*log(f*x + e) + 2*b^5*f*p^3*q^4*log
(c)*log(d) + b^5*f*p^3*q^3*log(c)^2 + 2*a*b^4*f*p^3*q^4*log(d) + 2*a*b^4*f*
p^3*q^3*log(c) + a^2*b^3*f*p^3*q^3) + 1/2*b^2*p^2*q^2*Ei(log(d)/p + log(c)/
(p*q) + a/(b*p*q) + log(f*x + e))*e^(-a/(b*p*q))*log(f*x + e)^2/((b^5*f*p^5
*q^5*log(f*x + e)^2 + 2*b^5*f*p^4*q^5*log(f*x + e)*log(d) + 2*b^5*f*p^4*q^4
*log(f*x + e)*log(c) + b^5*f*p^3*q^5*log(d)^2 + 2*a*b^4*f*p^4*q^4*log(f*x +
 e) + 2*b^5*f*p^3*q^4*log(c)*log(d) + b^5*f*p^3*q^3*log(c)^2 + 2*a*b^4*f*p^
3*q^4*log(d) + 2*a*b^4*f*p^3*q^3*log(c) + a^2*b^3*f*p^3*q^3)*c^(1/(p*q))*d^
(1/p)) - 1/2*(f*x + e)*b^2*p^2*q^2/(b^5*f*p^5*q^5*log(f*x + e)^2 + 2*b^5*f*
p^4*q^5*log(f*x + e)*log(d) + 2*b^5*f*p^4*q^4*log(f*x + e)*log(c) + b^5*f*p
^3*q^5*log(d)^2 + 2*a*b^4*f*p^4*q^4*log(f*x + e) + 2*b^5*f*p^3*q^4*log(c)*l
og(d) + b^5*f*p^3*q^3*log(c)^2 + 2*a*b^4*f*p^3*q^4*log(d) + 2*a*b^4*f*p^3*q
^3*log(c) + a^2*b^3*f*p^3*q^3) - 1/2*(f*x + e)*b^2*p*q^2*log(d)/(b^5*f*p^5*
q^5*log(f*x + e)^2 + 2*b^5*f*p^4*q^5*log(f*x + e)*log(d) + 2*b^5*f*p^4*q^4*
log(f*x + e)*log(c) + b^5*f*p^3*q^5*log(d)^2 + 2*a*b^4*f*p^4*q^4*log(f*x +
e) + 2*b^5*f*p^3*q^4*log(c)*log(d) + b^5*f*p^3*q^3*log(c)^2 + 2*a*b^4*f*p^3
```

*q^4*log(d) + 2*a*b^4*f*p^3*q^3*log(c) + a^2*b^3*f*p^3*q^3) + b^2*p*q^2*Ei(
log(d)/p + log(c)/(p*q) + a/(b*p*q) + log(f*x + e))*e^(-a/(b*p*q))*log(f*x
+ e)*log(d)/((b^5*f*p^5*q^5*log(f*x + e)^2 + 2*b^5*f*p^4*q^5*log(f*x + e)*l
og(d) + 2*b^5*f*p^4*q^4*log(f*x + e)*log(c) + b^5*f*p^3*q^5*log(d)^2 + 2*a*
b^4*f*p^4*q^4*log(f*x + e) + 2*b^5*f*p^3*q^4*log(c)*log(d) + b^5*f*p^3*q^3*
log(c)^2 + 2*a*b^4*f*p^3*q^4*log(d) + 2*a*b^4*f*p^3*q^3*log(c) + a^2*b^3*f*
p^3*q^3)*c^(1/(p*q))*d^(1/p)) - 1/2*(f*x + e)*b^2*p*q*log(c)/(b^5*f*p^5*q^5
*log(f*x + e)^2 + 2*b^5*f*p^4*q^5*log(f*x + e)*log(d) + 2*b^5*f*p^4*q^4*log
(f*x + e)*log(c) + b^5*f*p^3*q^5*log(d)^2 + 2*a*b^4*f*p^4*q^4*log(f*x + e)
+ 2*b^5*f*p^3*q^4*log(c)*log(d) + b^5*f*p^3*q^3*log(c)^2 + 2*a*b^4*f*p^3*q^
4*log(d) + 2*a*b^4*f*p^3*q^3*log(c) + a^2*b^3*f*p^3*q^3) + b^2*p*q*Ei(log(d
)/p + log(c)/(p*q) + a/(b*p*q) + log(f*x + e))*e^(-a/(b*p*q))*log(f*x + e)*
log(c)/((b^5*f*p^5*q^5*log(f*x + e)^2 + 2*b^5*f*p^4*q^5*log(f*x + e)*log(d)
+ 2*b^5*f*p^4*q^4*log(f*x + e)*log(c) + b^5*f*p^3*q^5*log(d)^2 + 2*a*b^4*f
*p^4*q^4*log(f*x + e) + 2*b^5*f*p^3*q^4*log(c)*log(d) + b^5*f*p^3*q^3*log(c
)^2 + 2*a*b^4*f*p^3*q^4*log(d) + 2*a*b^4*f*p^3*q^3*log(c) + a^2*b^3*f*p^3*q
^3)*c^(1/(p*q))*d^(1/p)) + 1/2*b^2*q^2*Ei(log(d)/p + log(c)/(p*q) + a/(b*p*
q) + log(f*x + e))*e^(-a/(b*p*q))*log(d)^2/((b^5*f*p^5*q^5*log(f*x + e)^2 +
2*b^5*f*p^4*q^5*log(f*x + e)*log(d) + 2*b^5*f*p^4*q^4*log(f*x + e)*log(c)
+ b^5*f*p^3*q^5*log(d)^2 + 2*a*b^4*f*p^4*q^4*log(f*x + e) + 2*b^5*f*p^3*q^4
*log(c)*log(d) + b^5*f*p^3*q^3*log(c)^2 + 2*a*b^4*f*p^3*q^4*log(d) + 2*a*b^
4*f*p^3*q^3*log(c) + a^2*b^3*f*p^3*q^3)*c^(1/(p*q))*d^(1/p)) - 1/2*(f*x + e
)*a*b*p*q/(b^5*f*p^5*q^5*log(f*x + e)^2 + 2*b^5*f*p^4*q^5*log(f*x + e)*log(
d) + 2*b^5*f*p^4*q^4*log(f*x + e)*log(c) + b^5*f*p^3*q^5*log(d)^2 + 2*a*b^4
*f*p^4*q^4*log(f*x + e) + 2*b^5*f*p^3*q^4*log(c)*log(d) + b^5*f*p^3*q^3*log
(c)^2 + 2*a*b^4*f*p^3*q^4*log(d) + 2*a*b^4*f*p^3*q^3*log(c) + a^2*b^3*f*p^3
*q^3) + a*b*p*q*Ei(log(d)/p + log(c)/(p*q) + a/(b*p*q) + log(f*x + e))*e^(-
a/(b*p*q))*log(f*x + e)/((b^5*f*p^5*q^5*log(f*x + e)^2 + 2*b^5*f*p^4*q^5*lo
g(f*x + e)*log(d) + 2*b^5*f*p^4*q^4*log(f*x + e)*log(c) + b^5*f*p^3*q^5*log
(d)^2 + 2*a*b^4*f*p^4*q^4*log(f*x + e) + 2*b^5*f*p^3*q^4*log(c)*log(d) + b^
5*f*p^3*q^3*log(c)^2 + 2*a*b^4*f*p^3*q^4*log(d) + 2*a*b^4*f*p^3*q^3*log(c)
+ a^2*b^3*f*p^3*q^3)*c^(1/(p*q))*d^(1/p)) + b^2*q*Ei(log(d)/p + log(c)/(p*q
) + a/(b*p*q) + log(f*x + e))*e^(-a/(b*p*q))*log(c)*log(d)/((b^5*f*p^5*q^5*
log(f*x + e)^2 + 2*b^5*f*p^4*q^5*log(f*x + e)*log(d) + 2*b^5*f*p^4*q^4*log(
f*x + e)*log(c) + b^5*f*p^3*q^5*log(d)^2 + 2*a*b^4*f*p^4*q^4*log(f*x + e) +
2*b^5*f*p^3*q^4*log(c)*log(d) + b^5*f*p^3*q^3*log(c)^2 + 2*a*b^4*f*p^3*q^4
*log(d) + 2*a*b^4*f*p^3*q^3*log(c) + a^2*b^3*f*p^3*q^3)*c^(1/(p*q))*d^(1/p)
) + 1/2*b^2*Ei(log(d)/p + log(c)/(p*q) + a/(b*p*q) + log(f*x + e))*e^(-a/(b
*p*q))*log(c)^2/((b^5*f*p^5*q^5*log(f*x + e)^2 + 2*b^5*f*p^4*q^5*log(f*x +
e)*log(d) + 2*b^5*f*p^4*q^4*log(f*x + e)*log(c) + b^5*f*p^3*q^5*log(d)^2 +
2*a*b^4*f*p^4*q^4*log(f*x + e) + 2*b^5*f*p^3*q^4*log(c)*log(d) + b^5*f*p^3*
q^3*log(c)^2 + 2*a*b^4*f*p^3*q^4*log(d) + 2*a*b^4*f*p^3*q^3*log(c) + a^2*b^
3*f*p^3*q^3)*c^(1/(p*q))*d^(1/p)) + a*b*q*Ei(log(d)/p + log(c)/(p*q) + a/(b
*p*q) + log(f*x + e))*e^(-a/(b*p*q))*log(d)/((b^5*f*p^5*q^5*log(f*x + e)^2
+ 2*b^5*f*p^4*q^5*log(f*x + e)*log(d) + 2*b^5*f*p^4*q^4*log(f*x + e)*log(c)

```
 + b^5*f*p^3*q^5*log(d)^2 + 2*a*b^4*f*p^4*q^4*log(f*x + e) + 2*b^5*f*p^3*q^
4*log(c)*log(d) + b^5*f*p^3*q^3*log(c)^2 + 2*a*b^4*f*p^3*q^4*log(d) + 2*a*b
^4*f*p^3*q^3*log(c) + a^2*b^3*f*p^3*q^3)*c^(1/(p*q))*d^(1/p)) + a*b*Ei(log(
d)/p + log(c)/(p*q) + a/(b*p*q) + log(f*x + e))...
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{1}{\left(a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)\right)}^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a + b*log(c*(d*(e + f*x)^p)^q))^3,x)
```

```
[Out] int(1/(a + b*log(c*(d*(e + f*x)^p)^q))^3, x)
```

3.458 $\int \frac{1}{(g+hx)(a+b\log(c(d(e+fx)^p)^q))^3} dx$

Optimal. Leaf size=31

$$\text{Int}\left(\frac{1}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3},x\right)$$

```
[Out] Unintegrable(1/(h*x+g)/(a+b*ln(c*(d*(f*x+e)^p)^q))^3,x)
```

Rubi [A]
time = 0.04, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int \frac{1}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3} dx$$

Verification is not applicable to the result.

```
[In] Int[1/((g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^3),x]
```

```
[Out] Defer[Int][1/((g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^3), x]
```

Rubi steps

$$\int \frac{1}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3} dx = \int \frac{1}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3} dx$$

Mathematica [A]
time = 0.76, size = 0, normalized size = 0.00

$$\int \frac{1}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3} dx$$

Verification is not applicable to the result.

```
[In] Integrate[1/((g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^3),x]
```

```
[Out] Integrate[1/((g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^3), x]
```

Maple [A]
time = 0.20, size = 0, normalized size = 0.00

$$\int \frac{1}{(hx+g)\left(a+b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)\right)^3} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(h*x+g)/(a+b*ln(c*(d*(f*x+e)^p)^q))^3,x)
```

```
[Out] int(1/(h*x+g)/(a+b*ln(c*(d*(f*x+e)^p)^q))^3,x)
```

Maxima [A]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q))^3,x, algorithm="maxima")
```

```
[Out] -1/2*(b*f^2*h*p*q*x^2 + (a*f^2*g + (f^2*g*p*q + f^2*g*q*log(d) + f^2*g*log(
c))*b - (a*f*h - (f*h*p*q - f*h*q*log(d) - f*h*log(c))*b)*e)*x - ((h*q*log(
d) + h*log(c))*b + a*h)*e^2 + (a*f*g + (f*g*p*q + f*g*q*log(d) + f*g*log(c)
)*b)*e + (b*f*g*e - b*h*e^2 + (b*f^2*g - b*f*h*e)*x)*log(((f*x + e)^p)^q))/
(a^2*b^2*f^2*g^2*p^2*q^2 + 2*(f^2*g^2*p^2*q^3*log(d) + f^2*g^2*p^2*q^2*log(
c))*a*b^3 + (f^2*g^2*p^2*q^4*log(d)^2 + 2*f^2*g^2*p^2*q^3*log(c)*log(d) + f
^2*g^2*p^2*q^2*log(c)^2)*b^4 + (a^2*b^2*f^2*h^2*p^2*q^2 + 2*(f^2*h^2*p^2*q^
3*log(d) + f^2*h^2*p^2*q^2*log(c))*a*b^3 + (f^2*h^2*p^2*q^4*log(d)^2 + 2*f^
2*h^2*p^2*q^3*log(c)*log(d) + f^2*h^2*p^2*q^2*log(c)^2)*b^4)*x^2 + (b^4*f^2
*h^2*p^2*q^2*x^2 + 2*b^4*f^2*g*h*p^2*q^2*x + b^4*f^2*g^2*p^2*q^2)*log(((f*x
 + e)^p)^q)^2 + 2*(a^2*b^2*f^2*g*h*p^2*q^2 + 2*(f^2*g*h*p^2*q^3*log(d) + f^
2*g*h*p^2*q^2*log(c))*a*b^3 + (f^2*g*h*p^2*q^4*log(d)^2 + 2*f^2*g*h*p^2*q^3
*log(c)*log(d) + f^2*g*h*p^2*q^2*log(c)^2)*b^4)*x + 2*(a*b^3*f^2*g^2*p^2*q^
2 + (f^2*g^2*p^2*q^3*log(d) + f^2*g^2*p^2*q^2*log(c))*b^4 + (a*b^3*f^2*h^2*
p^2*q^2 + (f^2*h^2*p^2*q^3*log(d) + f^2*h^2*p^2*q^2*log(c))*b^4)*x^2 + 2*(a
*b^3*f^2*g*h*p^2*q^2 + (f^2*g*h*p^2*q^3*log(d) + f^2*g*h*p^2*q^2*log(c))*b^
4)*x)*log(((f*x + e)^p)^q)) + integrate(1/2*(f^2*g^2 - 3*f*g*h*e + 2*h^2*e^
2 - (f^2*g*h - f*h^2*e)*x)/(a*b^2*f^2*g^3*p^2*q^2 + (f^2*g^3*p^2*q^3*log(d)
 + f^2*g^3*p^2*q^2*log(c))*b^3 + (a*b^2*f^2*h^3*p^2*q^2 + (f^2*h^3*p^2*q^3*
log(d) + f^2*h^3*p^2*q^2*log(c))*b^3)*x^3 + 3*(a*b^2*f^2*g*h^2*p^2*q^2 + (f
^2*g*h^2*p^2*q^3*log(d) + f^2*g*h^2*p^2*q^2*log(c))*b^3)*x^2 + 3*(a*b^2*f^2
*g^2*h*p^2*q^2 + (f^2*g^2*h*p^2*q^3*log(d) + f^2*g^2*h*p^2*q^2*log(c))*b^3)
*x + (b^3*f^2*h^3*p^2*q^2*x^3 + 3*b^3*f^2*g*h^2*p^2*q^2*x^2 + 3*b^3*f^2*g^2
*h*p^2*q^2*x + b^3*f^2*g^3*p^2*q^2)*log(((f*x + e)^p)^q)), x)
```

Fricas [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q))^3,x, algorithm="fricas")
```

```
[Out] integral(1/(a^3*h*x + a^3*g + (b^3*h*x + b^3*g)*log(((f*x + e)^p*d)^q*c)^3
+ 3*(a*b^2*h*x + a*b^2*g)*log(((f*x + e)^p*d)^q*c)^2 + 3*(a^2*b*h*x + a^2*b
*g)*log(((f*x + e)^p*d)^q*c)), x)
```

Sympy [A]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(a+b\log \left(c\left(d\left(e+fx\right)^{p}\right)^{q}\right)\right)^{3}\left(g+hx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(a+b*ln(c*(d*(f*x+e)**p)**q))**3,x)
[Out] Integral(1/((a + b*log(c*(d*(e + f*x)**p)**q))**3*(g + h*x)), x)
```

Giac [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q))^3,x, algorithm="giac")
[Out] integrate(1/((h*x + g)*(b*log(((f*x + e)^p*d)^q*c) + a)^3), x)
```

Mupad [A]
time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{1}{\left(g+h\,x\right)\,{\left(a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)\right)}^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((g + h*x)*(a + b*log(c*(d*(e + f*x)^p)^q))^3),x)
[Out] int(1/((g + h*x)*(a + b*log(c*(d*(e + f*x)^p)^q))^3), x)
```

3.459 $\int \frac{1}{(g+hx)^2(a+b\log(c(d(e+fx)^p)^q))^3} dx$

Optimal. Leaf size=31

$$\text{Int}\left(\frac{1}{(g+hx)^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3},x\right)$$

[Out] Unintegrable(1/(h*x+g)^2/(a+b*ln(c*(d*(f*x+e)^p)^q))^3,x)

Rubi [A]
time = 0.04, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int \frac{1}{(g+hx)^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3} dx$$

Verification is not applicable to the result.

[In] Int[1/((g + h*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])^3),x]

[Out] Defer[Int][1/((g + h*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])^3), x]

Rubi steps

$$\int \frac{1}{(g+hx)^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3} dx = \int \frac{1}{(g+hx)^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3} dx$$

Mathematica [A]
time = 24.83, size = 0, normalized size = 0.00

$$\int \frac{1}{(g+hx)^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3} dx$$

Verification is not applicable to the result.

[In] Integrate[1/((g + h*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])^3),x]

[Out] Integrate[1/((g + h*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])^3), x]

Maple [A]
time = 0.20, size = 0, normalized size = 0.00

$$\int \frac{1}{(hx+g)^2\left(a+b\ln\left(c\left(d\left(fx+e\right)^p\right)^q\right)\right)^3} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(h*x+g)^2/(a+b*ln(c*(d*(f*x+e)^p)^q))^3,x)
```

```
[Out] int(1/(h*x+g)^2/(a+b*ln(c*(d*(f*x+e)^p)^q))^3,x)
```

Maxima [A]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)^2/(a+b*log(c*(d*(f*x+e)^p)^q))^3,x, algorithm="maxima")
```

```
[Out] 1/2*((a*f^2*h - (f^2*h*p*q - f^2*h*q*log(d) - f^2*h*log(c))*b)*x^2 - (a*f^2
*g + (f^2*g*p*q + f^2*g*q*log(d) + f^2*g*log(c))*b - (3*a*f*h - (f*h*p*q -
3*f*h*q*log(d) - 3*f*h*log(c))*b)*e)*x + 2*((h*q*log(d) + h*log(c))*b + a*h
)*e^2 - (a*f*g + (f*g*p*q + f*g*q*log(d) + f*g*log(c))*b)*e + (b*f^2*h*x^2
- b*f*g*e + 2*b*h*e^2 - (b*f^2*g - 3*b*f*h*e)*x)*log(((f*x + e)^p)^q))/(a^2
*b^2*f^2*g^3*p^2*q^2 + 2*(f^2*g^3*p^2*q^3*log(d) + f^2*g^3*p^2*q^2*log(c))*
a*b^3 + (f^2*g^3*p^2*q^4*log(d)^2 + 2*f^2*g^3*p^2*q^3*log(c)*log(d) + f^2*g
^3*p^2*q^2*log(c)^2)*b^4 + (a^2*b^2*f^2*h^3*p^2*q^2 + 2*(f^2*h^3*p^2*q^3*lo
g(d) + f^2*h^3*p^2*q^2*log(c))*a*b^3 + (f^2*h^3*p^2*q^4*log(d)^2 + 2*f^2*h^
3*p^2*q^3*log(c)*log(d) + f^2*h^3*p^2*q^2*log(c)^2)*b^4)*x^3 + 3*(a^2*b^2*f
^2*g*h^2*p^2*q^2 + 2*(f^2*g*h^2*p^2*q^3*log(d) + f^2*g*h^2*p^2*q^2*log(c))*
a*b^3 + (f^2*g*h^2*p^2*q^4*log(d)^2 + 2*f^2*g*h^2*p^2*q^3*log(c)*log(d) + f
^2*g*h^2*p^2*q^2*log(c)^2)*b^4)*x^2 + (b^4*f^2*h^3*p^2*q^2*x^3 + 3*b^4*f^2*
g*h^2*p^2*q^2*x^2 + 3*b^4*f^2*g^2*h*p^2*q^2*x + b^4*f^2*g^3*p^2*q^2)*log(((
f*x + e)^p)^q)^2 + 3*(a^2*b^2*f^2*g^2*h*p^2*q^2 + 2*(f^2*g^2*h*p^2*q^3*log(
d) + f^2*g^2*h*p^2*q^2*log(c))*a*b^3 + (f^2*g^2*h*p^2*q^4*log(d)^2 + 2*f^2*
g^2*h*p^2*q^3*log(c)*log(d) + f^2*g^2*h*p^2*q^2*log(c)^2)*b^4)*x + 2*(a*b^3
*f^2*g^3*p^2*q^2 + (f^2*g^3*p^2*q^3*log(d) + f^2*g^3*p^2*q^2*log(c))*b^4 +
(a*b^3*f^2*h^3*p^2*q^2 + (f^2*h^3*p^2*q^3*log(d) + f^2*h^3*p^2*q^2*log(c))*
b^4)*x^3 + 3*(a*b^3*f^2*g*h^2*p^2*q^2 + (f^2*g*h^2*p^2*q^3*log(d) + f^2*g*h
^2*p^2*q^2*log(c))*b^4)*x^2 + 3*(a*b^3*f^2*g^2*h*p^2*q^2 + (f^2*g^2*h*p^2*q
^3*log(d) + f^2*g^2*h*p^2*q^2*log(c))*b^4)*x)*log(((f*x + e)^p)^q)) + integ
rate(1/2*(f^2*h^2*x^2 + f^2*g^2 - 6*f*g*h*e + 6*h^2*e^2 - 2*(2*f^2*g*h - 3*
f*h^2*e)*x)/(a*b^2*f^2*g^4*p^2*q^2 + (a*b^2*f^2*h^4*p^2*q^2 + (f^2*h^4*p^2*
q^3*log(d) + f^2*h^4*p^2*q^2*log(c))*b^3)*x^4 + (f^2*g^4*p^2*q^3*log(d) + f
^2*g^4*p^2*q^2*log(c))*b^3 + 4*(a*b^2*f^2*g*h^3*p^2*q^2 + (f^2*g*h^3*p^2*q^
3*log(d) + f^2*g*h^3*p^2*q^2*log(c))*b^3)*x^3 + 6*(a*b^2*f^2*g^2*h^2*p^2*q^
2 + (f^2*g^2*h^2*p^2*q^3*log(d) + f^2*g^2*h^2*p^2*q^2*log(c))*b^3)*x^2 + 4*
(a*b^2*f^2*g^3*h*p^2*q^2 + (f^2*g^3*h*p^2*q^3*log(d) + f^2*g^3*h*p^2*q^2*lo
g(c))*b^3)*x + (b^3*f^2*h^4*p^2*q^2*x^4 + 4*b^3*f^2*g*h^3*p^2*q^2*x^3 + 6*b
^3*f^2*g^2*h^2*p^2*q^2*x^2 + 4*b^3*f^2*g^3*h*p^2*q^2*x + b^3*f^2*g^4*p^2*q^
2)*log(((f*x + e)^p)^q)), x)
```

Fricas [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)^2/(a+b*log(c*(d*(f*x+e)^p)^q))^3,x, algorithm="fricas")
```

```
[Out] integral(1/(a^3*h^2*x^2 + 2*a^3*g*h*x + a^3*g^2 + (b^3*h^2*x^2 + 2*b^3*g*h*
x + b^3*g^2)*log(((f*x + e)^p*d)^q*c)^3 + 3*(a*b^2*h^2*x^2 + 2*a*b^2*g*h*x
+ a*b^2*g^2)*log(((f*x + e)^p*d)^q*c)^2 + 3*(a^2*b*h^2*x^2 + 2*a^2*b*g*h*x
+ a^2*b*g^2)*log(((f*x + e)^p*d)^q*c)), x)
```

Sympy [A]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(a + b \log \left(c \left(d \left(e + fx\right)^{p}\right)^{q}\right)\right)^{3} \left(g + hx\right)^{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)**2/(a+b*ln(c*(d*(f*x+e)**p)**q))**3,x)
```

```
[Out] Integral(1/((a + b*log(c*(d*(e + f*x)**p)**q))**3*(g + h*x)**2), x)
```

Giac [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)^2/(a+b*log(c*(d*(f*x+e)^p)^q))^3,x, algorithm="giac")
```

```
[Out] integrate(1/((h*x + g)^2*(b*log(((f*x + e)^p*d)^q*c) + a)^3), x)
```

Mupad [A]
time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{1}{{\left(g+h\,x\right)}^2\,{\left(a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)\right)}^3} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((g + h*x)^2*(a + b*log(c*(d*(e + f*x)^p)^q))^3),x)
```

```
[Out] int(1/((g + h*x)^2*(a + b*log(c*(d*(e + f*x)^p)^q))^3), x)
```

3.460 $\int (g+hx)^2\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}\,dx$

Optimal. Leaf size=488

$$-\frac{\sqrt{b}\,e^{-\frac{a}{bpq}}(fg-eh)^2\sqrt{p}\,\sqrt{\pi}\,\sqrt{q}\,(e+fx)\left(c(d(e+fx)^p)^q\right)^{-\frac{1}{pq}}\operatorname{erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\,\sqrt{p}\,\sqrt{q}}\right)}{2f^3}-\frac{\sqrt{b}}{}$$

```
[Out] -1/18*h^2*(f*x+e)^3*erfi(3^(1/2)*(a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2)/b^(1/2)/
p^(1/2)/q^(1/2))*b^(1/2)*p^(1/2)*3^(1/2)*Pi^(1/2)*q^(1/2)/exp(3*a/b/p/q)/f^
3/((c*(d*(f*x+e)^p)^q)^(3/p/q))-1/4*h*(-e*h+f*g)*(f*x+e)^2*erfi(2^(1/2)*(a+
b*ln(c*(d*(f*x+e)^p)^q))^(1/2)/b^(1/2)/p^(1/2)/q^(1/2))*b^(1/2)*p^(1/2)*2^(
1/2)*Pi^(1/2)*q^(1/2)/exp(2*a/b/p/q)/f^3/((c*(d*(f*x+e)^p)^q)^(2/p/q))-1/2*
(-e*h+f*g)^2*(f*x+e)*erfi((a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2)/b^(1/2)/p^(1/2)
/q^(1/2))*b^(1/2)*p^(1/2)*Pi^(1/2)*q^(1/2)/exp(a/b/p/q)/f^3/((c*(d*(f*x+e)^
p)^q)^(1/p/q))+(-e*h+f*g)^2*(f*x+e)*(a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2)/f^3+h
*(-e*h+f*g)*(f*x+e)^2*(a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2)/f^3+1/3*h^2*(f*x+e)
^3*(a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2)/f^3
```

Rubi [A]
time = 1.15, antiderivative size = 488, normalized size of antiderivative = 1.00, number of steps used = 18, number of rules used = 10, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}} = 0.333$, Rules used = {2448, 2436, 2333, 2337, 2211, 2235, 2437, 2342, 2347, 2495}

$$-\frac{\sqrt{\frac{\pi}{2}}\,\sqrt{b}\,h\sqrt{p}\,\sqrt{q}\,(e+fx)^2e^{-\frac{2a}{bpq}}(fg-eh)\left(c(d(e+fx)^p)^q\right)^{-\frac{2}{pq}}\operatorname{Erfi}\left(\frac{\sqrt{2}\,\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\,\sqrt{p}\,\sqrt{q}}\right)}{2f^3}-\frac{\sqrt{\pi}\,\sqrt{b}\,\sqrt{p}\,\sqrt{q}\,(e+fx)e^{-\frac{a}{bpq}}(fg-eh)^2\left(c(d(e+fx)^p)^q\right)^{-\frac{1}{pq}}\operatorname{Erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\,\sqrt{p}\,\sqrt{q}}\right)}{2f^3}-\frac{\sqrt{\frac{\pi}{3}}\,\sqrt{b}\,h^2\sqrt{p}\,\sqrt{q}\,(e+fx)^3e^{-\frac{3a}{bpq}}\left(c(d(e+fx)^p)^q\right)^{-\frac{3}{pq}}\operatorname{Erfi}\left(\frac{\sqrt{3}\,\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\,\sqrt{p}\,\sqrt{q}}\right)}{6f^3}+\frac{h(e+fx)^2(fg-eh)\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{f^3}+\frac{(e+fx)(fg-eh)^2\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{f^3}+\frac{h^2(e+fx)^3\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{3f^3}$$

Antiderivative was successfully verified.

```
[In] Int[(g + h*x)^2*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]],x]
```

```
[Out] -1/2*(Sqrt[b]*(f*g - e*h)^2*Sqrt[p]*Sqrt[Pi]*Sqrt[q]*(e + f*x)*Erfi[Sqrt[a
 + b*Log[c*(d*(e + f*x)^p)^q]]/(Sqrt[b]*Sqrt[p]*Sqrt[q])])/(E^(a/(b*p*q))*f^
3*(c*(d*(e + f*x)^p)^q)^(1/(p*q))) - (Sqrt[b]*h*(f*g - e*h)*Sqrt[p]*Sqrt[Pi
/2]*Sqrt[q]*(e + f*x)^2*Erfi[(Sqrt[2]*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]])
/(Sqrt[b]*Sqrt[p]*Sqrt[q])])/(2*E^((2*a)/(b*p*q))*f^3*(c*(d*(e + f*x)^p)^q)
^(2/(p*q))) - (Sqrt[b]*h^2*Sqrt[p]*Sqrt[Pi/3]*Sqrt[q]*(e + f*x)^3*Erfi[(Sqr
t[3]*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]])/(Sqrt[b]*Sqrt[p]*Sqrt[q])])/(6*E
^((3*a)/(b*p*q))*f^3*(c*(d*(e + f*x)^p)^q)^(3/(p*q))) + ((f*g - e*h)^2*(e +
 f*x)*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]])/f^3 + (h*(f*g - e*h)*(e + f*x)^
2*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]])/f^3 + (h^2*(e + f*x)^3*Sqrt[a + b*L
og[c*(d*(e + f*x)^p)^q]])/(3*f^3)
```

Rule 2211

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - c*(f/d)) + f*g*(x^2/d)), x], x, Sqrt[c + d*
```

```
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !TrueQ[$UseGamma]
```

Rule 2235

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[F^a*Sqrt
[Pi]*(Erfi[(c + d*x)*Rt[b*Log[F], 2]]/(2*d*Rt[b*Log[F], 2])), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2333

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2337

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2342

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_.)*(x_))^(m_.), x_Symbo
l] :> Simp[(d*x)^(m + 1)*((a + b*Log[c*x^n])^p/(d*(m + 1))), x] - Dist[b*n*
(p/(m + 1)), Int[(d*x)^m*(a + b*Log[c*x^n])^(p - 1), x], x] /; FreeQ[{a, b,
 c, d, m, n}, x] && NeQ[m, -1] && GtQ[p, 0]
```

Rule 2347

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_)*((d_.)*(x_))^(m_.), x_Symbol
] :> Dist[(d*x)^(m + 1)/(d*n*(c*x^n)^((m + 1)/n)), Subst[Int[E^(((m + 1)/n)
*x)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b, c, d, m, n, p}, x]
```

Rule 2436

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2437

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[(f*(x/d))^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2448

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q*(a + b*Log[c*(d
 + e*x)^n])^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f -
 d*g, 0] && IGtQ[q, 0]
```

Rule 2495

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int (g+hx)^2\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}\,dx = \text{Subst}\left(\int (g+hx)^2\sqrt{a+b\log\left(cd^q(e+fx)^{pq}\right)}\,dx, cd^q(e+f\right.$$

$$= \text{Subst}\left(\int\left(\frac{(fg-eh)^2\sqrt{a+b\log\left(cd^q(e+fx)^{pq}\right)}}{f^2}+\frac{2h(fg\right.\right.$$

$$= \text{Subst}\left(\frac{h^2\int(e+fx)^2\sqrt{a+b\log\left(cd^q(e+fx)^{pq}\right)}\,dx}{f^2}, cd^q(e+\right.$$

$$= \text{Subst}\left(\frac{h^2\text{Subst}\left(\int x^2\sqrt{a+b\log\left(cd^qx^{pq}\right)}\,dx, x, e+fx\right)}{f^3}, cd^q\right.$$

$$= \frac{(fg-eh)^2(e+fx)\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{f^3}+\frac{h(fg-e}{}$$

$$= \frac{(fg-eh)^2(e+fx)\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{f^3}+\frac{h(fg-e}{}$$

$$= \frac{(fg-eh)^2(e+fx)\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{f^3}+\frac{h(fg-e}{}$$

$$= -\frac{\sqrt{b}\,e^{-\frac{a}{bpq}}(fg-eh)^2\sqrt{p}\,\sqrt{\pi}\,\sqrt{q}\,(e+fx)\left(c\left(d(e+fx)^p\right)^q\right)^-}{2f^3}$$

Mathematica [A]
time = 0.45, size = 458, normalized size = 0.94

$$\frac{(e+fx)\left(-18\sqrt{b}\,e^{-\frac{a}{bpq}}(fg-eh)^2\sqrt{p}\,\sqrt{\pi}\,\sqrt{q}\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\text{erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\,\sqrt{p}\,\sqrt{q}}\right)+9\sqrt{b}\,e^{-\frac{2a}{bpq}}h(-fg+eh)\sqrt{p}\,\sqrt{2\pi}\,\sqrt{q}\,(e+fx)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{2}{pq}}\text{erfi}\left(\frac{\sqrt{2}\,\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\,\sqrt{p}\,\sqrt{q}}\right)-2\sqrt{b}\,e^{-\frac{3a}{bpq}}h^2\sqrt{p}\,\sqrt{3\pi}\,\sqrt{q}\,(e+fx)^2\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{3}{pq}}\text{erfi}\left(\frac{\sqrt{3}\,\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\,\sqrt{p}\,\sqrt{q}}\right)+36(fg-eh)^2\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}+36h(fg-eh)(e+fx)\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}+12h^2(e+fx)^2\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}\right)}{36f^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(g + h*x)^2*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]],x]
```

```
[Out] ((e + f*x)*((-18*Sqrt[b]*(f*g - e*h)^2*Sqrt[p]*Sqrt[Pi]*Sqrt[q]*Erfi[Sqrt[a
 + b*Log[c*(d*(e + f*x)^p)^q]]/(Sqrt[b]*Sqrt[p]*Sqrt[q])]])/(E^(a/(b*p*q))*(
c*(d*(e + f*x)^p)^q)^(1/(p*q))) + (9*Sqrt[b]*h*(-(f*g) + e*h)*Sqrt[p]*Sqrt[
2*Pi]*Sqrt[q]*(e + f*x)*Erfi[(Sqrt[2]*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]])
```

```
/(Sqrt[b]*Sqrt[p]*Sqrt[q])])/(E^((2*a)/(b*p*q))*(c*(d*(e + f*x)^p)^q)^(2/(p
*q))) - (2*Sqrt[b]*h^2*Sqrt[p]*Sqrt[3*Pi]*Sqrt[q]*(e + f*x)^2*Erfi[(Sqrt[3]
*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]])/(Sqrt[b]*Sqrt[p]*Sqrt[q])])/(E^((3*a
)/(b*p*q))*(c*(d*(e + f*x)^p)^q)^(3/(p*q))) + 36*(f*g - e*h)^2*Sqrt[a + b*L
og[c*(d*(e + f*x)^p)^q]] + 36*h*(f*g - e*h)*(e + f*x)*Sqrt[a + b*Log[c*(d*(
e + f*x)^p)^q]] + 12*h^2*(e + f*x)^2*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]))
/(36*f^3)
```

Maple [F]
time = 0.18, size = 0, normalized size = 0.00

$$\int (hx+g)^2 \sqrt{a+b\ln \left(c \left(d \left(fx+e\right)^p\right)^q\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x+g)^2*(a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2),x)
[Out] int((h*x+g)^2*(a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2),x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^2*(a+b*log(c*(d*(f*x+e)^p)^q))^(1/2),x, algorithm="maxima
")
[Out] integrate((h*x + g)^2*sqrt(b*log(((f*x + e)^p*d)^q*c) + a), x)
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^2*(a+b*log(c*(d*(f*x+e)^p)^q))^(1/2),x, algorithm="fricas
")
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt{a+b\log \left(c \left(d \left(e+fx\right)^p\right)^q\right)} \left(g+hx\right)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)**2*(a+b*ln(c*(d*(f*x+e)**p)**q))**(1/2),x)
```

```
[Out] Integral(sqrt(a + b*log(c*(d*(e + f*x)**p)**q))*(g + h*x)**2, x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^2*(a+b*log(c*(d*(f*x+e)^p)^q))^(1/2),x, algorithm="giac")
```

```
[Out] integrate((h*x + g)^2*sqrt(b*log(((f*x + e)^p*d)^q*c) + a), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int (g+h\,x)^2\,\sqrt{a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g + h*x)^2*(a + b*log(c*(d*(e + f*x)^p)^q))^(1/2),x)
```

```
[Out] int((g + h*x)^2*(a + b*log(c*(d*(e + f*x)^p)^q))^(1/2), x)
```

3.461 $\int (g+hx)\sqrt{a+b\log \left(c\left(d(e+fx)^p\right)^q\right)}\,dx$

Optimal. Leaf size=311

$$-\frac{\sqrt{b}\,e^{-\frac{a}{bpq}}(fg-eh)\sqrt{p}\,\sqrt{\pi}\,\sqrt{q}\,(e+fx)\left(c(d(e+fx)^p)^q\right)^{-\frac{1}{pq}}\operatorname{erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\,\sqrt{p}\,\sqrt{q}}\right)}{2f^2}-\frac{\sqrt{b}\,e \cdots}{\cdots}$$

```
[Out] -1/8*h*(f*x+e)^2*erfi(2^(1/2)*(a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2)/b^(1/2)/p^(
1/2)/q^(1/2))*b^(1/2)*p^(1/2)*2^(1/2)*Pi^(1/2)*q^(1/2)/exp(2*a/b/p/q)/f^2/(
(c*(d*(f*x+e)^p)^q)^(2/p/q))-1/2*(-e*h+f*g)*(f*x+e)*erfi((a+b*ln(c*(d*(f*x+
e)^p)^q))^(1/2)/b^(1/2)/p^(1/2)/q^(1/2))*b^(1/2)*p^(1/2)*Pi^(1/2)*q^(1/2)/e
xp(a/b/p/q)/f^2/((c*(d*(f*x+e)^p)^q)^(1/p/q))+(-e*h+f*g)*(f*x+e)*(a+b*ln(c*
(d*(f*x+e)^p)^q))^(1/2)/f^2+1/2*h*(f*x+e)^2*(a+b*ln(c*(d*(f*x+e)^p)^q))^(1/
2)/f^2
```

Rubi [A]
time = 0.61, antiderivative size = 311, normalized size of antiderivative = 1.00, number of steps used = 13, number of rules used = 10, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}} = 0.357$, Rules used = {2448, 2436, 2333, 2337, 2211, 2235, 2437, 2342, 2347, 2495}

$$-\frac{\sqrt{\pi}\,\sqrt{b}\,\sqrt{p}\,\sqrt{q}\,(e+fx)e^{-\frac{a}{bpq}}(fg-eh)\left(c(d(e+fx)^p)^q\right)^{-\frac{1}{pq}}\operatorname{Erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\,\sqrt{p}\,\sqrt{q}}\right)}{2f^2}-\frac{\sqrt{\frac{\pi}{2}}\,\sqrt{b}\,h\sqrt{p}\,\sqrt{q}\,(e+fx)^2e^{-\frac{2a}{bpq}}\left(c(d(e+fx)^p)^q\right)^{-\frac{2}{pq}}\operatorname{Erfi}\left(\frac{\sqrt{2}\,\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\,\sqrt{p}\,\sqrt{q}}\right)}{4f^2}+\frac{(e+fx)(fg-eh)\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{f^2}+\frac{h(e+fx)^2\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{2f^2}$$

Antiderivative was successfully verified.

```
[In] Int[(g + h*x)*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]],x]
```

```
[Out] -1/2*(Sqrt[b]*(f*g - e*h)*Sqrt[p]*Sqrt[Pi]*Sqrt[q]*(e + f*x)*Erfi[Sqrt[a +
b*Log[c*(d*(e + f*x)^p)^q]]/(Sqrt[b]*Sqrt[p]*Sqrt[q])])/(E^(a/(b*p*q))*f^2*
(c*(d*(e + f*x)^p)^q)^(1/(p*q))) - (Sqrt[b]*h*Sqrt[p]*Sqrt[Pi/2]*Sqrt[q]*(e
 + f*x)^2*Erfi[(Sqrt[2]*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]])/(Sqrt[b]*Sqrt
[p]*Sqrt[q])])/(4*E^((2*a)/(b*p*q))*f^2*(c*(d*(e + f*x)^p)^q)^(2/(p*q))) +
((f*g - e*h)*(e + f*x)*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]])/f^2 + (h*(e +
f*x)^2*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]])/(2*f^2)
```

Rule 2211

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - c*(f/d)) + f*g*(x^2/d)), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !TrueQ[$UseGamma]
```

Rule 2235

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[F^a*Sqrt
[Pi]*(Erfi[(c + d*x)*Rt[b*Log[F], 2]]/(2*d*Rt[b*Log[F], 2])), x] /; FreeQ[{
```

```
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2333

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2337

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2342

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_.)*(x_))^(m_.), x_Symbo
l] :> Simp[(d*x)^(m + 1)*((a + b*Log[c*x^n])^p/(d*(m + 1))), x] - Dist[b*n*
(p/(m + 1)), Int[(d*x)^m*(a + b*Log[c*x^n])^(p - 1), x], x] /; FreeQ[{a, b,
 c, d, m, n}, x] && NeQ[m, -1] && GtQ[p, 0]
```

Rule 2347

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_)*((d_.)*(x_))^(m_.), x_Symbol
] :> Dist[(d*x)^(m + 1)/(d*n*(c*x^n)^((m + 1)/n)), Subst[Int[E^(((m + 1)/n)
*x)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b, c, d, m, n, p}, x]
```

Rule 2436

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2437

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[(f*(x/d))^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2448

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q*(a + b*Log[c*(d
 + e*x)^n])^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f -
 d*g, 0] && IGtQ[q, 0]
```

Rule 2495

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int (g+hx)\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}\,dx = \text{Subst}\left(\int (g+hx)\sqrt{a+b\log\left(cd^q(e+fx)^{pq}\right)}\,dx, cd^q(e+fx$$

$$= \text{Subst}\left(\int \left(\frac{(fg-eh)\sqrt{a+b\log\left(cd^q(e+fx)^{pq}\right)}}{f} + \frac{h(e+f$$

$$= \text{Subst}\left(\frac{h\int (e+fx)\sqrt{a+b\log\left(cd^q(e+fx)^{pq}\right)}\,dx}{f}, cd^q(e+f$$

$$= \text{Subst}\left(\frac{h\text{Subst}\left(\int x\sqrt{a+b\log\left(cd^qx^{pq}\right)}\,dx, x, e+fx\right)}{f^2}, cd^q(e$$

$$= \frac{(fg-eh)(e+fx)\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{f^2} + \frac{h(e+fx)$$

$$= \frac{(fg-eh)(e+fx)\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{f^2} + \frac{h(e+fx)$$

$$= \frac{(fg-eh)(e+fx)\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{f^2} + \frac{h(e+fx)$$

$$= -\frac{\sqrt{b}\,e^{-\frac{a}{bpq}}(fg-eh)\sqrt{p}\,\sqrt{\pi}\,\sqrt{q}\,(e+fx)\left(c(d(e+fx)^p)^q\right)^{-}}{2f^2}$$

Mathematica [A]
time = 0.26, size = 298, normalized size = 0.96

$$-\frac{e^{-\frac{2a}{bpq}}(e+fx)\left(c(d(e+fx)^p)^q\right)^{-\frac{2}{pq}}\left(4\sqrt{b}\,e^{\frac{a}{bpq}}(fg-eh)\sqrt{p}\,\sqrt{\pi}\,\sqrt{q}\left(c(d(e+fx)^p)^q\right)^{\frac{1}{pq}}\text{erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\,\sqrt{p}\,\sqrt{q}}\right)+\sqrt{b}\,h\sqrt{p}\,\sqrt{2\pi}\,\sqrt{q}\,(e+fx)\text{erfi}\left(\frac{\sqrt{2}\,\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\,\sqrt{p}\,\sqrt{q}}\right)-4e^{\frac{2a}{bpq}}\left(c(d(e+fx)^p)^q\right)^{\frac{2}{pq}}(2fg-eh+fhx)\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}\right)}{8f^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(g + h*x)*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]],x]
```

```
[Out] -1/8*((e + f*x)*(4*Sqrt[b]*E^(a/(b*p*q))*(f*g - e*h)*Sqrt[p]*Sqrt[Pi]*Sqrt[
q]*(c*(d*(e + f*x)^p)^q)^(1/(p*q))*Erfi[Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]
]/(Sqrt[b]*Sqrt[p]*Sqrt[q])] + Sqrt[b]*h*Sqrt[p]*Sqrt[2*Pi]*Sqrt[q]*(e + f*
x)*Erfi[(Sqrt[2]*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]])/(Sqrt[b]*Sqrt[p]*Sqr
t[q])] - 4*E^((2*a)/(b*p*q))*(c*(d*(e + f*x)^p)^q)^(2/(p*q))*(2*f*g - e*h +
 f*h*x)*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]))/(E^((2*a)/(b*p*q))*f^2*(c*(d
*(e + f*x)^p)^q)^(2/(p*q)))
```

Maple [F]
time = 0.03, size = 0, normalized size = 0.00

$$\int \left(hx+g\right)\sqrt{a+b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x+g)*(a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2),x)
```

```
[Out] int((h*x+g)*(a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2),x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)*(a+b*log(c*(d*(f*x+e)^p)^q))^(1/2),x, algorithm="maxima")
```

```
[Out] integrate((h*x + g)*sqrt(b*log(((f*x + e)^p*d)^q*c) + a), x)
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)*(a+b*log(c*(d*(f*x+e)^p)^q))^(1/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt{a+b\log\left(c\left(d\left(e+fx\right)^{p}\right)^{q}\right)}\left(g+hx\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)*(a+b*ln(c*(d*(f*x+e)**p)**q))**(1/2),x)
[Out] Integral(sqrt(a + b*log(c*(d*(e + f*x)**p)**q))*(g + h*x), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)*(a+b*log(c*(d*(f*x+e)^p)^q))^(1/2),x, algorithm="giac")
[Out] integrate((h*x + g)*sqrt(b*log(((f*x + e)^p*d)^q*c) + a), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int (g + h\,x)\,\sqrt{a + b\,\ln\left(c\,{\left(d\,{\left(e + f\,x\right)}^p\right)}^q\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g + h*x)*(a + b*log(c*(d*(e + f*x)^p)^q))^(1/2),x)
[Out] int((g + h*x)*(a + b*log(c*(d*(e + f*x)^p)^q))^(1/2), x)
```

3.462 $\int \sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}\,dx$

Optimal. Leaf size=139

$$-\frac{\sqrt{b}\,e^{-\frac{a}{bpq}}\sqrt{p}\,\sqrt{\pi}\,\sqrt{q}\,(e+fx)\left(c(d(e+fx)^p)^q\right)^{-\frac{1}{pq}}\operatorname{erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\,\sqrt{p}\,\sqrt{q}}\right)}{2f}+\frac{(e+fx)\sqrt{a+b}}{}$$

[Out] -1/2*(f*x+e)*erfi((a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2)/b^(1/2)/p^(1/2)/q^(1/2))*b^(1/2)*p^(1/2)*Pi^(1/2)*q^(1/2)/exp(a/b/p/q)/f/((c*(d*(f*x+e)^p)^q)^(1/p/q))+(f*x+e)*(a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2)/f

Rubi [A]

time = 0.16, antiderivative size = 139, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.273$, Rules used = {2436, 2333, 2337, 2211, 2235, 2495}

$$\frac{(e+fx)\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{f}-\frac{\sqrt{\pi}\,\sqrt{b}\,\sqrt{p}\,\sqrt{q}\,(e+fx)e^{-\frac{a}{bpq}}\left(c(d(e+fx)^p)^q\right)^{-\frac{1}{pq}}\operatorname{Erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\,\sqrt{p}\,\sqrt{q}}\right)}{2f}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]],x]
```

```
[Out] -1/2*(Sqrt[b]*Sqrt[p]*Sqrt[Pi]*Sqrt[q]*(e + f*x)*Erfi[Sqrt[a + b*Log[c*(d*(
e + f*x)^p)^q]]/(Sqrt[b]*Sqrt[p]*Sqrt[q])])/(E^(a/(b*p*q))*f*(c*(d*(e + f*x
)^p)^q)^(1/(p*q))) + ((e + f*x)*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]])/f
```

Rule 2211

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - c*(f/d)) + f*g*(x^2/d)), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !TrueQ[$UseGamma]
```

Rule 2235

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[F^a*Sqrt
[Pi]*(Erfi[(c + d*x)*Rt[b*Log[F], 2]]/(2*d*Rt[b*Log[F], 2])), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2333

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2337

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2436

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2495

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}\,dx = \text{Subst}\left(\int \sqrt{a+b\log\left(cd^q(e+fx)^{pq}\right)}\,dx, cd^q(e+fx)^{pq}, c(d(e+fx)^p)^q\right)$$

$$= \text{Subst}\left(\frac{\text{Subst}\left(\int \sqrt{a+b\log\left(cd^q x^{pq}\right)}\,dx, x, e+fx\right)}{f}, cd^q(e+fx)^{pq}, c(\ldots$$

$$= \frac{(e+fx)\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{f} - \text{Subst}\left(\frac{(bpq)\text{Subst}\left(\int \frac{\ldots}{\sqrt{a+\ldots}}\ldots\right.}{\ldots}\right.$$

$$= \frac{(e+fx)\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{f} - \text{Subst}\left(\frac{\left(b(e+fx)\left(cd^q(e+f\ldots\right.\right.}{\ldots}\right.$$

$$= \frac{(e+fx)\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{f} - \text{Subst}\left(\frac{\left((e+fx)\left(cd^q(e+f\ldots\right.\right.}{\ldots}\right.$$

$$= -\frac{\sqrt{b}\,e^{-\frac{a}{bpq}}\sqrt{p}\,\sqrt{\pi}\,\sqrt{q}\,(e+fx)\left(c(d(e+fx)^p)^q\right)^{-\frac{1}{pq}}\text{erfi}\left(\frac{\sqrt{a+b\log\ldots}}{\sqrt{b}\ldots}\right.}{2f}$$

Mathematica [A]
time = 0.05, size = 134, normalized size = 0.96

$$\frac{(e+fx)\left(-\sqrt{b}\,e^{-\frac{a}{bpq}}\sqrt{p}\,\sqrt{\pi}\,\sqrt{q}\,\left(c(d(e+fx)^p)^q\right)^{-\frac{1}{pq}}\text{erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\,\sqrt{p}\,\sqrt{q}}\right)+2\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}\right)}{2f}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]],x]
```

```
[Out] ((e + f*x)*(-((Sqrt[b]*Sqrt[p]*Sqrt[Pi]*Sqrt[q]*Erfi[Sqrt[a + b*Log[c*(d*(e
 + f*x)^p)^q]]/(Sqrt[b]*Sqrt[p]*Sqrt[q])])/(E^(a/(b*p*q))*(c*(d*(e + f*x)^p
)^q)^(1/(p*q)))) + 2*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]))/(2*f)
```

Maple [F]
time = 0.04, size = 0, normalized size = 0.00

$$\int \sqrt{a+b\ln\left(c\left(d\left(fx+e\right)^p\right)^q\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2),x)
```

```
[Out] int((a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2),x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^(1/2),x, algorithm="maxima")
```

```
[Out] integrate(sqrt(b*log(((f*x + e)^p*d)^q*c) + a), x)
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^(1/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt{a + b\log\left(c\left(d\left(e + fx\right)^{p}\right)^{q}\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))**(1/2),x)
```

```
[Out] Integral(sqrt(a + b*log(c*(d*(e + f*x)**p)**q)), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^(1/2),x, algorithm="giac")
```

```
[Out] integrate(sqrt(b*log(((f*x + e)^p*d)^q*c) + a), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int \sqrt{a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d*(e + f*x)^p)^q))^(1/2),x)
[Out] int((a + b*log(c*(d*(e + f*x)^p)^q))^(1/2), x)
```

3.463 $\int \frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{g+hx}\,dx$

Optimal. Leaf size=33

$$\text{Int}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{g+hx},x\right)$$

```
[Out] Unintegrable((a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2)/(h*x+g),x)
```

Rubi [A]
time = 0.07, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int \frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{g+hx}\,dx$$

Verification is not applicable to the result.

```
[In] Int[Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]/(g + h*x),x]
[Out] Defer[Int][Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]/(g + h*x), x]
```

Rubi steps

$$\int \frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{g+hx}\,dx = \int \frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{g+hx}\,dx$$

Mathematica [A]
time = 2.77, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{g+hx}\,dx$$

Verification is not applicable to the result.

```
[In] Integrate[Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]/(g + h*x),x]
[Out] Integrate[Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]/(g + h*x), x]
```

Maple [A]
time = 0.18, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{a+b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)}}{hx+g}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2)/(h*x+g),x)
[Out] int((a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2)/(h*x+g),x)
```

Maxima [A]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^(1/2)/(h*x+g),x, algorithm="maxima")
[Out] integrate(sqrt(b*log(((f*x + e)^p*d)^q*c) + a)/(h*x + g), x)
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^(1/2)/(h*x+g),x, algorithm="fricas")
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [A]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{a+b\log\left(c\left(d\left(e+fx\right)^{p}\right)^{q}\right)}}{g+hx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))**(1/2)/(h*x+g),x)
[Out] Integral(sqrt(a + b*log(c*(d*(e + f*x)**p)**q))/(g + h*x), x)
```

Giac [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^(1/2)/(h*x+g),x, algorithm="giac")
[Out] integrate(sqrt(b*log(((f*x + e)^p*d)^q*c) + a)/(h*x + g), x)
```

Mupad [A]
time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{\sqrt{a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)}}{g+h\,x} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d*(e + f*x)^p)^q))^(1/2)/(g + h*x),x)
[Out] int((a + b*log(c*(d*(e + f*x)^p)^q))^(1/2)/(g + h*x), x)
```

3.464 $\int \frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{(g+hx)^2}\,dx$

Optimal. Leaf size=33

$$\text{Int}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{(g+hx)^2},x\right)$$

```
[Out] Unintegrable((a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2)/(h*x+g)^2,x)
```

Rubi [A]
time = 0.10, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int \frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{(g+hx)^2}\,dx$$

Verification is not applicable to the result.

```
[In] Int[Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]/(g + h*x)^2,x]
[Out] Defer[Int][Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]/(g + h*x)^2, x]
```

Rubi steps

$$\int \frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{(g+hx)^2}\,dx = \int \frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{(g+hx)^2}\,dx$$

Mathematica [A]
time = 0.25, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{(g+hx)^2}\,dx$$

Verification is not applicable to the result.

```
[In] Integrate[Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]/(g + h*x)^2,x]
[Out] Integrate[Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]/(g + h*x)^2, x]
```

Maple [A]
time = 0.21, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{a+b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)}}{\left(hx+g\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2)/(h*x+g)^2,x)
[Out] int((a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2)/(h*x+g)^2,x)
```

Maxima [A]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^(1/2)/(h*x+g)^2,x, algorithm="maxima
")
[Out] integrate(sqrt(b*log(((f*x + e)^p*d)^q*c) + a)/(h*x + g)^2, x)
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^(1/2)/(h*x+g)^2,x, algorithm="fricas
")
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [A]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{a+b\log\left(c\left(d\left(e+fx\right)^{p}\right)^{q}\right)}}{\left(g+hx\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))**(1/2)/(h*x+g)**2,x)
[Out] Integral(sqrt(a + b*log(c*(d*(e + f*x)**p)**q))/(g + h*x)**2, x)
```

Giac [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^(1/2)/(h*x+g)^2,x, algorithm="giac")
[Out] integrate(sqrt(b*log(((f*x + e)^p*d)^q*c) + a)/(h*x + g)^2, x)
```

Mupad [A]
time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{\sqrt{a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)}}{{\left(g+h\,x\right)}^2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d*(e + f*x)^p)^q))^(1/2)/(g + h*x)^2,x)
[Out] int((a + b*log(c*(d*(e + f*x)^p)^q))^(1/2)/(g + h*x)^2, x)
```

3.465 $\int (g+hx)^2 \left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)^{3/2} \, dx$

Optimal. Leaf size=625

$$\frac{3b^{3/2}e^{-\frac{a}{bpq}}(fg-eh)^2p^{3/2}\sqrt{\pi}\,q^{3/2}(e+fx)\left(c(d(e+fx)^p)^q\right)^{-\frac{1}{pq}}\operatorname{erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\,\sqrt{p}\,\sqrt{q}}\right)}{4f^3}+\frac{3b^{3/2}e}{}$$

```
[Out] (-e*h+f*g)^2*(f*x+e)*(a+b*ln(c*(d*(f*x+e)^p)^q))^(3/2)/f^3+h*(-e*h+f*g)*(f*
x+e)^2*(a+b*ln(c*(d*(f*x+e)^p)^q))^(3/2)/f^3+1/3*h^2*(f*x+e)^3*(a+b*ln(c*(d
*(f*x+e)^p)^q))^(3/2)/f^3+1/36*b^(3/2)*h^2*p^(3/2)*q^(3/2)*(f*x+e)^3*erfi(3
^(1/2)*(a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2)/b^(1/2)/p^(1/2)/q^(1/2))*3^(1/2)*P
i^(1/2)/exp(3*a/b/p/q)/f^3/((c*(d*(f*x+e)^p)^q)^(3/p/q))+3/16*b^(3/2)*h*(-e
*h+f*g)*p^(3/2)*q^(3/2)*(f*x+e)^2*erfi(2^(1/2)*(a+b*ln(c*(d*(f*x+e)^p)^q))^
(1/2)/b^(1/2)/p^(1/2)/q^(1/2))*2^(1/2)*Pi^(1/2)/exp(2*a/b/p/q)/f^3/((c*(d*(
f*x+e)^p)^q)^(2/p/q))+3/4*b^(3/2)*(-e*h+f*g)^2*p^(3/2)*q^(3/2)*(f*x+e)*erfi
((a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2)/b^(1/2)/p^(1/2)/q^(1/2))*Pi^(1/2)/exp(a/
b/p/q)/f^3/((c*(d*(f*x+e)^p)^q)^(1/p/q))-3/2*b*(-e*h+f*g)^2*p*q*(f*x+e)*(a+
b*ln(c*(d*(f*x+e)^p)^q))^(1/2)/f^3-3/4*b*h*(-e*h+f*g)*p*q*(f*x+e)^2*(a+b*ln
(c*(d*(f*x+e)^p)^q))^(1/2)/f^3-1/6*b*h^2*p*q*(f*x+e)^3*(a+b*ln(c*(d*(f*x+e)
^p)^q))^(1/2)/f^3
```

Rubi [A]
time = 1.36, antiderivative size = 625, normalized size of antiderivative = 1.00, number of steps used = 21, number of rules used = 10, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}} = 0.333$, Rules used = {2448, 2436, 2333, 2337, 2211, 2235, 2437, 2342, 2347, 2495}

$$\frac{3\sqrt{\frac{\pi}{2}}b^{3/2}hp^{3/2}q^{3/2}(e+fx)^2e^{-\frac{2a}{bpq}}(fg-eh)\left(c(d(e+fx)^p)^q\right)^{-\frac{2}{pq}}\operatorname{Erfi}\left(\frac{\sqrt{2}\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\sqrt{p}\sqrt{q}}\right)}{8f^3}+\frac{3\sqrt{\pi}b^{3/2}p^{3/2}q^{3/2}(e+fx)e^{-\frac{a}{bpq}}(fg-eh)^2\left(c(d(e+fx)^p)^q\right)^{-\frac{1}{pq}}\operatorname{Erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\sqrt{p}\sqrt{q}}\right)}{4f^3}+\frac{\sqrt{\frac{\pi}{3}}b^{3/2}h^2p^{3/2}q^{3/2}(e+fx)^3e^{-\frac{3a}{bpq}}\left(c(d(e+fx)^p)^q\right)^{-\frac{3}{pq}}\operatorname{Erfi}\left(\frac{\sqrt{3}\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\sqrt{p}\sqrt{q}}\right)}{12f^3}+\frac{h(e+fx)^2(fg-eh)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2}}{f^3}+\frac{(e+fx)(fg-eh)^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2}}{f^3}-\frac{3bhpq(e+fx)^2(fg-eh)\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{4f^3}-\frac{3bpq(e+fx)(fg-eh)^2\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{2f^3}+\frac{h^2(e+fx)^3\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2}}{3f^3}-\frac{bh^2pq(e+fx)^3\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{6f^3}$$

Antiderivative was successfully verified.

```
[In] Int[(g + h*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2),x]
```

```
[Out] (3*b^(3/2)*(f*g - e*h)^2*p^(3/2)*Sqrt[Pi]*q^(3/2)*(e + f*x)*Erfi[Sqrt[a + b
*Log[c*(d*(e + f*x)^p)^q]]/(Sqrt[b]*Sqrt[p]*Sqrt[q])])/(4*E^(a/(b*p*q))*f^3
*(c*(d*(e + f*x)^p)^q)^(1/(p*q))) + (3*b^(3/2)*h*(f*g - e*h)*p^(3/2)*Sqrt[P
i/2]*q^(3/2)*(e + f*x)^2*Erfi[(Sqrt[2]*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]
)/(Sqrt[b]*Sqrt[p]*Sqrt[q])])/(8*E^((2*a)/(b*p*q))*f^3*(c*(d*(e + f*x)^p)^q
)^(2/(p*q))) + (b^(3/2)*h^2*p^(3/2)*Sqrt[Pi/3]*q^(3/2)*(e + f*x)^3*Erfi[(Sq
rt[3]*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]])/(Sqrt[b]*Sqrt[p]*Sqrt[q])])/(12
*E^((3*a)/(b*p*q))*f^3*(c*(d*(e + f*x)^p)^q)^(3/(p*q))) - (3*b*(f*g - e*h)^
2*p*q*(e + f*x)*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]])/(2*f^3) - (3*b*h*(f*g
 - e*h)*p*q*(e + f*x)^2*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]])/(4*f^3) - (b*
h^2*p*q*(e + f*x)^3*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]])/(6*f^3) + ((f*g -
 e*h)^2*(e + f*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2))/f^3 + (h*(f*g - e
```

```
*h)*(e + f*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2))/f^3 + (h^2*(e + f*x
)^3*(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2))/(3*f^3)
```

Rule 2211

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - c*(f/d)) + f*g*(x^2/d)), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !TrueQ[$UseGamma]
```

Rule 2235

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[F^a*Sqrt
[Pi]*(Erfi[(c + d*x)*Rt[b*Log[F], 2]]/(2*d*Rt[b*Log[F], 2])), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2333

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2337

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2342

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_.)*(x_))^(m_.), x_Symbo
l] :> Simp[(d*x)^(m + 1)*((a + b*Log[c*x^n])^p/(d*(m + 1))), x] - Dist[b*n*
(p/(m + 1)), Int[(d*x)^m*(a + b*Log[c*x^n])^(p - 1), x], x] /; FreeQ[{a, b,
 c, d, m, n}, x] && NeQ[m, -1] && GtQ[p, 0]
```

Rule 2347

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_)*((d_.)*(x_))^(m_.), x_Symbol
] :> Dist[(d*x)^(m + 1)/(d*n*(c*x^n)^((m + 1)/n)), Subst[Int[E^(((m + 1)/n)
*x)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b, c, d, m, n, p}, x]
```

Rule 2436

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2437

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[(f*(x/d))^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2448

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q*(a + b*Log[c*(d
 + e*x)^n])^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f -
 d*g, 0] && IGtQ[q, 0]
```

Rule 2495

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int (g+hx)^2 \left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)^{3/2}\,dx = \text{Subst}\left(\int (g+hx)^2\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^{3/2}\,dx, cd^q(e+\right.$$

$$= \text{Subst}\left(\int\left(\frac{(fg-eh)^2\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^{3/2}}{f^2}+\frac{2h(\right.\right.$$

$$= \text{Subst}\left(\frac{h^2\int(e+fx)^2\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^{3/2}\,dx}{f^2}, cd^q(\right.$$

$$= \text{Subst}\left(\frac{h^2\text{Subst}\left(\int x^2\left(a+b\log\left(cd^qx^{pq}\right)\right)^{3/2}\,dx, x, e+fx\right)}{f^3}, \right.$$

$$= \frac{(fg-eh)^2(e+fx)\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)^{3/2}}{f^3}+\frac{h(fg-}{}$$

$$= -\frac{3b(fg-eh)^2pq(e+fx)\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{2f^3}-\frac{3}{}$$

$$= -\frac{3b(fg-eh)^2pq(e+fx)\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{2f^3}-\frac{3}{}$$

$$= -\frac{3b(fg-eh)^2pq(e+fx)\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{2f^3}-\frac{3}{}$$

$$= \frac{3b^{3/2}e^{-\frac{a}{bpq}}(fg-eh)^2p^{3/2}\sqrt{\pi}\,q^{3/2}(e+fx)\left(c(d(e+fx)^p)^q\right)^{-}}{4f^3}$$

Mathematica [A]

time = 0.90, size = 545, normalized size = 0.87

$$\frac{(e+fx)\left(144(fg-eh)^2\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)^{3/2}+144h(fg-eh)(e+fx)\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)^{3/2}+48h^2(e+fx)^2\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)^{3/2}+4bh^2pq(e+fx)^2\left(\sqrt{b}e^{-\frac{3a}{bpq}}\sqrt{p}\sqrt{3\pi}\sqrt{q}\left(c(d(e+fx)^p)^q\right)^{-\frac{3}{pq}}\text{erfi}\left(\frac{\sqrt{3}\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\sqrt{p}\sqrt{q}}\right)-6\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}\right)+27bh(fg-eh)pq(e+fx)\left(\sqrt{b}e^{-\frac{2a}{bpq}}\sqrt{p}\sqrt{2\pi}\sqrt{q}\left(c(d(e+fx)^p)^q\right)^{-\frac{2}{pq}}\text{erfi}\left(\frac{\sqrt{2}\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\sqrt{p}\sqrt{q}}\right)-4\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}\right)+108b(fg-eh)^2pq\left(\sqrt{b}e^{-\frac{a}{bpq}}\sqrt{p}\sqrt{\pi}\sqrt{q}\left(c(d(e+fx)^p)^q\right)^{-\frac{1}{pq}}\text{erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\sqrt{p}\sqrt{q}}\right)-2\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}\right)\right)}{144f^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(g + h*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2),x]
```

```
[Out] ((e + f*x)*(144*(f*g - e*h)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2) + 144*
h*(f*g - e*h)*(e + f*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2) + 48*h^2*(e
```

```
+ f*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2) + 4*b*h^2*p*q*(e + f*x)^2*(
(Sqrt[b]*Sqrt[p]*Sqrt[3*Pi]*Sqrt[q]*Erfi[(Sqrt[3]*Sqrt[a + b*Log[c*(d*(e +
f*x)^p)^q]])/(Sqrt[b]*Sqrt[p]*Sqrt[q])]])/(E^((3*a)/(b*p*q))*(c*(d*(e + f*x)
^p)^q)^(3/(p*q))) - 6*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]) + 27*b*h*(f*g -
 e*h)*p*q*(e + f*x)*((Sqrt[b]*Sqrt[p]*Sqrt[2*Pi]*Sqrt[q]*Erfi[(Sqrt[2]*Sqrt
[a + b*Log[c*(d*(e + f*x)^p)^q]])/(Sqrt[b]*Sqrt[p]*Sqrt[q])]])/(E^((2*a)/(b*
p*q))*(c*(d*(e + f*x)^p)^q)^(2/(p*q))) - 4*Sqrt[a + b*Log[c*(d*(e + f*x)^p)
^q]]) + 108*b*(f*g - e*h)^2*p*q*((Sqrt[b]*Sqrt[p]*Sqrt[Pi]*Sqrt[q]*Erfi[Sqr
t[a + b*Log[c*(d*(e + f*x)^p)^q]]/(Sqrt[b]*Sqrt[p]*Sqrt[q])]])/(E^(a/(b*p*q)
)*(c*(d*(e + f*x)^p)^q)^(1/(p*q))) - 2*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]
)))/(144*f^3)
```

Maple [F]
time = 0.14, size = 0, normalized size = 0.00

$$\int \left(h x +g \right)^{2} \left(a +b \ln \left(c \left(d \left(f x +e \right)^{p}\right)^{q}\right)\right)^{\frac{3}{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x+g)^2*(a+b*ln(c*(d*(f*x+e)^p)^q))^(3/2),x)
```

```
[Out] int((h*x+g)^2*(a+b*ln(c*(d*(f*x+e)^p)^q))^(3/2),x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^2*(a+b*log(c*(d*(f*x+e)^p)^q))^(3/2),x, algorithm="maxima
")
```

```
[Out] integrate((h*x + g)^2*(b*log(((f*x + e)^p*d)^q*c) + a)^(3/2), x)
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^2*(a+b*log(c*(d*(f*x+e)^p)^q))^(3/2),x, algorithm="fricas
")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \left(a + b\log\left(c(d(e + fx)^{p})^{q}\right)\right)^{\frac{3}{2}} (g + hx)^{2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)**2*(a+b*ln(c*(d*(f*x+e)**p)**q))**(3/2),x)
[Out] Integral((a + b*log(c*(d*(e + f*x)**p)**q))**(3/2)*(g + h*x)**2, x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^2*(a+b*log(c*(d*(f*x+e)^p)^q))^(3/2),x, algorithm="giac")
[Out] integrate((h*x + g)^2*(b*log(((f*x + e)^p*d)^q*c) + a)^(3/2), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int (g + h\,x)^{2}\,\left(a + b\,\ln\left(c\,\left(d\,(e + f\,x)^{p}\right)^{q}\right)\right)^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g + h*x)^2*(a + b*log(c*(d*(e + f*x)^p)^q))^(3/2),x)
[Out] int((g + h*x)^2*(a + b*log(c*(d*(e + f*x)^p)^q))^(3/2), x)
```

3.466 $\int (g+hx)\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)^{3/2}\,dx$

Optimal. Leaf size=396

$$\frac{3b^{3/2}e^{-\frac{a}{bpq}}(fg-eh)p^{3/2}\sqrt{\pi}\,q^{3/2}(e+fx)\left(c(d(e+fx)^p)^q\right)^{-\frac{1}{pq}}\operatorname{erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\,\sqrt{p}\,\sqrt{q}}\right)}{4f^2}+\frac{3b^{3/2}e^{-}\cdots}{\cdots}$$

```
[Out] (-e*h+f*g)*(f*x+e)*(a+b*ln(c*(d*(f*x+e)^p)^q))^(3/2)/f^2+1/2*h*(f*x+e)^2*(a
+b*ln(c*(d*(f*x+e)^p)^q))^(3/2)/f^2+3/32*b^(3/2)*h*p^(3/2)*q^(3/2)*(f*x+e)^
2*erfi(2^(1/2)*(a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2)/b^(1/2)/p^(1/2)/q^(1/2))*2
^(1/2)*Pi^(1/2)/exp(2*a/b/p/q)/f^2/((c*(d*(f*x+e)^p)^q)^(2/p/q))+3/4*b^(3/2
)*(-e*h+f*g)*p^(3/2)*q^(3/2)*(f*x+e)*erfi((a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2)
/b^(1/2)/p^(1/2)/q^(1/2))*Pi^(1/2)/exp(a/b/p/q)/f^2/((c*(d*(f*x+e)^p)^q)^(1
/p/q))-3/2*b*(-e*h+f*g)*p*q*(f*x+e)*(a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2)/f^2-3
/8*b*h*p*q*(f*x+e)^2*(a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2)/f^2
```

Rubi [A]

time = 0.76, antiderivative size = 396, normalized size of antiderivative = 1.00, number of steps used = 15, number of rules used = 10, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}} = 0.357$, Rules used = {2448, 2436, 2333, 2337, 2211, 2235, 2437, 2342, 2347, 2495}

$$\frac{3\sqrt{\pi}\,b^{3/2}p^{3/2}q^{3/2}(e+fx)e^{-\frac{a}{bpq}}(fg-eh)\left(c(d(e+fx)^p)^q\right)^{-\frac{1}{pq}}\operatorname{Erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\,\sqrt{p}\,\sqrt{q}}\right)}{4f^2}+\frac{3\sqrt{\frac{\pi}{2}}\,b^{3/2}hp^{3/2}q^{3/2}(e+fx)^2e^{-\frac{2a}{bpq}}\left(c(d(e+fx)^p)^q\right)^{-\frac{2}{pq}}\operatorname{Erfi}\left(\frac{\sqrt{2}\,\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\,\sqrt{p}\,\sqrt{q}}\right)}{16f^2}+\frac{(e+fx)(fg-eh)\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)^{3/2}}{f^2}-\frac{3bpq(e+fx)(fg-eh)\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{2f^2}+\frac{h(e+fx)^2\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)^{3/2}}{2f^2}-\frac{3bhpq(e+fx)^2\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{8f^2}$$

Antiderivative was successfully verified.

```
[In] Int[(g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2),x]
```

```
[Out] (3*b^(3/2)*(f*g - e*h)*p^(3/2)*Sqrt[Pi]*q^(3/2)*(e + f*x)*Erfi[Sqrt[a + b*L
og[c*(d*(e + f*x)^p)^q]]/(Sqrt[b]*Sqrt[p]*Sqrt[q])])/(4*E^(a/(b*p*q))*f^2*(
c*(d*(e + f*x)^p)^q)^(1/(p*q))) + (3*b^(3/2)*h*p^(3/2)*Sqrt[Pi/2]*q^(3/2)*(
e + f*x)^2*Erfi[(Sqrt[2]*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]])/(Sqrt[b]*Sqr
t[p]*Sqrt[q])])/(16*E^((2*a)/(b*p*q))*f^2*(c*(d*(e + f*x)^p)^q)^(2/(p*q)))
- (3*b*(f*g - e*h)*p*q*(e + f*x)*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]])/(2*f
^2) - (3*b*h*p*q*(e + f*x)^2*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]])/(8*f^2)
+ ((f*g - e*h)*(e + f*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2))/f^2 + (h*(
e + f*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2))/(2*f^2)
```

Rule 2211

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - c*(f/d)) + f*g*(x^2/d)), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !TrueQ[$UseGamma]
```

Rule 2235

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[F^a*Sqrt
[Pi]*(Erfi[(c + d*x)*Rt[b*Log[F], 2]]/(2*d*Rt[b*Log[F], 2])), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2333

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2337

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2342

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_.)*(x_))^(m_.), x_Symbo
l] :> Simp[(d*x)^(m + 1)*((a + b*Log[c*x^n])^p/(d*(m + 1))), x] - Dist[b*n*
(p/(m + 1)), Int[(d*x)^m*(a + b*Log[c*x^n])^(p - 1), x], x] /; FreeQ[{a, b,
 c, d, m, n}, x] && NeQ[m, -1] && GtQ[p, 0]
```

Rule 2347

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_)*((d_.)*(x_))^(m_.), x_Symbol
] :> Dist[(d*x)^(m + 1)/(d*n*(c*x^n)^((m + 1)/n)), Subst[Int[E^(((m + 1)/n)
*x)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b, c, d, m, n, p}, x]
```

Rule 2436

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2437

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[(f*(x/d))^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2448

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q*(a + b*Log[c*(d
```

```
 + e*x)^n])^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f -
 d*g, 0] && IGtQ[q, 0]
```

Rule 2495

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int (g+hx) \left(a+b \log \left(c(d(e+fx)^p)^q\right)\right)^{3/2} \, dx = \text{Subst}\left(\int (g+hx) \left(a+b \log \left(cd^q(e+fx)^{pq}\right)\right)^{3/2} \, dx, cd^q(e+$$

$$= \text{Subst}\left(\int \left(\frac{(fg-eh) \left(a+b \log \left(cd^q(e+fx)^{pq}\right)\right)^{3/2}}{f} + \frac{h(e+}{}\right.\right.$$

$$= \text{Subst}\left(\frac{h \int (e+fx) \left(a+b \log \left(cd^q(e+fx)^{pq}\right)\right)^{3/2} \, dx}{f}, cd^q(e+\right.$$

$$= \text{Subst}\left(\frac{h\text{Subst}\left(\int x(a+b \log \left(cd^q x^{pq}\right))^{3/2} \, dx, x, e+fx\right)}{f^2}, cd^q\right.$$

$$= \frac{(fg-eh)(e+fx) \left(a+b \log \left(c(d(e+fx)^p)^q\right)\right)^{3/2}}{f^2} + \frac{h(e+fx}{}$$

$$= -\frac{3b(fg-eh)pq(e+fx)\sqrt{a+b \log \left(c \left(d(e+fx)^p\right)^q\right)}}{2f^2} - \frac{3bh}{}$$

$$= -\frac{3b(fg-eh)pq(e+fx)\sqrt{a+b \log \left(c \left(d(e+fx)^p\right)^q\right)}}{2f^2} - \frac{3bh}{}$$

$$= -\frac{3b(fg-eh)pq(e+fx)\sqrt{a+b \log \left(c \left(d(e+fx)^p\right)^q\right)}}{2f^2} - \frac{3bh}{}$$

$$= \frac{3b^{3/2}e^{-\frac{a}{bpq}}(fg-eh)p^{3/2}\sqrt{\pi}\, q^{3/2}(e+fx) \left(c(d(e+fx)^p)^q\right)^{-\frac{1}{pq}}}{4f^2}$$

Mathematica [A]

time = 0.37, size = 348, normalized size = 0.88

$$\frac{(e+fx) \left(32(fg-eh) \left(a+b \log \left(c(d(e+fx)^p)^q\right)\right)^{3/2}+16h(e+fx) \left(a+b \log \left(c(d(e+fx)^p)^q\right)\right)^{3/2}+3bhpq(e+fx) \left(\sqrt{b}\, e^{-\frac{2a}{bpq}}\sqrt{p}\sqrt{2\pi}\sqrt{q} \left(c(d(e+fx)^p)^q\right)^{-\frac{2}{pq}} \text{erfi}\left(\frac{\sqrt{2}\sqrt{a+b \log \left(c \left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\sqrt{p}\sqrt{q}}\right)-4\sqrt{a+b \log \left(c \left(d(e+fx)^p\right)^q\right)}\right)+24b(fg-eh)pq \left(\sqrt{b}\, e^{-\frac{a}{bpq}}\sqrt{p}\sqrt{\pi}\sqrt{q} \left(c(d(e+fx)^p)^q\right)^{-\frac{1}{pq}} \text{erfi}\left(\frac{\sqrt{a+b \log \left(c \left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\sqrt{p}\sqrt{q}}\right)-2\sqrt{a+b \log \left(c \left(d(e+fx)^p\right)^q\right)}\right)\right)}{32f^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2),x]
[Out] ((e + f*x)*(32*(f*g - e*h)*(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2) + 16*h*(e
 + f*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2) + 3*b*h*p*q*(e + f*x)*((Sqrt
```

```
[b]*Sqrt[p]*Sqrt[2*Pi]*Sqrt[q]*Erfi[(Sqrt[2]*Sqrt[a + b*Log[c*(d*(e + f*x)^
p)^q]])/(Sqrt[b]*Sqrt[p]*Sqrt[q])])/(E^((2*a)/(b*p*q))*(c*(d*(e + f*x)^p)^q
)^(2/(p*q))) - 4*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]) + 24*b*(f*g - e*h)*p
*q*((Sqrt[b]*Sqrt[p]*Sqrt[Pi]*Sqrt[q]*Erfi[Sqrt[a + b*Log[c*(d*(e + f*x)^p)
^q]]/(Sqrt[b]*Sqrt[p]*Sqrt[q])])/(E^(a/(b*p*q))*(c*(d*(e + f*x)^p)^q)^(1/(p
*q))) - 2*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]])))/(32*f^2)
```

Maple [F]
time = 0.04, size = 0, normalized size = 0.00

$$\int \left(h x +g \right) \left(a +b \ln \left(c \left(d \left(f x +e \right)^{p}\right)^{q}\right)\right)^{\frac{3}{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x+g)*(a+b*ln(c*(d*(f*x+e)^p)^q))^(3/2),x)
[Out] int((h*x+g)*(a+b*ln(c*(d*(f*x+e)^p)^q))^(3/2),x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)*(a+b*log(c*(d*(f*x+e)^p)^q))^(3/2),x, algorithm="maxima")
[Out] integrate((h*x + g)*(b*log(((f*x + e)^p*d)^q*c) + a)^(3/2), x)
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)*(a+b*log(c*(d*(f*x+e)^p)^q))^(3/2),x, algorithm="fricas")
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \left(a + b \log{\left(c \left(d \left(e + f x\right)^{p}\right)^{q} \right)}\right)^{\frac{3}{2}} \left(g + h x\right)\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)*(a+b*ln(c*(d*(f*x+e)**p)**q))**(3/2),x)
```

```
[Out] Integral((a + b*log(c*(d*(e + f*x)**p)**q))**(3/2)*(g + h*x), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)*(a+b*log(c*(d*(f*x+e)^p)^q))^(3/2),x, algorithm="giac")
[Out] integrate((h*x + g)*(b*log(((f*x + e)^p*d)^q*c) + a)^(3/2), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int (g+h\,x)\,\left(a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)\right)^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g + h*x)*(a + b*log(c*(d*(e + f*x)^p)^q))^(3/2),x)
[Out] int((g + h*x)*(a + b*log(c*(d*(e + f*x)^p)^q))^(3/2), x)
```

3.467 $\int (a+b\log(c(d(e+fx)^p)^q))^{3/2}\,dx$

Optimal. Leaf size=176

$$\frac{3b^{3/2}e^{-\frac{a}{bpq}}p^{3/2}\sqrt{\pi}\,q^{3/2}(e+fx)\left(c(d(e+fx)^p)^q\right)^{-\frac{1}{pq}}\operatorname{erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\,\sqrt{p}\,\sqrt{q}}\right)}{4f}-\frac{3bpq(e+fx)\sqrt{a}}{}$$

```
[Out] (f*x+e)*(a+b*ln(c*(d*(f*x+e)^p)^q))^(3/2)/f+3/4*b^(3/2)*p^(3/2)*q^(3/2)*(f*
x+e)*erfi((a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2)/b^(1/2)/p^(1/2)/q^(1/2))*Pi^(1/
2)/exp(a/b/p/q)/f/((c*(d*(f*x+e)^p)^q)^(1/p/q))-3/2*b*p*q*(f*x+e)*(a+b*ln(c
*(d*(f*x+e)^p)^q))^(1/2)/f
```

Rubi [A]

time = 0.19, antiderivative size = 176, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.273$, Rules used = {2436, 2333, 2337, 2211, 2235, 2495}

$$\frac{3\sqrt{\pi}\,b^{3/2}p^{3/2}q^{3/2}(e+fx)e^{-\frac{a}{bpq}}\left(c(d(e+fx)^p)^q\right)^{-\frac{1}{pq}}\operatorname{Erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\,\sqrt{p}\,\sqrt{q}}\right)}{4f}+\frac{(e+fx)\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)^{3/2}}{f}-\frac{3bpq(e+fx)\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{2f}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2),x]
```

```
[Out] (3*b^(3/2)*p^(3/2)*Sqrt[Pi]*q^(3/2)*(e + f*x)*Erfi[Sqrt[a + b*Log[c*(d*(e +
 f*x)^p)^q]]/(Sqrt[b]*Sqrt[p]*Sqrt[q])])/(4*E^(a/(b*p*q))*f*(c*(d*(e + f*x)
^p)^q)^(1/(p*q))) - (3*b*p*q*(e + f*x)*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]
)/(2*f) + ((e + f*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2))/f
```

Rule 2211

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - c*(f/d)) + f*g*(x^2/d)), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !TrueQ[$UseGamma]
```

Rule 2235

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[F^a*Sqrt
[Pi]*(Erfi[(c + d*x)*Rt[b*Log[F], 2]]/(2*d*Rt[b*Log[F], 2])), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2333

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
```

```
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2337

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2436

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2495

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int (a+b\log (c(d(e+fx)^p)^q))^{3/2}\,dx = \text{Subst}\left(\int (a+b\log (cd^q(e+fx)^{pq}))^{3/2}\,dx, cd^q(e+fx)^{pq}, c(d(e+f$$

$$= \text{Subst}\left(\frac{\text{Subst}\left(\int (a+b\log (cd^q x^{pq}))^{3/2}\,dx, x, e+fx\right)}{f}, cd^q(e+fx)^{p}\right.$$

$$= \frac{(e+fx)(a+b\log (c(d(e+fx)^p)^q))^{3/2}}{f} - \text{Subst}\left(\frac{(3bpq)\text{Subst}\left(\int \sqrt{}\right.}{}\right.$$

$$= -\frac{3bpq(e+fx)\sqrt{a+b\log (c(d(e+fx)^p)^q)}}{2f} + \frac{(e+fx)(a+b\log (}{f}$$

$$= -\frac{3bpq(e+fx)\sqrt{a+b\log (c(d(e+fx)^p)^q)}}{2f} + \frac{(e+fx)(a+b\log (}{f}$$

$$= -\frac{3bpq(e+fx)\sqrt{a+b\log (c(d(e+fx)^p)^q)}}{2f} + \frac{(e+fx)(a+b\log (}{f}$$

$$= \frac{3b^{3/2}e^{-\frac{a}{bpq}}p^{3/2}\sqrt{\pi}\,q^{3/2}(e+fx)(c(d(e+fx)^p)^q)^{-\frac{1}{pq}}\operatorname{erfi}\left(\frac{\sqrt{a+b\log}}{\sqrt{}}\right.}{4f}$$

Mathematica [A]
time = 0.14, size = 160, normalized size = 0.91

$$\frac{(e+fx)\left(3b^{3/2}e^{-\frac{a}{bpq}}p^{3/2}\sqrt{\pi}\,q^{3/2}(c(d(e+fx)^p)^q)^{-\frac{1}{pq}}\operatorname{erfi}\left(\frac{\sqrt{a+b\log (c(d(e+fx)^p)^q)}}{\sqrt{b}\sqrt{p}\sqrt{q}}\right)+2\sqrt{a+b\log (c(d(e+fx)^p)^q)}\,(2a-3bpq+2b\log (c(d(e+fx)^p)^q))\right)}{4f}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2),x]
```

```
[Out] ((e + f*x)*((3*b^(3/2)*p^(3/2)*Sqrt[Pi]*q^(3/2)*Erfi[Sqrt[a + b*Log[c*(d*(e
 + f*x)^p)^q]]/(Sqrt[b]*Sqrt[p]*Sqrt[q])])/(E^(a/(b*p*q))*(c*(d*(e + f*x)^p
)^q)^(1/(p*q))) + 2*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]*(2*a - 3*b*p*q + 2
*b*Log[c*(d*(e + f*x)^p)^q])))/(4*f)
```

Maple [F]
time = 0.04, size = 0, normalized size = 0.00

$$\int \left(a + b\ln \left(c(d(fx + e)^{p})^{q}\right)\right)^{\frac{3}{2}} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(d*(f*x+e)^p)^q))^(3/2),x)
[Out] int((a+b*ln(c*(d*(f*x+e)^p)^q))^(3/2),x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^(3/2),x, algorithm="maxima")
[Out] integrate((b*log(((f*x + e)^p*d)^q*c) + a)^(3/2), x)
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^(3/2),x, algorithm="fricas")
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \left(a + b\log \left(c(d(e + fx)^{p})^{q}\right)\right)^{\frac{3}{2}} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))**(3/2),x)
[Out] Integral((a + b*log(c*(d*(e + f*x)**p)**q))**(3/2), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^(3/2),x, algorithm="giac")
[Out] integrate((b*log(((f*x + e)^p*d)^q*c) + a)^(3/2), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int \left(a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)\right)^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d*(e + f*x)^p)^q))^(3/2),x)
[Out] int((a + b*log(c*(d*(e + f*x)^p)^q))^(3/2), x)
```

3.468 $\int \frac{(a+b\log(c(d(e+fx)^p)^q))^{3/2}}{g+hx} dx$

Optimal. Leaf size=33

$$\text{Int}\left(\frac{(a+b\log(c(d(e+fx)^p)^q))^{3/2}}{g+hx},x\right)$$

[Out] Unintegrable((a+b*ln(c*(d*(f*x+e)^p)^q))^(3/2)/(h*x+g),x)

Rubi [A]
time = 0.08, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int \frac{(a+b\log(c(d(e+fx)^p)^q))^{3/2}}{g+hx}\,dx$$

Verification is not applicable to the result.

[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2)/(g + h*x),x]

[Out] Defer[Int][(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2)/(g + h*x), x]

Rubi steps

$$\int \frac{(a+b\log(c(d(e+fx)^p)^q))^{3/2}}{g+hx}\,dx = \int \frac{(a+b\log(c(d(e+fx)^p)^q))^{3/2}}{g+hx}\,dx$$

Mathematica [A]
time = 1.12, size = 0, normalized size = 0.00

$$\int \frac{(a+b\log(c(d(e+fx)^p)^q))^{3/2}}{g+hx}\,dx$$

Verification is not applicable to the result.

[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2)/(g + h*x),x]

[Out] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2)/(g + h*x), x]

Maple [A]
time = 0.21, size = 0, normalized size = 0.00

$$\int \frac{(a+b\ln(c(d(fx+e)^p)^q))^{\frac{3}{2}}}{hx+g}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(d*(f*x+e)^p)^q))^(3/2)/(h*x+g),x)
[Out] int((a+b*ln(c*(d*(f*x+e)^p)^q))^(3/2)/(h*x+g),x)
```

Maxima [**A**]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^(3/2)/(h*x+g),x, algorithm="maxima")
[Out] integrate((b*log(((f*x + e)^p*d)^q*c) + a)^(3/2)/(h*x + g), x)
```

Fricas [**F(-2)**]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^(3/2)/(h*x+g),x, algorithm="fricas")
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [**A**]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(a + b \log \left(c \left(d \left(e + f x\right)^{p}\right)^{q}\right)\right)^{\frac{3}{2}}}{g + h x}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))**(3/2)/(h*x+g),x)
[Out] Integral((a + b*log(c*(d*(e + f*x)**p)**q))**(3/2)/(g + h*x), x)
```

Giac [**A**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^(3/2)/(h*x+g),x, algorithm="giac")
[Out] integrate((b*log(((f*x + e)^p*d)^q*c) + a)^(3/2)/(h*x + g), x)
```

Mupad [A]
time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{\left(a+b\ln\left(c\left(d\left(e+f\,x\right)^p\right)^q\right)\right)^{3/2}}{g+h\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d*(e + f*x)^p)^q))^(3/2)/(g + h*x),x)
[Out] int((a + b*log(c*(d*(e + f*x)^p)^q))^(3/2)/(g + h*x), x)
```

3.469 $\int \frac{(a+b\log(c(d(e+fx)^p)^q))^{3/2}}{(g+hx)^2}\,dx$

Optimal. Leaf size=33

$$\text{Int}\left(\frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2}}{(g+hx)^2},x\right)$$

```
[Out] Unintegrable((a+b*ln(c*(d*(f*x+e)^p)^q))^(3/2)/(h*x+g)^2,x)
```

Rubi [A]
time = 0.11, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2}}{(g+hx)^2}\,dx$$

Verification is not applicable to the result.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2)/(g + h*x)^2,x]
[Out] Defer[Int][(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2)/(g + h*x)^2, x]
```

Rubi steps

$$\int \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2}}{(g+hx)^2}\,dx=\int \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2}}{(g+hx)^2}\,dx$$

Mathematica [A]
time = 1.42, size = 0, normalized size = 0.00

$$\int \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2}}{(g+hx)^2}\,dx$$

Verification is not applicable to the result.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2)/(g + h*x)^2,x]
[Out] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2)/(g + h*x)^2, x]
```

Maple [A]
time = 0.21, size = 0, normalized size = 0.00

$$\int \frac{\left(a+b\ln\left(c\left(d(fx+e)^p\right)^q\right)\right)^{\frac{3}{2}}}{(hx+g)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(d*(f*x+e)^p)^q))^(3/2)/(h*x+g)^2,x)
```

```
[Out] int((a+b*ln(c*(d*(f*x+e)^p)^q))^(3/2)/(h*x+g)^2,x)
```

Maxima [A]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^(3/2)/(h*x+g)^2,x, algorithm="maxima
")
```

```
[Out] integrate((b*log(((f*x + e)^p*d)^q*c) + a)^(3/2)/(h*x + g)^2, x)
```

Fricas [**F(-2)**]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^(3/2)/(h*x+g)^2,x, algorithm="fricas
")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [**F(-1)**] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))**(3/2)/(h*x+g)**2,x)
```

```
[Out] Timed out
```

Giac [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^(3/2)/(h*x+g)^2,x, algorithm="giac")
```

```
[Out] integrate((b*log(((f*x + e)^p*d)^q*c) + a)^(3/2)/(h*x + g)^2, x)
```

Mupad [A]

time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{\left(a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)\right)^{3/2}}{{\left(g+h\,x\right)}^2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d*(e + f*x)^p)^q))^(3/2)/(g + h*x)^2,x)
[Out] int((a + b*log(c*(d*(e + f*x)^p)^q))^(3/2)/(g + h*x)^2, x)
```

3.470 $\int \frac{(g+hx)^2}{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}\,dx$

Optimal. Leaf size=355

$$\frac{e^{-\frac{a}{bpq}}(fg-eh)^2\sqrt{\pi}\,(e+fx)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\operatorname{erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\,\sqrt{p}\,\sqrt{q}}\right)}{\sqrt{b}\,f^3\sqrt{p}\,\sqrt{q}}+\frac{e^{-\frac{2a}{bpq}}h(fg-eh)\sqrt{2}}{}$$

```
[Out] 1/3*h^2*(f*x+e)^3*erfi(3^(1/2)*(a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2)/b^(1/2)/p^
(1/2)/q^(1/2))*3^(1/2)*Pi^(1/2)/exp(3*a/b/p/q)/f^3/((c*(d*(f*x+e)^p)^q)^(3/
p/q))/b^(1/2)/p^(1/2)/q^(1/2)+(-e*h+f*g)^2*(f*x+e)*erfi((a+b*ln(c*(d*(f*x+e
)^p)^q))^(1/2)/b^(1/2)/p^(1/2)/q^(1/2))*Pi^(1/2)/exp(a/b/p/q)/f^3/((c*(d*(f
*x+e)^p)^q)^(1/p/q))/b^(1/2)/p^(1/2)/q^(1/2)+h*(-e*h+f*g)*(f*x+e)^2*erfi(2^
(1/2)*(a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2)/b^(1/2)/p^(1/2)/q^(1/2))*2^(1/2)*Pi
^(1/2)/exp(2*a/b/p/q)/f^3/((c*(d*(f*x+e)^p)^q)^(2/p/q))/b^(1/2)/p^(1/2)/q^(
1/2)
```

Rubi [A]

time = 0.93, antiderivative size = 355, normalized size of antiderivative = 1.00, number of steps used = 15, number of rules used = 8, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}} = 0.267$, Rules used = {2448, 2436, 2337, 2211, 2235, 2437, 2347, 2495}

$$\frac{\sqrt{2\pi}\,h(e+fx)^2e^{-\frac{2a}{bpq}}(fg-eh)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{2}{pq}}\operatorname{Erfi}\left(\frac{\sqrt{2}\,\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\,\sqrt{p}\,\sqrt{q}}\right)}{\sqrt{b}\,f^3\sqrt{p}\,\sqrt{q}}+\frac{\sqrt{\pi}\,(e+fx)e^{-\frac{a}{bpq}}(fg-eh)^2\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\operatorname{Erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\,\sqrt{p}\,\sqrt{q}}\right)}{\sqrt{b}\,f^3\sqrt{p}\,\sqrt{q}}+\frac{\sqrt{\frac{\pi}{3}}\,h^2(e+fx)^3e^{-\frac{3a}{bpq}}\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{3}{pq}}\operatorname{Erfi}\left(\frac{\sqrt{3}\,\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\,\sqrt{p}\,\sqrt{q}}\right)}{\sqrt{b}\,f^3\sqrt{p}\,\sqrt{q}}$$

Antiderivative was successfully verified.

```
[In] Int[(g + h*x)^2/Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]],x]
```

```
[Out] ((f*g - e*h)^2*Sqrt[Pi]*(e + f*x)*Erfi[Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]
/(Sqrt[b]*Sqrt[p]*Sqrt[q])])/(Sqrt[b]*E^(a/(b*p*q))*f^3*Sqrt[p]*Sqrt[q]*(c*
(d*(e + f*x)^p)^q)^(1/(p*q))) + (h*(f*g - e*h)*Sqrt[2*Pi]*(e + f*x)^2*Erfi[
(Sqrt[2]*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]])/(Sqrt[b]*Sqrt[p]*Sqrt[q])])/
(Sqrt[b]*E^((2*a)/(b*p*q))*f^3*Sqrt[p]*Sqrt[q]*(c*(d*(e + f*x)^p)^q)^(2/(p*
q))) + (h^2*Sqrt[Pi/3]*(e + f*x)^3*Erfi[(Sqrt[3]*Sqrt[a + b*Log[c*(d*(e + f
*x)^p)^q]])/(Sqrt[b]*Sqrt[p]*Sqrt[q])])/(Sqrt[b]*E^((3*a)/(b*p*q))*f^3*Sqrt
[p]*Sqrt[q]*(c*(d*(e + f*x)^p)^q)^(3/(p*q)))
```

Rule 2211

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - c*(f/d)) + f*g*(x^2/d)), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !TrueQ[$UseGamma]
```

Rule 2235

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[F^a*Sqrt
[Pi]*(Erfi[(c + d*x)*Rt[b*Log[F], 2]]/(2*d*Rt[b*Log[F], 2])), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2337

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2347

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_)*((d_.)*(x_))^(m_.), x_Symbol
] :> Dist[(d*x)^(m + 1)/(d*n*(c*x^n)^((m + 1)/n)), Subst[Int[E^(((m + 1)/n)
*x)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b, c, d, m, n, p}, x]
```

Rule 2436

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2437

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[(f*(x/d))^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2448

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q*(a + b*Log[c*(d
 + e*x)^n])^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f -
 d*g, 0] && IGtQ[q, 0]
```

Rule 2495

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{(g+hx)^2}{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}\,dx = \text{Subst}\left(\int \frac{(g+hx)^2}{\sqrt{a+b\log\left(cd^q(e+fx)^{pq}\right)}}\,dx, cd^q(e+fx)^{pq}, c(d(e+fx)^p\right.$$

$$= \text{Subst}\left(\int \left(\frac{(fg-eh)^2}{f^2\sqrt{a+b\log\left(cd^q(e+fx)^{pq}\right)}} + \frac{2h(fg-eh)(e+fx}{f^2\sqrt{a+b\log\left(cd^q(e+f\right.}}\right.\right.$$

$$= \text{Subst}\left(\frac{h^2\int \frac{(e+fx)^2}{\sqrt{a+b\log\left(cd^q(e+fx)^{pq}\right)}}\,dx}{f^2}, cd^q(e+fx)^{pq}, c(d(e+fx\right.$$

$$= \text{Subst}\left(\frac{h^2\text{Subst}\left(\int \frac{x^2}{\sqrt{a+b\log\left(cd^qx^{pq}\right)}}\,dx, x, e+fx\right)}{f^3}, cd^q(e+fx)^{p\right.$$

$$= \text{Subst}\left(\frac{\left(h^2(e+fx)^3\left(cd^q(e+fx)^{pq}\right)^{-\frac{3}{pq}}\right)\text{Subst}\left(\int \frac{e^{\frac{3x}{pq}}}{\sqrt{a+bx}}\,dx, x, \log\right.}{f^3pq}\right.$$

$$= \text{Subst}\left(\frac{\left(2h^2(e+fx)^3\left(cd^q(e+fx)^{pq}\right)^{-\frac{3}{pq}}\right)\text{Subst}\left(\int e^{-\frac{3a}{bpq}+\frac{3x^2}{bpq}}\,dx, x, \sqrt{}\right.}{bf^3pq}\right.$$

$$= \frac{e^{-\frac{a}{bpq}}(fg-eh)^2\sqrt{\pi}\,(e+fx)\left(c(d(e+fx)^p)^q\right)^{-\frac{1}{pq}}\text{erfi}\left(\frac{\sqrt{a+b\log(c(}}{\sqrt{b}\sqrt{}}\right.}{\sqrt{b}\,f^3\sqrt{p}\sqrt{q}}$$

<u>Mathematica</u> [A]

time = 0.24, size = 315, normalized size = 0.89

$$\frac{e^{-\frac{3a}{bpq}}\sqrt{\pi}\,(e+fx)\left(c(d(e+fx)^p)^q\right)^{-\frac{3}{pq}}\left(3e^{\frac{2a}{bpq}}(fg-eh)^2\left(c(d(e+fx)^p)^q\right)^{\frac{2}{pq}}\text{erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\sqrt{p}\sqrt{q}}\right)+3\sqrt{2}\,e^{\frac{a}{bpq}}h(fg-eh)(e+fx)\left(c(d(e+fx)^p)^q\right)^{\frac{1}{pq}}\text{erfi}\left(\frac{\sqrt{2}\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\sqrt{p}\sqrt{q}}\right)+\sqrt{3}\,h^2(e+fx)^2\text{erfi}\left(\frac{\sqrt{3}\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\sqrt{p}\sqrt{q}}\right)\right)}{3\sqrt{b}\,f^3\sqrt{p}\sqrt{q}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(g + h*x)^2/Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]],x]
```

```
[Out] (Sqrt[Pi]*(e + f*x)*(3*E^((2*a)/(b*p*q))*(f*g - e*h)^2*(c*(d*(e + f*x)^p)^q
)^(2/(p*q))*Erfi[Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]/(Sqrt[b]*Sqrt[p]*Sqrt
[q])] + 3*Sqrt[2]*E^(a/(b*p*q))*h*(f*g - e*h)*(e + f*x)*(c*(d*(e + f*x)^p)^
q)^(1/(p*q))*Erfi[(Sqrt[2]*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]])/(Sqrt[b]*S
qrt[p]*Sqrt[q])] + Sqrt[3]*h^2*(e + f*x)^2*Erfi[(Sqrt[3]*Sqrt[a + b*Log[c*(
```

```
d*(e + f*x)^p)^q]])/(Sqrt[b]*Sqrt[p]*Sqrt[q])]))/(3*Sqrt[b]*E^((3*a)/(b*p*q
))*f^3*Sqrt[p]*Sqrt[q]*(c*(d*(e + f*x)^p)^q)^(3/(p*q)))
```

Maple [F]
time = 0.19, size = 0, normalized size = 0.00

$$\int \frac{(hx+g)^2}{\sqrt{a+b\ln\left(c\left(d\left(fx+e\right)^p\right)^q\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x+g)^2/(a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2),x)
[Out] int((h*x+g)^2/(a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2),x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^2/(a+b*log(c*(d*(f*x+e)^p)^q))^(1/2),x, algorithm="maxima
")
[Out] integrate((h*x + g)^2/sqrt(b*log(((f*x + e)^p*d)^q*c) + a), x)
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^2/(a+b*log(c*(d*(f*x+e)^p)^q))^(1/2),x, algorithm="fricas
")
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(g+hx)^2}{\sqrt{a+b\log\left(c\left(d\left(e+fx\right)^p\right)^q\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)**2/(a+b*ln(c*(d*(f*x+e)**p)**q))**(1/2),x)
```

```
[Out] Integral((g + h*x)**2/sqrt(a + b*log(c*(d*(e + f*x)**p)**q)), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^2/(a+b*log(c*(d*(f*x+e)^p)^q))^(1/2),x, algorithm="giac")
[Out] integrate((h*x + g)^2/sqrt(b*log(((f*x + e)^p*d)^q*c) + a), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(g+h\,x)^2}{\sqrt{a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g + h*x)^2/(a + b*log(c*(d*(e + f*x)^p)^q))^(1/2),x)
[Out] int((g + h*x)^2/(a + b*log(c*(d*(e + f*x)^p)^q))^(1/2), x)
```

3.471 $\int \frac{g+hx}{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}\,dx$

Optimal. Leaf size=229

$$\frac{e^{-\frac{a}{bpq}}(fg-eh)\sqrt{\pi}\,(e+fx)\left(c(d(e+fx)^p)^q\right)^{-\frac{1}{pq}}\operatorname{erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\sqrt{p}\sqrt{q}}\right)}{\sqrt{b}\,f^2\sqrt{p}\sqrt{q}}+\frac{e^{-\frac{2a}{bpq}}h\sqrt{\frac{\pi}{2}}\,(e+fx}{}$$

```
[Out] 1/2*h*(f*x+e)^2*erfi(2^(1/2)*(a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2)/b^(1/2)/p^(1
/2)/q^(1/2))*2^(1/2)*Pi^(1/2)/exp(2*a/b/p/q)/f^2/((c*(d*(f*x+e)^p)^q)^(2/p/
q))/b^(1/2)/p^(1/2)/q^(1/2)+(-e*h+f*g)*(f*x+e)*erfi((a+b*ln(c*(d*(f*x+e)^p)
^q))^(1/2)/b^(1/2)/p^(1/2)/q^(1/2))*Pi^(1/2)/exp(a/b/p/q)/f^2/((c*(d*(f*x+e
)^p)^q)^(1/p/q))/b^(1/2)/p^(1/2)/q^(1/2)
```

Rubi [A]

time = 0.49, antiderivative size = 229, normalized size of antiderivative = 1.00, number of steps used = 11, number of rules used = 8, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}} = 0.286$, Rules used = {2448, 2436, 2337, 2211, 2235, 2437, 2347, 2495}

$$\frac{\sqrt{\pi}\,(e+fx)e^{-\frac{a}{bpq}}(fg-eh)\left(c(d(e+fx)^p)^q\right)^{-\frac{1}{pq}}\operatorname{Erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\sqrt{p}\sqrt{q}}\right)}{\sqrt{b}\,f^2\sqrt{p}\sqrt{q}}+\frac{\sqrt{\frac{\pi}{2}}\,h(e+fx)^2e^{-\frac{2a}{bpq}}\left(c(d(e+fx)^p)^q\right)^{-\frac{2}{pq}}\operatorname{Erfi}\left(\frac{\sqrt{2}\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\sqrt{p}\sqrt{q}}\right)}{\sqrt{b}\,f^2\sqrt{p}\sqrt{q}}$$

Antiderivative was successfully verified.

```
[In] Int[(g + h*x)/Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]],x]
```

```
[Out] ((f*g - e*h)*Sqrt[Pi]*(e + f*x)*Erfi[Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]/(
Sqrt[b]*Sqrt[p]*Sqrt[q])])/(Sqrt[b]*E^(a/(b*p*q))*f^2*Sqrt[p]*Sqrt[q]*(c*(d
*(e + f*x)^p)^q)^(1/(p*q))) + (h*Sqrt[Pi/2]*(e + f*x)^2*Erfi[(Sqrt[2]*Sqrt[
a + b*Log[c*(d*(e + f*x)^p)^q]])/(Sqrt[b]*Sqrt[p]*Sqrt[q])])/(Sqrt[b]*E^((2
*a)/(b*p*q))*f^2*Sqrt[p]*Sqrt[q]*(c*(d*(e + f*x)^p)^q)^(2/(p*q)))
```

Rule 2211

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - c*(f/d)) + f*g*(x^2/d)), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !TrueQ[$UseGamma]
```

Rule 2235

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[F^a*Sqrt
[Pi]*(Erfi[(c + d*x)*Rt[b*Log[F], 2]]/(2*d*Rt[b*Log[F], 2])), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2337

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2347

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_)*((d_.)*(x_))^(m_.), x_Symbol
] :> Dist[(d*x)^(m + 1)/(d*n*(c*x^n)^((m + 1)/n)), Subst[Int[E^(((m + 1)/n)
*x)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b, c, d, m, n, p}, x]
```

Rule 2436

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2437

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[(f*(x/d))^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2448

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q*(a + b*Log[c*(d
 + e*x)^n])^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f -
 d*g, 0] && IGtQ[q, 0]
```

Rule 2495

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{g+hx}{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}\,dx = \text{Subst}\left(\int \frac{g+hx}{\sqrt{a+b\log\left(cd^q(e+fx)^{pq}\right)}}\,dx, cd^q(e+fx)^{pq}, c(d(e+fx)$$

$$= \text{Subst}\left(\int \left(\frac{fg-eh}{f\sqrt{a+b\log\left(cd^q(e+fx)^{pq}\right)}} + \frac{h(e+fx)}{f\sqrt{a+b\log\left(cd^q(e+f\right.}}\right.\right.$$

$$= \text{Subst}\left(\frac{h\int \frac{e+fx}{\sqrt{a+b\log\left(cd^q(e+fx)^{pq}\right)}}\,dx}{f}, cd^q(e+fx)^{pq}, c(d(e+f\right.$$

$$= \text{Subst}\left(\frac{h\text{Subst}\left(\int \frac{x}{\sqrt{a+b\log\left(cd^q x^{pq}\right)}}\,dx, x, e+fx\right)}{f^2}, cd^q(e+fx)^p\right.$$

$$= \text{Subst}\left(\frac{\left(h(e+fx)^2\left(cd^q(e+fx)^{pq}\right)^{-\frac{2}{pq}}\right)\text{Subst}\left(\int \frac{e^{\frac{2x}{pq}}}{\sqrt{a+bx}}\,dx, x, \text{lo}\right.}{f^2pq}\right.$$

$$= \text{Subst}\left(\frac{\left(2h(e+fx)^2\left(cd^q(e+fx)^{pq}\right)^{-\frac{2}{pq}}\right)\text{Subst}\left(\int e^{-\frac{2a}{bpq}+\frac{2x^2}{bpq}}\,dx, x,\right.}{bf^2pq}\right.$$

$$= \frac{e^{-\frac{a}{bpq}}(fg-eh)\sqrt{\pi}\,(e+fx)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\text{erfi}\left(\frac{\sqrt{a+b\log\left(c\right.}}{\sqrt{b}\,\sqrt{}}\right.}{\sqrt{b}\,f^2\sqrt{p}\,\sqrt{q}}$$

Mathematica [A]
time = 0.13, size = 208, normalized size = 0.91

$$\frac{e^{-\frac{2a}{bpq}}\sqrt{\pi}\,(e+fx)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{2}{pq}}\left(2e^{\frac{a}{bpq}}(fg-eh)\left(c\left(d(e+fx)^p\right)^q\right)^{\frac{1}{pq}}\text{erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\,\sqrt{p}\,\sqrt{q}}\right)+\sqrt{2}\,h(e+fx)\text{erfi}\left(\frac{\sqrt{2}\,\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\,\sqrt{p}\,\sqrt{q}}\right)\right)}{2\sqrt{b}\,f^2\sqrt{p}\,\sqrt{q}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(g + h*x)/Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]],x]
```

```
[Out] (Sqrt[Pi]*(e + f*x)*(2*E^(a/(b*p*q))*(f*g - e*h)*(c*(d*(e + f*x)^p)^q)^(1/(
p*q))*Erfi[Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]/(Sqrt[b]*Sqrt[p]*Sqrt[q])]
+ Sqrt[2]*h*(e + f*x)*Erfi[(Sqrt[2]*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]])/(
Sqrt[b]*Sqrt[p]*Sqrt[q])]))/(2*Sqrt[b]*E^((2*a)/(b*p*q))*f^2*Sqrt[p]*Sqrt[q
]*(c*(d*(e + f*x)^p)^q)^(2/(p*q)))
```

Maple [F]
time = 0.05, size = 0, normalized size = 0.00

$$\int \frac{hx+g}{\sqrt{a+b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x+g)/(a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2),x)
```

```
[Out] int((h*x+g)/(a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2),x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q))^(1/2),x, algorithm="maxima")
```

```
[Out] integrate((h*x + g)/sqrt(b*log(((f*x + e)^p*d)^q*c) + a), x)
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q))^(1/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{g+hx}{\sqrt{a+b\log\left(c\left(d\left(e+fx\right)^{p}\right)^{q}\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)/(a+b*ln(c*(d*(f*x+e)**p)**q))**(1/2),x)
```

```
[Out] Integral((g + h*x)/sqrt(a + b*log(c*(d*(e + f*x)**p)**q)), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q))^(1/2),x, algorithm="giac")
```

```
[Out] integrate((h*x + g)/sqrt(b*log(((f*x + e)^p*d)^q*c) + a), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{g+h\,x}{\sqrt{a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g + h*x)/(a + b*log(c*(d*(e + f*x)^p)^q))^(1/2),x)
```

```
[Out] int((g + h*x)/(a + b*log(c*(d*(e + f*x)^p)^q))^(1/2), x)
```

3.472 $\int \frac{1}{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}\,dx$

Optimal. Leaf size=104

$$\frac{e^{-\frac{a}{bpq}}\sqrt{\pi}\,(e+fx)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\operatorname{erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\,\sqrt{p}\,\sqrt{q}}\right)}{\sqrt{b}\,f\sqrt{p}\,\sqrt{q}}$$

```
[Out] (f*x+e)*erfi((a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2)/b^(1/2)/p^(1/2)/q^(1/2))*Pi^
(1/2)/exp(a/b/p/q)/f/((c*(d*(f*x+e)^p)^q)^(1/p/q))/b^(1/2)/p^(1/2)/q^(1/2)
```

Rubi [A]
time = 0.13, antiderivative size = 104, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.227$, Rules used = {2436, 2337, 2211, 2235, 2495}

$$\frac{\sqrt{\pi}\,(e+fx)e^{-\frac{a}{bpq}}\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\operatorname{Erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\,\sqrt{p}\,\sqrt{q}}\right)}{\sqrt{b}\,f\sqrt{p}\,\sqrt{q}}$$

Antiderivative was successfully verified.

```
[In] Int[1/Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]],x]
```

```
[Out] (Sqrt[Pi]*(e + f*x)*Erfi[Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]/(Sqrt[b]*Sqrt
[p]*Sqrt[q])])/(Sqrt[b]*E^(a/(b*p*q))*f*Sqrt[p]*Sqrt[q]*(c*(d*(e + f*x)^p)^
q)^(1/(p*q)))
```

Rule 2211

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - c*(f/d)) + f*g*(x^2/d)), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !TrueQ[$UseGamma]
```

Rule 2235

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[F^a*Sqrt
[Pi]*(Erfi[(c + d*x)*Rt[b*Log[F], 2]]/(2*d*Rt[b*Log[F], 2])), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2337

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
```

```
{a, b, c, n, p}, x]
```

Rule 2436

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2495

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] && !IntegerQ[n] && !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{1}{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}\,dx = \text{Subst}\left(\int \frac{1}{\sqrt{a+b\log\left(cd^q(e+fx)^{pq}\right)}}\,dx, cd^q(e+fx)^{pq}, c(d(e+fx)$$

$$= \text{Subst}\left(\frac{\text{Subst}\left(\int \frac{1}{\sqrt{a+b\log\left(cd^q x^{pq}\right)}}\,dx, x, e+fx\right)}{f}, cd^q(e+fx)^{pq},\right.$$

$$= \text{Subst}\left(\frac{\left((e+fx)\left(cd^q(e+fx)^{pq}\right)^{-\frac{1}{pq}}\right)\text{Subst}\left(\int \frac{e^{\frac{x}{pq}}}{\sqrt{a+bx}}\,dx, x, \log\right.}{fpq}\right.$$

$$= \text{Subst}\left(\frac{\left(2(e+fx)\left(cd^q(e+fx)^{pq}\right)^{-\frac{1}{pq}}\right)\text{Subst}\left(\int e^{-\frac{a}{bpq}+\frac{x^2}{bpq}}\,dx, x, \sqrt{a}\right.}{bfpq}\right.$$

$$= \frac{e^{-\frac{a}{bpq}}\sqrt{\pi}\,(e+fx)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\operatorname{erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx\right.\right.}}{\sqrt{b}\sqrt{p}\sqrt{q}}\right.}{\sqrt{b}\,f\sqrt{p}\,\sqrt{q}}$$

Mathematica [A]

time = 0.02, size = 104, normalized size = 1.00

$$\frac{e^{-\frac{a}{bpq}}\sqrt{\pi}\,(e+fx)\,(c(d(e+fx)^p)^q)^{-\frac{1}{pq}}\,\mathrm{erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\,\sqrt{p}\,\sqrt{q}}\right)}{\sqrt{b}\,f\sqrt{p}\,\sqrt{q}}$$

Antiderivative was successfully verified.

```
[In] Integrate[1/Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]],x]
```

```
[Out] (Sqrt[Pi]*(e + f*x)*Erfi[Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]/(Sqrt[b]*Sqrt
[p]*Sqrt[q])])/(Sqrt[b]*E^(a/(b*p*q))*f*Sqrt[p]*Sqrt[q]*(c*(d*(e + f*x)^p)^
q)^(1/(p*q)))
```

Maple [F]
time = 0.04, size = 0, normalized size = 0.00

$$\int \frac{1}{\sqrt{a+b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2),x)
```

```
[Out] int(1/(a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2),x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(d*(f*x+e)^p)^q))^(1/2),x, algorithm="maxima")
```

```
[Out] integrate(1/sqrt(b*log(((f*x + e)^p*d)^q*c) + a), x)
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(d*(f*x+e)^p)^q))^(1/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\sqrt{a+b\log\left(c\left(d\left(e+fx\right)^{p}\right)^{q}\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*ln(c*(d*(f*x+e)**p)**q))**(1/2),x)
[Out] Integral(1/sqrt(a + b*log(c*(d*(e + f*x)**p)**q)), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(d*(f*x+e)^p)^q))^(1/2),x, algorithm="giac")
[Out] integrate(1/sqrt(b*log(((f*x + e)^p*d)^q*c) + a), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{1}{\sqrt{a+b\,\ln\left(c\left(d\left(e+f\,x\right)^{p}\right)^{q}\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a + b*log(c*(d*(e + f*x)^p)^q))^(1/2),x)
[Out] int(1/(a + b*log(c*(d*(e + f*x)^p)^q))^(1/2), x)
```

3.473 $\int \frac{1}{(g+hx)\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}\,dx$

Optimal. Leaf size=33

$$\mathrm{Int}\left(\frac{1}{(g+hx)\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}},x\right)$$

```
[Out] Unintegrable(1/(h*x+g)/(a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2),x)
```

Rubi [A]
time = 0.07, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int \frac{1}{(g+hx)\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}\,dx$$

Verification is not applicable to the result.

```
[In] Int[1/((g + h*x)*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]),x]
[Out] Defer[Int][1/((g + h*x)*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]), x]
```

Rubi steps

$$\int \frac{1}{(g+hx)\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}\,dx = \int \frac{1}{(g+hx)\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}\,dx$$

Mathematica [A]
time = 0.08, size = 0, normalized size = 0.00

$$\int \frac{1}{(g+hx)\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}\,dx$$

Verification is not applicable to the result.

```
[In] Integrate[1/((g + h*x)*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]),x]
[Out] Integrate[1/((g + h*x)*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]), x]
```

Maple [A]
time = 0.20, size = 0, normalized size = 0.00

$$\int \frac{1}{(hx+g)\sqrt{a+b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(h*x+g)/(a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2),x)
```

```
[Out] int(1/(h*x+g)/(a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2),x)
```

Maxima [A]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q))^(1/2),x, algorithm="maxima
")
```

```
[Out] integrate(1/((h*x + g)*sqrt(b*log(((f*x + e)^p*d)^q*c) + a)), x)
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q))^(1/2),x, algorithm="fricas
")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [A]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\sqrt{a + b\log\left(c\left(d\left(e + fx\right)^{p}\right)^{q}\right)}\,\left(g + hx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(a+b*ln(c*(d*(f*x+e)**p)**q))**(1/2),x)
```

```
[Out] Integral(1/(sqrt(a + b*log(c*(d*(e + f*x)**p)**q))*(g + h*x)), x)
```

Giac [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q))^(1/2),x, algorithm="giac")
[Out] integrate(1/((h*x + g)*sqrt(b*log(((f*x + e)^p*d)^q*c) + a)), x)
```

Mupad [A]
time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{1}{(g+h\,x)\,\sqrt{a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((g + h*x)*(a + b*log(c*(d*(e + f*x)^p)^q))^(1/2)),x)
[Out] int(1/((g + h*x)*(a + b*log(c*(d*(e + f*x)^p)^q))^(1/2)), x)
```

3.474 $\int \frac{(g+hx)^2}{(a+b\log(c(d(e+fx)^p)^q))^{3/2}}\,dx$

Optimal. Leaf size=404

$$\frac{2e^{-\frac{a}{bpq}}(fg-eh)^2\sqrt{\pi}\,(e+fx)\,(c(d(e+fx)^p)^q)^{-\frac{1}{pq}}\operatorname{erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\,\sqrt{p}\,\sqrt{q}}\right)}{b^{3/2}f^3p^{3/2}q^{3/2}}+\frac{4e^{-\frac{2a}{bpq}}h(fg-eh)$$

```
[Out] 2*(-e*h+f*g)^2*(f*x+e)*erfi((a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2)/b^(1/2)/p^(1/
2)/q^(1/2))*Pi^(1/2)/b^(3/2)/exp(a/b/p/q)/f^3/p^(3/2)/q^(3/2)/((c*(d*(f*x+e
)^p)^q)^(1/p/q))+4*h*(-e*h+f*g)*(f*x+e)^2*erfi(2^(1/2)*(a+b*ln(c*(d*(f*x+e)
^p)^q))^(1/2)/b^(1/2)/p^(1/2)/q^(1/2))*2^(1/2)*Pi^(1/2)/b^(3/2)/exp(2*a/b/p
/q)/f^3/p^(3/2)/q^(3/2)/((c*(d*(f*x+e)^p)^q)^(2/p/q))+2*h^2*(f*x+e)^3*erfi(
3^(1/2)*(a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2)/b^(1/2)/p^(1/2)/q^(1/2))*3^(1/2)*
Pi^(1/2)/b^(3/2)/exp(3*a/b/p/q)/f^3/p^(3/2)/q^(3/2)/((c*(d*(f*x+e)^p)^q)^(3
/p/q))-2*(f*x+e)*(h*x+g)^2/b/f/p/q/(a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2)
```

Rubi [A]

time = 1.64, antiderivative size = 404, normalized size of antiderivative = 1.00, number of steps used = 26, number of rules used = 9, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}} = 0.300$, Rules used = {2447, 2448, 2436, 2337, 2211, 2235, 2437, 2347, 2495}

$$\frac{4\sqrt{2\pi}\,h(e+fx)^2e^{-\frac{2a}{bpq}}(fg-eh)\,(c(d(e+fx)^p)^q)^{-\frac{2}{pq}}\operatorname{Erfi}\left(\frac{\sqrt{2}\,\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\,\sqrt{p}\,\sqrt{q}}\right)}{b^{3/2}f^3p^{3/2}q^{3/2}}+\frac{2\sqrt{\pi}\,(e+fx)e^{-\frac{a}{bpq}}(fg-eh)^2\,(c(d(e+fx)^p)^q)^{-\frac{1}{pq}}\operatorname{Erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\,\sqrt{p}\,\sqrt{q}}\right)}{b^{3/2}f^3p^{3/2}q^{3/2}}+\frac{2\sqrt{3\pi}\,h^2(e+fx)^3e^{-\frac{3a}{bpq}}(c(d(e+fx)^p)^q)^{-\frac{3}{pq}}\operatorname{Erfi}\left(\frac{\sqrt{3}\,\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\,\sqrt{p}\,\sqrt{q}}\right)}{b^{3/2}f^3p^{3/2}q^{3/2}}-\frac{2(e+fx)(g+hx)^2}{bfpq\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}$$

Antiderivative was successfully verified.

```
[In] Int[(g + h*x)^2/(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2),x]
```

```
[Out] (2*(f*g - e*h)^2*Sqrt[Pi]*(e + f*x)*Erfi[Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q
]]/(Sqrt[b]*Sqrt[p]*Sqrt[q])])/(b^(3/2)*E^(a/(b*p*q))*f^3*p^(3/2)*q^(3/2)*(
c*(d*(e + f*x)^p)^q)^(1/(p*q))) + (4*h*(f*g - e*h)*Sqrt[2*Pi]*(e + f*x)^2*E
rfi[(Sqrt[2]*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]])/(Sqrt[b]*Sqrt[p]*Sqrt[q]
)])/(b^(3/2)*E^((2*a)/(b*p*q))*f^3*p^(3/2)*q^(3/2)*(c*(d*(e + f*x)^p)^q)^(2
/(p*q))) + (2*h^2*Sqrt[3*Pi]*(e + f*x)^3*Erfi[(Sqrt[3]*Sqrt[a + b*Log[c*(d*
(e + f*x)^p)^q]])/(Sqrt[b]*Sqrt[p]*Sqrt[q])])/(b^(3/2)*E^((3*a)/(b*p*q))*f^
3*p^(3/2)*q^(3/2)*(c*(d*(e + f*x)^p)^q)^(3/(p*q))) - (2*(e + f*x)*(g + h*x)
^2)/(b*f*p*q*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]])
```

Rule 2211

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - c*(f/d)) + f*g*(x^2/d)), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !TrueQ[$UseGamma]
```

Rule 2235

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[F^a*Sqrt
[Pi]*(Erfi[(c + d*x)*Rt[b*Log[F], 2]]/(2*d*Rt[b*Log[F], 2])), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2337

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2347

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_)*((d_.)*(x_))^(m_.), x_Symbol
] :> Dist[(d*x)^(m + 1)/(d*n*(c*x^n)^((m + 1)/n)), Subst[Int[E^(((m + 1)/n)
*x)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b, c, d, m, n, p}, x]
```

Rule 2436

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2437

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[(f*(x/d))^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2447

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[(d + e*x)*(f + g*x)^q*((a + b*Log[c*(d + e
*x)^n])^(p + 1)/(b*e*n*(p + 1))), x] + (-Dist[(q + 1)/(b*n*(p + 1)), Int[(f
 + g*x)^q*(a + b*Log[c*(d + e*x)^n])^(p + 1), x], x] + Dist[q*((e*f - d*g)/
(b*e*n*(p + 1))), Int[(f + g*x)^(q - 1)*(a + b*Log[c*(d + e*x)^n])^(p + 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0] && LtQ[
p, -1] && GtQ[q, 0]
```

Rule 2448

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q*(a + b*Log[c*(d
 + e*x)^n])^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f -
```

```
 d*g, 0] && IGtQ[q, 0]
```

Rule 2495

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{(g+hx)^2}{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2}}\,dx = \text{Subst}\left(\int \frac{(g+hx)^2}{\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^{3/2}}\,dx, cd^q(e+fx)^{pq}, c(d(e+fx$$

$$= -\frac{2(e+fx)(g+hx)^2}{bfpq\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}} + \text{Subst}\left(\frac{6\int \frac{(g+hx)^2}{\sqrt{a+b\log\left(cd^q(e\right.}}}{bpq}\right.$$

$$= -\frac{2(e+fx)(g+hx)^2}{bfpq\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}} + \text{Subst}\left(6\int\left(\frac{(fg-e}{f^2\sqrt{a+b\log\left(c\right.}}\right.\right.$$

$$= -\frac{2(e+fx)(g+hx)^2}{bfpq\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}} + \text{Subst}\left(\frac{(6h^2)\int \frac{(e+}{\sqrt{a+b\log\left(c\right.}}}{bf^2pq}\right.$$

$$= -\frac{2(e+fx)(g+hx)^2}{bfpq\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}} + \text{Subst}\left((6h^2)\,\text{Subst}\left(\int \frac{}{\sqrt{a+}}\right.\right.$$

$$= -\frac{2(e+fx)(g+hx)^2}{bfpq\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}} + \text{Subst}\left(\left(6h^2(e+fx)^3\left(cd^q(e\right.\right.\right.$$

$$= -\frac{2(e+fx)(g+hx)^2}{bfpq\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}} + \text{Subst}\left(\left(12h^2(e+fx)^3\left(cd^q(e\right.\right.\right.$$

$$= \frac{2e^{-\frac{a}{bpq}}(fg-eh)^2\sqrt{\pi}\,(e+fx)\left(c(d(e+fx)^p)^q\right)^{-\frac{1}{pq}}\text{erfi}\left(\frac{\sqrt{a+b\log(}}{\sqrt{b}}\right.}{b^{3/2}f^3p^{3/2}q^{3/2}}$$

Mathematica [B] Leaf count is larger than twice the leaf count of optimal. 1821 vs. 2(404) = 808.
time = 2.76, size = 1821, normalized size = 4.51

Antiderivative was successfully verified.

```
[In] Integrate[(g + h*x)^2/(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2),x]
```

```
[Out] (-2*(Sqrt[b]*e*E^((3*a)/(b*p*q))*f^2*g^2*Sqrt[p]*Sqrt[q]*(c*(d*(e + f*x)^p)
^q)^(3/(p*q)) + Sqrt[b]*E^((3*a)/(b*p*q))*f^3*g^2*Sqrt[p]*Sqrt[q]*x*(c*(d*(
e + f*x)^p)^q)^(3/(p*q)) + 2*Sqrt[b]*e*E^((3*a)/(b*p*q))*f^2*g*h*Sqrt[p]*Sq
rt[q]*x*(c*(d*(e + f*x)^p)^q)^(3/(p*q)) + 2*Sqrt[b]*E^((3*a)/(b*p*q))*f^3*g
*h*Sqrt[p]*Sqrt[q]*x^2*(c*(d*(e + f*x)^p)^q)^(3/(p*q)) + Sqrt[b]*e*E^((3*a)
/(b*p*q))*f^2*h^2*Sqrt[p]*Sqrt[q]*x^2*(c*(d*(e + f*x)^p)^q)^(3/(p*q)) + Sqr
t[b]*E^((3*a)/(b*p*q))*f^3*h^2*Sqrt[p]*Sqrt[q]*x^3*(c*(d*(e + f*x)^p)^q)^(3
/(p*q)) + 4*e*E^((2*a)/(b*p*q))*f*g*h*Sqrt[Pi]*(e + f*x)*(c*(d*(e + f*x)^p)
^q)^(2/(p*q))*Erfi[Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]/(Sqrt[b]*Sqrt[p]*Sq
rt[q])]*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]] + 2*e^2*E^((2*a)/(b*p*q))*h^2*
Sqrt[Pi]*(e + f*x)*(c*(d*(e + f*x)^p)^q)^(2/(p*q))*Erfi[Sqrt[a + b*Log[c*(d
*(e + f*x)^p)^q]]/(Sqrt[b]*Sqrt[p]*Sqrt[q])]*Sqrt[a + b*Log[c*(d*(e + f*x)^
p)^q]] - 2*E^(a/(b*p*q))*f*g*h*Sqrt[2*Pi]*(e + f*x)^2*(c*(d*(e + f*x)^p)^q)
^(1/(p*q))*Erfi[(Sqrt[2]*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]])/(Sqrt[b]*Sqr
t[p]*Sqrt[q])]*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]] - e*E^(a/(b*p*q))*h^2*S
qrt[2*Pi]*(e + f*x)^2*(c*(d*(e + f*x)^p)^q)^(1/(p*q))*Erfi[(Sqrt[2]*Sqrt[a
+ b*Log[c*(d*(e + f*x)^p)^q]])/(Sqrt[b]*Sqrt[p]*Sqrt[q])]*Sqrt[a + b*Log[c*
(d*(e + f*x)^p)^q]] - Sqrt[b]*h^2*Sqrt[p]*Sqrt[3*Pi]*Sqrt[q]*(e + f*x)^3*Sq
rt[-((a + b*Log[c*(d*(e + f*x)^p)^q])/(b*p*q))] + 3*Sqrt[b]*e*E^(a/(b*p*q))
*h^2*Sqrt[p]*Sqrt[2*Pi]*Sqrt[q]*(e + f*x)^2*(c*(d*(e + f*x)^p)^q)^(1/(p*q))
*Sqrt[-((a + b*Log[c*(d*(e + f*x)^p)^q])/(b*p*q))] - 3*Sqrt[b]*e^2*E^((2*a)
/(b*p*q))*h^2*Sqrt[p]*Sqrt[Pi]*Sqrt[q]*(e + f*x)*(c*(d*(e + f*x)^p)^q)^(2/(
p*q))*Sqrt[-((a + b*Log[c*(d*(e + f*x)^p)^q])/(b*p*q))] + 3*Sqrt[b]*e^2*E^(
(2*a)/(b*p*q))*h^2*Sqrt[p]*Sqrt[Pi]*Sqrt[q]*(e + f*x)*(c*(d*(e + f*x)^p)^q)
^(2/(p*q))*Erf[Sqrt[-((a + b*Log[c*(d*(e + f*x)^p)^q])/(b*p*q))]]*Sqrt[-((a
 + b*Log[c*(d*(e + f*x)^p)^q])/(b*p*q))] - 3*Sqrt[b]*e*E^(a/(b*p*q))*h^2*Sq
rt[p]*Sqrt[2*Pi]*Sqrt[q]*(e + f*x)^2*(c*(d*(e + f*x)^p)^q)^(1/(p*q))*Erf[Sq
rt[2]*Sqrt[-((a + b*Log[c*(d*(e + f*x)^p)^q])/(b*p*q))]]*Sqrt[-((a + b*Log[
c*(d*(e + f*x)^p)^q])/(b*p*q))] + Sqrt[b]*h^2*Sqrt[p]*Sqrt[3*Pi]*Sqrt[q]*(e
 + f*x)^3*Erf[Sqrt[3]*Sqrt[-((a + b*Log[c*(d*(e + f*x)^p)^q])/(b*p*q))]]*Sq
rt[-((a + b*Log[c*(d*(e + f*x)^p)^q])/(b*p*q))] - Sqrt[b]*E^((2*a)/(b*p*q))
*f^2*g^2*Sqrt[p]*Sqrt[q]*(e + f*x)*(c*(d*(e + f*x)^p)^q)^(2/(p*q))*Gamma[1/
2, -((a + b*Log[c*(d*(e + f*x)^p)^q])/(b*p*q))]*Sqrt[-((a + b*Log[c*(d*(e +
 f*x)^p)^q])/(b*p*q))] - 2*Sqrt[b]*e*E^((2*a)/(b*p*q))*f*g*h*Sqrt[p]*Sqrt[q
]*(e + f*x)*(c*(d*(e + f*x)^p)^q)^(2/(p*q))*Gamma[1/2, -((a + b*Log[c*(d*(e
 + f*x)^p)^q])/(b*p*q))]*Sqrt[-((a + b*Log[c*(d*(e + f*x)^p)^q])/(b*p*q))])
)/(b^(3/2)*E^((3*a)/(b*p*q))*f^3*p^(3/2)*q^(3/2)*(c*(d*(e + f*x)^p)^q)^(3/(
p*q))*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]])
```

Maple [F]

time = 0.18, size = 0, normalized size = 0.00

$$\int \frac{(hx+g)^2}{(a+b\ln(c(d(fx+e)^p)^q))^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x+g)^2/(a+b*ln(c*(d*(f*x+e)^p)^q))^(3/2),x)
```

```
[Out] int((h*x+g)^2/(a+b*ln(c*(d*(f*x+e)^p)^q))^(3/2),x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^2/(a+b*log(c*(d*(f*x+e)^p)^q))^(3/2),x, algorithm="maxima
")
```

```
[Out] integrate((h*x + g)^2/(b*log(((f*x + e)^p*d)^q*c) + a)^(3/2), x)
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^2/(a+b*log(c*(d*(f*x+e)^p)^q))^(3/2),x, algorithm="fricas
")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(g + hx)^2}{(a + b\log(c(d(e + fx)^p)^q))^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)**2/(a+b*ln(c*(d*(f*x+e)**p)**q))**(3/2),x)
```

```
[Out] Integral((g + h*x)**2/(a + b*log(c*(d*(e + f*x)**p)**q))**(3/2), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^2/(a+b*log(c*(d*(f*x+e)^p)^q))^(3/2),x, algorithm="giac")
```

```
[Out] integrate((h*x + g)^2/(b*log(((f*x + e)^p*d)^q*c) + a)^(3/2), x)
```

Mupad [**F**]

time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(g + h\,x)^2}{\left(a + b\,\ln\left(c\,\left(d\,(e + f\,x)^p\right)^q\right)\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g + h*x)^2/(a + b*log(c*(d*(e + f*x)^p)^q))^(3/2),x)
```

```
[Out] int((g + h*x)^2/(a + b*log(c*(d*(e + f*x)^p)^q))^(3/2), x)
```

3.475 $\int \frac{g+hx}{(a+b\log(c(d(e+fx)^p)^q))^{3/2}}\,dx$

Optimal. Leaf size=275

$$\frac{2e^{-\frac{a}{bpq}}(fg-eh)\sqrt{\pi}\,(e+fx)\,(c(d(e+fx)^p)^q)^{-\frac{1}{pq}}\operatorname{erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\,\sqrt{p}\,\sqrt{q}}\right)}{b^{3/2}f^2p^{3/2}q^{3/2}}+\frac{2e^{-\frac{2a}{bpq}}h\sqrt{2\pi}\,(e+f$$

```
[Out] 2*(-e*h+f*g)*(f*x+e)*erfi((a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2)/b^(1/2)/p^(1/2)
/q^(1/2))*Pi^(1/2)/b^(3/2)/exp(a/b/p/q)/f^2/p^(3/2)/q^(3/2)/((c*(d*(f*x+e)^
p)^q)^(1/p/q))+2*h*(f*x+e)^2*erfi(2^(1/2)*(a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2)
/b^(1/2)/p^(1/2)/q^(1/2))*2^(1/2)*Pi^(1/2)/b^(3/2)/exp(2*a/b/p/q)/f^2/p^(3/
2)/q^(3/2)/((c*(d*(f*x+e)^p)^q)^(2/p/q))-2*(f*x+e)*(h*x+g)/b/f/p/q/(a+b*ln(
c*(d*(f*x+e)^p)^q))^(1/2)
```

Rubi [A]
time = 0.73, antiderivative size = 275, normalized size of antiderivative = 1.00, number of steps used = 16, number of rules used = 9, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}} = 0.321$, Rules used = {2447, 2448, 2436, 2337, 2211, 2235, 2437, 2347, 2495}

$$\frac{2\sqrt{\pi}\,(e+fx)e^{-\frac{a}{bpq}}(fg-eh)\,(c(d(e+fx)^p)^q)^{-\frac{1}{pq}}\operatorname{Erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\,\sqrt{p}\,\sqrt{q}}\right)}{b^{3/2}f^2p^{3/2}q^{3/2}}+\frac{2\sqrt{2\pi}\,h(e+fx)^2e^{-\frac{2a}{bpq}}(c(d(e+fx)^p)^q)^{-\frac{2}{pq}}\operatorname{Erfi}\left(\frac{\sqrt{2}\,\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\,\sqrt{p}\,\sqrt{q}}\right)}{b^{3/2}f^2p^{3/2}q^{3/2}}-\frac{2(e+fx)(g+hx)}{bfpq\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}$$

Antiderivative was successfully verified.

```
[In] Int[(g + h*x)/(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2),x]
```

```
[Out] (2*(f*g - e*h)*Sqrt[Pi]*(e + f*x)*Erfi[Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]
/(Sqrt[b]*Sqrt[p]*Sqrt[q])])/(b^(3/2)*E^(a/(b*p*q))*f^2*p^(3/2)*q^(3/2)*(c*
(d*(e + f*x)^p)^q)^(1/(p*q))) + (2*h*Sqrt[2*Pi]*(e + f*x)^2*Erfi[(Sqrt[2]*S
qrt[a + b*Log[c*(d*(e + f*x)^p)^q]])/(Sqrt[b]*Sqrt[p]*Sqrt[q])])/(b^(3/2)*E
^((2*a)/(b*p*q))*f^2*p^(3/2)*q^(3/2)*(c*(d*(e + f*x)^p)^q)^(2/(p*q))) - (2*
(e + f*x)*(g + h*x))/(b*f*p*q*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]])
```

Rule 2211

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - c*(f/d)) + f*g*(x^2/d)), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !TrueQ[$UseGamma]
```

Rule 2235

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[F^a*Sqrt
[Pi]*(Erfi[(c + d*x)*Rt[b*Log[F], 2]]/(2*d*Rt[b*Log[F], 2])), x] /; FreeQ[{
```

```
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2337

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2347

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_)*((d_.)*(x_))^(m_.), x_Symbol
] :> Dist[(d*x)^(m + 1)/(d*n*(c*x^n)^((m + 1)/n)), Subst[Int[E^(((m + 1)/n)
*x)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b, c, d, m, n, p}, x]
```

Rule 2436

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2437

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[(f*(x/d))^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2447

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[(d + e*x)*(f + g*x)^q*((a + b*Log[c*(d + e
*x)^n])^(p + 1)/(b*e*n*(p + 1))), x] + (-Dist[(q + 1)/(b*n*(p + 1)), Int[(f
 + g*x)^q*(a + b*Log[c*(d + e*x)^n])^(p + 1), x], x] + Dist[q*((e*f - d*g)/
(b*e*n*(p + 1))), Int[(f + g*x)^(q - 1)*(a + b*Log[c*(d + e*x)^n])^(p + 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0] && LtQ[
p, -1] && GtQ[q, 0]
```

Rule 2448

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q*(a + b*Log[c*(d
 + e*x)^n])^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f -
 d*g, 0] && IGtQ[q, 0]
```

Rule 2495

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{g+hx}{(a+b\log(c(d(e+fx)^p)^q))^{3/2}}\,dx = \text{Subst}\left(\int \frac{g+hx}{(a+b\log(cd^q(e+fx)^{pq}))^{3/2}}\,dx, cd^q(e+fx)^{pq}, c(d(e+f\right.$$

$$= -\frac{2(e+fx)(g+hx)}{bfpq\sqrt{a+b\log(c(d(e+fx)^p)^q)}} + \text{Subst}\left(\frac{4\int \frac{g+hx}{\sqrt{a+b\log(cd^q(}}}{bpq}\right.$$

$$= -\frac{2(e+fx)(g+hx)}{bfpq\sqrt{a+b\log(c(d(e+fx)^p)^q)}} + \text{Subst}\left(\frac{4\int\left(\frac{fg-}{f\sqrt{a+b\log(c}}\right.}{}\right.$$

$$= -\frac{2(e+fx)(g+hx)}{bfpq\sqrt{a+b\log(c(d(e+fx)^p)^q)}} + \text{Subst}\left(\frac{(4h)\int \frac{e+}{\sqrt{a+b\log(c}}}{bfp}\right.$$

$$= -\frac{2(e+fx)(g+hx)}{bfpq\sqrt{a+b\log(c(d(e+fx)^p)^q)}} + \text{Subst}\left(\frac{(4h)\text{Subst}\left(\int \frac{}{\sqrt{a+}}\right.}{}\right.$$

$$= -\frac{2e^{-\frac{a}{bpq}}(fg-eh)\sqrt{\pi}\,(e+fx)\,(c(d(e+fx)^p)^q)^{-\frac{1}{pq}}\,\text{erfi}\left(\frac{\sqrt{a+b\log}}{\sqrt{}}\right.}{b^{3/2}f^2p^{3/2}q^{3/2}}$$

$$= -\frac{2e^{-\frac{a}{bpq}}(fg-eh)\sqrt{\pi}\,(e+fx)\,(c(d(e+fx)^p)^q)^{-\frac{1}{pq}}\,\text{erfi}\left(\frac{\sqrt{a+b\log}}{\sqrt{}}\right.}{b^{3/2}f^2p^{3/2}q^{3/2}}$$

$$= \frac{2e^{-\frac{a}{bpq}}(fg-eh)\sqrt{\pi}\,(e+fx)\,(c(d(e+fx)^p)^q)^{-\frac{1}{pq}}\,\text{erfi}\left(\frac{\sqrt{a+b\log(}}{\sqrt{b}}\right.}{b^{3/2}f^2p^{3/2}q^{3/2}}$$

Mathematica [A]
time = 0.88, size = 435, normalized size = 1.58

$$\frac{2e^{-\frac{2a}{bpq}}(e+fx)(c(d(e+fx)^p)^q)^{-\frac{2}{pq}}\left(-2ee^{\frac{a}{bpq}}h\sqrt{\pi}(c(d(e+fx)^p)^q)^{\frac{1}{pq}}\text{erfi}\left(\frac{\sqrt{a+b\log(c(d(e+fx)^p)^q)}}{\sqrt{b}\sqrt{p}\sqrt{q}}\right)\sqrt{a+b\log(c(d(e+fx)^p)^q)}+h\sqrt{2\pi}(e+fx)\text{erfi}\left(\frac{\sqrt{2}\sqrt{a+b\log(c(d(e+fx)^p)^q)}}{\sqrt{b}\sqrt{p}\sqrt{q}}\right)\sqrt{a+b\log(c(d(e+fx)^p)^q)}+\sqrt{b}e^{\frac{a}{bpq}}\sqrt{p}\sqrt{q}(c(d(e+fx)^p)^q)^{\frac{1}{pq}}\left(-e^{\frac{a}{bpq}}f(c(d(e+fx)^p)^q)^{\frac{1}{pq}}(g+hx)+(fg+eh)\Gamma\left(\frac{1}{2},-\frac{a+b\log(c(d(e+fx)^p)^q)}{bpq}\right)\sqrt{-\frac{a+b\log(c(d(e+fx)^p)^q)}{bpq}}\right)\right)}{b^{3/2}f^2p^{3/2}q^{3/2}\sqrt{a+b\log(c(d(e+fx)^p)^q)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(g + h*x)/(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2),x]
```

```
[Out] (2*(e + f*x)*(-2*e*E^(a/(b*p*q))*h*Sqrt[Pi]*(c*(d*(e + f*x)^p)^q)^(1/(p*q))
*Erfi[Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]/(Sqrt[b]*Sqrt[p]*Sqrt[q])]*Sqrt[
a + b*Log[c*(d*(e + f*x)^p)^q]] + h*Sqrt[2*Pi]*(e + f*x)*Erfi[(Sqrt[2]*Sqrt
[a + b*Log[c*(d*(e + f*x)^p)^q]])/(Sqrt[b]*Sqrt[p]*Sqrt[q])]*Sqrt[a + b*Log
[c*(d*(e + f*x)^p)^q]] + Sqrt[b]*E^(a/(b*p*q))*Sqrt[p]*Sqrt[q]*(c*(d*(e + f
*x)^p)^q)^(1/(p*q))*(-(E^(a/(b*p*q))*f*(c*(d*(e + f*x)^p)^q)^(1/(p*q))*(g +
 h*x)) + (f*g + e*h)*Gamma[1/2, -((a + b*Log[c*(d*(e + f*x)^p)^q])/(b*p*q))
]*Sqrt[-((a + b*Log[c*(d*(e + f*x)^p)^q])/(b*p*q))])))/(b^(3/2)*E^((2*a)/(b
*p*q))*f^2*p^(3/2)*q^(3/2)*(c*(d*(e + f*x)^p)^q)^(2/(p*q))*Sqrt[a + b*Log[c
*(d*(e + f*x)^p)^q]])
```

Maple [F]
time = 0.03, size = 0, normalized size = 0.00

$$\int \frac{hx+g}{\left(a+b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x+g)/(a+b*ln(c*(d*(f*x+e)^p)^q))^(3/2),x)
```

```
[Out] int((h*x+g)/(a+b*ln(c*(d*(f*x+e)^p)^q))^(3/2),x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q))^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((h*x + g)/(b*log(((f*x + e)^p*d)^q*c) + a)^(3/2), x)
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q))^(3/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{g+hx}{\left(a+b\log\left(c\left(d\left(e+fx\right)^{p}\right)^{q}\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)/(a+b*ln(c*(d*(f*x+e)**p)**q))**(3/2),x)
```

```
[Out] Integral((g + h*x)/(a + b*log(c*(d*(e + f*x)**p)**q))**(3/2), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q))^(3/2),x, algorithm="giac")
```

```
[Out] integrate((h*x + g)/(b*log(((f*x + e)^p*d)^q*c) + a)^(3/2), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{g+h\,x}{{\left(a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)\right)}^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g + h*x)/(a + b*log(c*(d*(e + f*x)^p)^q))^(3/2),x)
```

```
[Out] int((g + h*x)/(a + b*log(c*(d*(e + f*x)^p)^q))^(3/2), x)
```

3.476 $\int \frac{1}{(a+b\log(c(d(e+fx)^p)^q))^{3/2}}\,dx$

Optimal. Leaf size=147

$$\frac{2e^{-\frac{a}{bpq}}\sqrt{\pi}\,(e+fx)\left(c(d(e+fx)^p)^q\right)^{-\frac{1}{pq}}\operatorname{erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\,\sqrt{p}\,\sqrt{q}}\right)}{b^{3/2}fp^{3/2}q^{3/2}}-\frac{2(e+fx)}{bfpq\sqrt{a+b\log\left(c\left(d(e+fx)\right.\right.}}$$

```
[Out] 2*(f*x+e)*erfi((a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2)/b^(1/2)/p^(1/2)/q^(1/2))*P
i^(1/2)/b^(3/2)/exp(a/b/p/q)/f/p^(3/2)/q^(3/2)/((c*(d*(f*x+e)^p)^q)^(1/p/q)
)-2*(f*x+e)/b/f/p/q/(a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2)
```

Rubi [A]
time = 0.17, antiderivative size = 147, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.273$, Rules used = {2436, 2334, 2337, 2211, 2235, 2495}

$$\frac{2\sqrt{\pi}\,(e+fx)e^{-\frac{a}{bpq}}\left(c(d(e+fx)^p)^q\right)^{-\frac{1}{pq}}\operatorname{Erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\,\sqrt{p}\,\sqrt{q}}\right)}{b^{3/2}fp^{3/2}q^{3/2}}-\frac{2(e+fx)}{bfpq\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])^(-3/2),x]
```

```
[Out] (2*Sqrt[Pi]*(e + f*x)*Erfi[Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]/(Sqrt[b]*Sq
rt[p]*Sqrt[q])])/(b^(3/2)*E^(a/(b*p*q))*f*p^(3/2)*q^(3/2)*(c*(d*(e + f*x)^p
)^q)^(1/(p*q))) - (2*(e + f*x))/(b*f*p*q*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q
]])
```

Rule 2211

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - c*(f/d)) + f*g*(x^2/d)), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !TrueQ[$UseGamma]
```

Rule 2235

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[F^a*Sqrt
[Pi]*(Erfi[(c + d*x)*Rt[b*Log[F], 2]]/(2*d*Rt[b*Log[F], 2])), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2334

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Simp[x*((a + b
*Log[c*x^n])^(p + 1)/(b*n*(p + 1))), x] - Dist[1/(b*n*(p + 1)), Int[(a + b*
Log[c*x^n])^(p + 1), x], x] /; FreeQ[{a, b, c, n}, x] && LtQ[p, -1] && Inte
gerQ[2*p]
```

Rule 2337

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2436

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2495

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{1}{(a+b\log(c(d(e+fx)^p)^q))^{3/2}}\,dx = \text{Subst}\left(\int \frac{1}{(a+b\log(cd^q(e+fx)^{pq}))^{3/2}}\,dx, cd^q(e+fx)^{pq}, c(d(e+fx$$

$$= \text{Subst}\left(\frac{\text{Subst}\left(\int \frac{1}{(a+b\log(cd^qx^{pq}))^{3/2}}\,dx, x, e+fx\right)}{f}, cd^q(e+fx)^{pq}, c(d(e$$

$$= -\frac{2(e+fx)}{bfpq\sqrt{a+b\log(c(d(e+fx)^p)^q)}} + \text{Subst}\left(\frac{2\text{Subst}\left(\int \frac{1}{\sqrt{a+b\log}}\right.}{b}\right.$$

$$= -\frac{2(e+fx)}{bfpq\sqrt{a+b\log(c(d(e+fx)^p)^q)}} + \text{Subst}\left(\frac{\left(2(e+fx)(cd^q(e+f\right.}{}\right.$$

$$= -\frac{2(e+fx)}{bfpq\sqrt{a+b\log(c(d(e+fx)^p)^q)}} + \text{Subst}\left(\frac{\left(4(e+fx)(cd^q(e+f\right.}{}\right.$$

$$= \frac{2e^{-\frac{a}{bpq}}\sqrt{\pi}(e+fx)(c(d(e+fx)^p)^q)^{-\frac{1}{pq}}\text{erfi}\left(\frac{\sqrt{a+b\log(c(d(e+fx}}{\sqrt{b}\sqrt{p}\sqrt{q}}\right.}{b^{3/2}fp^{3/2}q^{3/2}}$$

Mathematica [A]
time = 0.12, size = 181, normalized size = 1.23

$$-\frac{2e^{-\frac{a}{bpq}}(e+fx)(c(d(e+fx)^p)^q)^{-\frac{1}{pq}}\left(e^{\frac{a}{bpq}}(c(d(e+fx)^p)^q)^{\frac{1}{pq}} - \Gamma\left(\frac{1}{2}, -\frac{a+b\log(c(d(e+fx)^p)^q)}{bpq}\right)\sqrt{-\frac{a+b\log(c(d(e+fx)^p)^q)}{bpq}}\right)}{bfpq\sqrt{a+b\log(c(d(e+fx)^p)^q)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])^(-3/2),x]
```

```
[Out] (-2*(e + f*x)*(E^(a/(b*p*q))*(c*(d*(e + f*x)^p)^q)^(1/(p*q)) - Gamma[1/2, -
((a + b*Log[c*(d*(e + f*x)^p)^q])/(b*p*q))]*Sqrt[-((a + b*Log[c*(d*(e + f*x
)^p)^q])/(b*p*q))]))/(b*E^(a/(b*p*q))*f*p*q*(c*(d*(e + f*x)^p)^q)^(1/(p*q))
*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]])
```

Maple [F]
time = 0.04, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(a+b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+b*ln(c*(d*(f*x+e)^p)^q))^(3/2),x)
[Out] int(1/(a+b*ln(c*(d*(f*x+e)^p)^q))^(3/2),x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(d*(f*x+e)^p)^q))^(3/2),x, algorithm="maxima")
[Out] integrate((b*log(((f*x + e)^p*d)^q*c) + a)^(-3/2), x)
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(d*(f*x+e)^p)^q))^(3/2),x, algorithm="fricas")
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(a+b\log\left(c\left(d\left(e+fx\right)^{p}\right)^{q}\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*ln(c*(d*(f*x+e)**p)**q))**(3/2),x)
[Out] Integral((a + b*log(c*(d*(e + f*x)**p)**q))**(-3/2), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(d*(f*x+e)^p)^q))^(3/2),x, algorithm="giac")
[Out] integrate((b*log(((f*x + e)^p*d)^q*c) + a)^(-3/2), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{1}{\left(a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a + b*log(c*(d*(e + f*x)^p)^q))^(3/2),x)
[Out] int(1/(a + b*log(c*(d*(e + f*x)^p)^q))^(3/2), x)
```

3.477 $\int \frac{1}{(g+hx)(a+b\log(c(d(e+fx)^p)^q))^{3/2}}\,dx$

Optimal. Leaf size=33

$$\text{Int}\left(\frac{1}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2}},x\right)$$

```
[Out] Unintegrable(1/(h*x+g)/(a+b*ln(c*(d*(f*x+e)^p)^q))^(3/2),x)
```

Rubi [A]
time = 0.08, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int \frac{1}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2}}\,dx$$

Verification is not applicable to the result.

```
[In] Int[1/((g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2)),x]
[Out] Defer[Int][1/((g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2)), x]
```

Rubi steps

$$\int \frac{1}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2}}\,dx = \int \frac{1}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2}}\,dx$$

Mathematica [A]
time = 0.32, size = 0, normalized size = 0.00

$$\int \frac{1}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2}}\,dx$$

Verification is not applicable to the result.

```
[In] Integrate[1/((g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2)),x]
[Out] Integrate[1/((g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2)), x]
```

Maple [A]
time = 0.17, size = 0, normalized size = 0.00

$$\int \frac{1}{(hx+g)\left(a+b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(h*x+g)/(a+b*ln(c*(d*(f*x+e)^p)^q))^(3/2),x)
```

```
[Out] int(1/(h*x+g)/(a+b*ln(c*(d*(f*x+e)^p)^q))^(3/2),x)
```

Maxima [A]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q))^(3/2),x, algorithm="maxima
")
```

```
[Out] integrate(1/((h*x + g)*(b*log(((f*x + e)^p*d)^q*c) + a)^(3/2)), x)
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q))^(3/2),x, algorithm="fricas
")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [A]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(a + b \log \left(c \left(d \left(e + fx\right)^{p}\right)^{q}\right)\right)^{\frac{3}{2}} \left(g + hx\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(a+b*ln(c*(d*(f*x+e)**p)**q))**(3/2),x)
```

```
[Out] Integral(1/((a + b*log(c*(d*(e + f*x)**p)**q))**(3/2)*(g + h*x)), x)
```

Giac [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q))^(3/2),x, algorithm="giac")
```

```
[Out] integrate(1/((h*x + g)*(b*log((((f*x + e)^p*d)^q*c) + a)^(3/2)), x)
```

Mupad [A]
time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{1}{(g+h\,x)\,\left(a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((g + h*x)*(a + b*log(c*(d*(e + f*x)^p)^q))^(3/2)),x)
[Out] int(1/((g + h*x)*(a + b*log(c*(d*(e + f*x)^p)^q))^(3/2)), x)
```

3.478 $\int \frac{(g+hx)^2}{(a+b\log(c(d(e+fx)^p)^q))^{5/2}}\,dx$

Optimal. Leaf size=514

$$\frac{4e^{-\frac{a}{bpq}}(fg-eh)^2\sqrt{\pi}\,(e+fx)\left(c(d(e+fx)^p)^q\right)^{-\frac{1}{pq}}\operatorname{erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\,\sqrt{p}\,\sqrt{q}}\right)}{3b^{5/2}f^3p^{5/2}q^{5/2}}+\frac{16e^{-\frac{2a}{bpq}}h(fg-eh)}{}$$

```
[Out] -2/3*(f*x+e)*(h*x+g)^2/b/f/p/q/(a+b*ln(c*(d*(f*x+e)^p)^q))^(3/2)+4/3*(-e*h+
f*g)^2*(f*x+e)*erfi((a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2)/b^(1/2)/p^(1/2)/q^(1/
2))*Pi^(1/2)/b^(5/2)/exp(a/b/p/q)/f^3/p^(5/2)/q^(5/2)/((c*(d*(f*x+e)^p)^q)^
(1/p/q))+16/3*h*(-e*h+f*g)*(f*x+e)^2*erfi(2^(1/2)*(a+b*ln(c*(d*(f*x+e)^p)^q
))^(1/2)/b^(1/2)/p^(1/2)/q^(1/2))*2^(1/2)*Pi^(1/2)/b^(5/2)/exp(2*a/b/p/q)/f
^3/p^(5/2)/q^(5/2)/((c*(d*(f*x+e)^p)^q)^(2/p/q))+4*h^2*(f*x+e)^3*erfi(3^(1/
2)*(a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2)/b^(1/2)/p^(1/2)/q^(1/2))*3^(1/2)*Pi^(1
/2)/b^(5/2)/exp(3*a/b/p/q)/f^3/p^(5/2)/q^(5/2)/((c*(d*(f*x+e)^p)^q)^(3/p/q)
)+8/3*(-e*h+f*g)*(f*x+e)*(h*x+g)/b^2/f^2/p^2/q^2/(a+b*ln(c*(d*(f*x+e)^p)^q)
)^(1/2)-4*(f*x+e)*(h*x+g)^2/b^2/f/p^2/q^2/(a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2)
```

Rubi [A]
time = 2.59, antiderivative size = 514, normalized size of antiderivative = 1.00, number of steps used = 42, number of rules used = 9, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}} = 0.300$, Rules used = {2447, 2448, 2436, 2337, 2211, 2235, 2437, 2347, 2495}

$$\frac{16\sqrt{2\pi}\,h(e+fx)^2e^{-\frac{2a}{bpq}}(fg-eh)\left(c(d(e+fx)^p)^q\right)^{-\frac{2}{pq}}\operatorname{Erfi}\left(\frac{\sqrt{2}\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\sqrt{p}\sqrt{q}}\right)}{3b^{5/2}f^3p^{5/2}q^{5/2}}+\frac{4\sqrt{\pi}\,(e+fx)e^{-\frac{a}{bpq}}(fg-eh)^2\left(c(d(e+fx)^p)^q\right)^{-\frac{1}{pq}}\operatorname{Erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\sqrt{p}\sqrt{q}}\right)}{3b^{5/2}f^3p^{5/2}q^{5/2}}+\frac{4\sqrt{3\pi}\,h^2(e+fx)^3e^{-\frac{3a}{bpq}}\left(c(d(e+fx)^p)^q\right)^{-\frac{3}{pq}}\operatorname{Erfi}\left(\frac{\sqrt{3}\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\sqrt{p}\sqrt{q}}\right)}{b^{5/2}f^3p^{5/2}q^{5/2}}+\frac{8(e+fx)(g+hx)(fg-eh)}{3b^2f^2p^2q^2\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}-\frac{4(e+fx)(g+hx)^2}{b^2fp^2q^2\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}-\frac{2(e+fx)(g+hx)^2}{3bfpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(g + h*x)^2/(a + b*Log[c*(d*(e + f*x)^p)^q])^(5/2),x]
```

```
[Out] (4*(f*g - e*h)^2*Sqrt[Pi]*(e + f*x)*Erfi[Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q
]]/(Sqrt[b]*Sqrt[p]*Sqrt[q])])/(3*b^(5/2)*E^(a/(b*p*q))*f^3*p^(5/2)*q^(5/2)
*(c*(d*(e + f*x)^p)^q)^(1/(p*q))) + (16*h*(f*g - e*h)*Sqrt[2*Pi]*(e + f*x)^
2*Erfi[(Sqrt[2]*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]])/(Sqrt[b]*Sqrt[p]*Sqrt
[q])])/(3*b^(5/2)*E^((2*a)/(b*p*q))*f^3*p^(5/2)*q^(5/2)*(c*(d*(e + f*x)^p)^
q)^(2/(p*q))) + (4*h^2*Sqrt[3*Pi]*(e + f*x)^3*Erfi[(Sqrt[3]*Sqrt[a + b*Log[
c*(d*(e + f*x)^p)^q]])/(Sqrt[b]*Sqrt[p]*Sqrt[q])])/(b^(5/2)*E^((3*a)/(b*p*q
))*f^3*p^(5/2)*q^(5/2)*(c*(d*(e + f*x)^p)^q)^(3/(p*q))) - (2*(e + f*x)*(g +
 h*x)^2)/(3*b*f*p*q*(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2)) + (8*(f*g - e*h
)*(e + f*x)*(g + h*x))/(3*b^2*f^2*p^2*q^2*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^
q]]) - (4*(e + f*x)*(g + h*x)^2)/(b^2*f*p^2*q^2*Sqrt[a + b*Log[c*(d*(e + f*
x)^p)^q]])
```

Rule 2211

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - c*(f/d)) + f*g*(x^2/d)), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !TrueQ[$UseGamma]
```

Rule 2235

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[F^a*Sqrt
[Pi]*(Erfi[(c + d*x)*Rt[b*Log[F], 2]]/(2*d*Rt[b*Log[F], 2])), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2337

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2347

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_)*((d_.)*(x_))^(m_.), x_Symbol
] :> Dist[(d*x)^(m + 1)/(d*n*(c*x^n)^((m + 1)/n)), Subst[Int[E^(((m + 1)/n)
*x)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b, c, d, m, n, p}, x]
```

Rule 2436

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2437

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[(f*(x/d))^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2447

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[(d + e*x)*(f + g*x)^q*((a + b*Log[c*(d + e
*x)^n])^(p + 1)/(b*e*n*(p + 1))), x] + (-Dist[(q + 1)/(b*n*(p + 1)), Int[(f
 + g*x)^q*(a + b*Log[c*(d + e*x)^n])^(p + 1), x], x] + Dist[q*((e*f - d*g)/
(b*e*n*(p + 1))), Int[(f + g*x)^(q - 1)*(a + b*Log[c*(d + e*x)^n])^(p + 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0] && LtQ[
p, -1] && GtQ[q, 0]
```

Rule 2448

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q*(a + b*Log[c*(d
 + e*x)^n])^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f -
 d*g, 0] && IGtQ[q, 0]
```

Rule 2495

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{(g+hx)^2}{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{5/2}}\,dx = \text{Subst}\left(\int \frac{(g+hx)^2}{\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^{5/2}}\,dx, cd^q(e+fx)^{pq}, c(d(e+f$$

$$= -\frac{2(e+fx)(g+hx)^2}{3bfpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2}} + \text{Subst}\left(\frac{2\int \frac{(g+hx)^2}{(a+b\log(cd^q(e+fx}}{bpq}\right.$$

$$= -\frac{2(e+fx)(g+hx)^2}{3bfpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2}} + \frac{8(fg-eh)(e+fx)(}{3b^2f^2p^2q^2\sqrt{a+b\log\left(c\left(d\right.\right.}}$$

$$= -\frac{2(e+fx)(g+hx)^2}{3bfpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2}} + \frac{8(fg-eh)(e+fx)(}{3b^2f^2p^2q^2\sqrt{a+b\log\left(c\left(d\right.\right.}}$$

$$= -\frac{2(e+fx)(g+hx)^2}{3bfpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2}} + \frac{8(fg-eh)(e+fx)(}{3b^2f^2p^2q^2\sqrt{a+b\log\left(c\left(d\right.\right.}}$$

$$= -\frac{2(e+fx)(g+hx)^2}{3bfpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2}} + \frac{8(fg-eh)(e+fx)(}{3b^2f^2p^2q^2\sqrt{a+b\log\left(c\left(d\right.\right.}}$$

$$= \frac{8e^{-\frac{a}{bpq}}(fg-eh)^2\sqrt{\pi}\,(e+fx)\left(c(d(e+fx)^p)^q\right)^{-\frac{1}{pq}}\,\text{erfi}\left(\frac{\sqrt{a+b\log}}{\sqrt{l}}\right.}{3b^{5/2}f^3p^{5/2}q^{5/2}}$$

$$= \frac{8e^{-\frac{a}{bpq}}(fg-eh)^2\sqrt{\pi}\,(e+fx)\left(c(d(e+fx)^p)^q\right)^{-\frac{1}{pq}}\,\text{erfi}\left(\frac{\sqrt{a+b\log}}{\sqrt{l}}\right.}{3b^{5/2}f^3p^{5/2}q^{5/2}}$$

$$= \frac{4e^{-\frac{a}{bpq}}(fg-eh)^2\sqrt{\pi}\,(e+fx)\left(c(d(e+fx)^p)^q\right)^{-\frac{1}{pq}}\,\text{erfi}\left(\frac{\sqrt{a+b\log}}{\sqrt{l}}\right.}{3b^{5/2}f^3p^{5/2}q^{5/2}}$$

Mathematica [**B**] Leaf count is larger than twice the leaf count of optimal. 1471 vs. $2(514) = 1028$.

time = 3.11, size = 1471, normalized size = 2.86

Antiderivative was successfully verified.

```
[In] Integrate[(g + h*x)^2/(a + b*Log[c*(d*(e + f*x)^p)^q])^(5/2),x]
```

```
[Out] (2*(e + f*x)*((-10*Sqrt[b]*e*h^2*Sqrt[p]*Sqrt[Pi]*Sqrt[q]*(2*e*E^(a/(b*p*q)
)*(c*(d*(e + f*x)^p)^q)^(1/(p*q))*Erfi[Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]
/(Sqrt[b]*Sqrt[p]*Sqrt[q])] - Sqrt[2]*(e + f*x)*Erfi[(Sqrt[2]*Sqrt[a + b*Lo
g[c*(d*(e + f*x)^p)^q]])/(Sqrt[b]*Sqrt[p]*Sqrt[q])]))/(E^((2*a)/(b*p*q))*(c
*(d*(e + f*x)^p)^q)^(2/(p*q))) + (8*Sqrt[b]*f*g*h*Sqrt[p]*Sqrt[Pi]*Sqrt[q]*
(-2*e*E^(a/(b*p*q))*(c*(d*(e + f*x)^p)^q)^(1/(p*q))*Erfi[Sqrt[a + b*Log[c*(
d*(e + f*x)^p)^q]]/(Sqrt[b]*Sqrt[p]*Sqrt[q])] + Sqrt[2]*(e + f*x)*Erfi[(Sqr
t[2]*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]])/(Sqrt[b]*Sqrt[p]*Sqrt[q])]))/(E^
((2*a)/(b*p*q))*(c*(d*(e + f*x)^p)^q)^(2/(p*q))) + (6*h^2*Sqrt[Pi]*(-(Sqrt[
3]*e^2) - 2*Sqrt[3]*e*f*x - Sqrt[3]*f^2*x^2 + 3*Sqrt[2]*e^2*E^(a/(b*p*q))*(
c*(d*(e + f*x)^p)^q)^(1/(p*q)) + 3*Sqrt[2]*e*E^(a/(b*p*q))*f*x*(c*(d*(e + f
*x)^p)^q)^(1/(p*q)) - 3*e^2*E^((2*a)/(b*p*q))*(c*(d*(e + f*x)^p)^q)^(2/(p*q
)) + 3*e^2*E^((2*a)/(b*p*q))*(c*(d*(e + f*x)^p)^q)^(2/(p*q))*Erf[Sqrt[-((a
+ b*Log[c*(d*(e + f*x)^p)^q])/(b*p*q))]] - 3*Sqrt[2]*e*E^(a/(b*p*q))*(e + f
*x)*(c*(d*(e + f*x)^p)^q)^(1/(p*q))*Erf[Sqrt[2]*Sqrt[-((a + b*Log[c*(d*(e +
 f*x)^p)^q])/(b*p*q))]] + Sqrt[3]*e^2*Erf[Sqrt[3]*Sqrt[-((a + b*Log[c*(d*(e
 + f*x)^p)^q])/(b*p*q))]] + 2*Sqrt[3]*e*f*x*Erf[Sqrt[3]*Sqrt[-((a + b*Log[c
*(d*(e + f*x)^p)^q])/(b*p*q))]] + Sqrt[3]*f^2*x^2*Erf[Sqrt[3]*Sqrt[-((a + b
*Log[c*(d*(e + f*x)^p)^q])/(b*p*q))]])*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]
)/(E^((3*a)/(b*p*q))*(c*(d*(e + f*x)^p)^q)^(3/(p*q))*Sqrt[-((a + b*Log[c*(d
*(e + f*x)^p)^q])/(b*p*q))]) - (2*f^2*g^2*Gamma[1/2, -((a + b*Log[c*(d*(e +
 f*x)^p)^q])/(b*p*q))]*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]])/(E^(a/(b*p*q))
*(c*(d*(e + f*x)^p)^q)^(1/(p*q))*Sqrt[-((a + b*Log[c*(d*(e + f*x)^p)^q])/(b
*p*q))]) - (12*e*f*g*h*Gamma[1/2, -((a + b*Log[c*(d*(e + f*x)^p)^q])/(b*p*q
))]*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]])/(E^(a/(b*p*q))*(c*(d*(e + f*x)^p)
^q)^(1/(p*q))*Sqrt[-((a + b*Log[c*(d*(e + f*x)^p)^q])/(b*p*q))]) - (4*e^2*h
^2*Gamma[1/2, -((a + b*Log[c*(d*(e + f*x)^p)^q])/(b*p*q))]*Sqrt[a + b*Log[c
*(d*(e + f*x)^p)^q]])/(E^(a/(b*p*q))*(c*(d*(e + f*x)^p)^q)^(1/(p*q))*Sqrt[-
((a + b*Log[c*(d*(e + f*x)^p)^q])/(b*p*q))]) - (b*f*p*q*(g + h*x)*(b*f*p*q*
(g + h*x) + 2*a*(f*g + 2*e*h + 3*f*h*x) + 2*b*(2*e*h + f*(g + 3*h*x))*Log[c
*(d*(e + f*x)^p)^q]))/(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2)))/(3*b^3*f^3*p
^3*q^3)
```

Maple [F]
time = 0.19, size = 0, normalized size = 0.00

$$\int \frac{(hx+g)^2}{(a+b\ln(c(d(fx+e)^p)^q))^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x+g)^2/(a+b*ln(c*(d*(f*x+e)^p)^q))^(5/2),x)
```

```
[Out] int((h*x+g)^2/(a+b*ln(c*(d*(f*x+e)^p)^q))^(5/2),x)
```

Maxima [**F**]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^2/(a+b*log(c*(d*(f*x+e)^p)^q))^(5/2),x, algorithm="maxima
")
```

```
[Out] integrate((h*x + g)^2/(b*log(((f*x + e)^p*d)^q*c) + a)^(5/2), x)
```

Fricas [**F(-2)**]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^2/(a+b*log(c*(d*(f*x+e)^p)^q))^(5/2),x, algorithm="fricas
")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [**F**]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(g+hx)^2}{\left(a+b\log\left(c\left(d\left(e+fx\right)^p\right)^q\right)\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)**2/(a+b*ln(c*(d*(f*x+e)**p)**q))**(5/2),x)
```

```
[Out] Integral((g + h*x)**2/(a + b*log(c*(d*(e + f*x)**p)**q))**(5/2), x)
```

Giac [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^2/(a+b*log(c*(d*(f*x+e)^p)^q))^(5/2),x, algorithm="giac")
[Out] integrate((h*x + g)^2/(b*log(((f*x + e)^p*d)^q*c) + a)^(5/2), x)
```

Mupad [F]

time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(g+h\,x)^2}{(a+b\,\ln(c\,(d\,(e+f\,x)^p)^q))^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g + h*x)^2/(a + b*log(c*(d*(e + f*x)^p)^q))^(5/2),x)
[Out] int((g + h*x)^2/(a + b*log(c*(d*(e + f*x)^p)^q))^(5/2), x)
```

3.479 $\int \frac{g+hx}{(a+b\log(c(d(e+fx)^p)^q))^{5/2}}\,dx$

Optimal. Leaf size=380

$$\frac{4e^{-\frac{a}{bpq}}(fg-eh)\sqrt{\pi}\,(e+fx)\left(c(d(e+fx)^p)^q\right)^{-\frac{1}{pq}}\operatorname{erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\,\sqrt{p}\,\sqrt{q}}\right)}{3b^{5/2}f^2p^{5/2}q^{5/2}}+\frac{8e^{-\frac{2a}{bpq}}h\sqrt{2\pi}\,(e+$$

```
[Out] -2/3*(f*x+e)*(h*x+g)/b/f/p/q/(a+b*ln(c*(d*(f*x+e)^p)^q))^(3/2)+4/3*(-e*h+f*
g)*(f*x+e)*erfi((a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2)/b^(1/2)/p^(1/2)/q^(1/2))*
Pi^(1/2)/b^(5/2)/exp(a/b/p/q)/f^2/p^(5/2)/q^(5/2)/((c*(d*(f*x+e)^p)^q)^(1/p
/q))+8/3*h*(f*x+e)^2*erfi(2^(1/2)*(a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2)/b^(1/2)
/p^(1/2)/q^(1/2))*2^(1/2)*Pi^(1/2)/b^(5/2)/exp(2*a/b/p/q)/f^2/p^(5/2)/q^(5/
2)/((c*(d*(f*x+e)^p)^q)^(2/p/q))+4/3*(-e*h+f*g)*(f*x+e)/b^2/f^2/p^2/q^2/(a+
b*ln(c*(d*(f*x+e)^p)^q))^(1/2)-8/3*(f*x+e)*(h*x+g)/b^2/f/p^2/q^2/(a+b*ln(c*
(d*(f*x+e)^p)^q))^(1/2)
```

Rubi [A]

time = 1.05, antiderivative size = 380, normalized size of antiderivative = 1.00, number of steps used = 22, number of rules used = 10, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}} = 0.357$, Rules used = {2447, 2448, 2436, 2337, 2211, 2235, 2437, 2347, 2334, 2495}

$$\frac{4\sqrt{\pi}\,(e+fx)e^{-\frac{a}{bpq}}(fg-eh)\left(c(d(e+fx)^p)^q\right)^{-\frac{1}{pq}}\operatorname{Erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\,\sqrt{p}\,\sqrt{q}}\right)}{3b^{5/2}f^2p^{5/2}q^{5/2}}+\frac{8\sqrt{2\pi}\,h(e+fx)^2e^{-\frac{2a}{bpq}}\left(c(d(e+fx)^p)^q\right)^{-\frac{2}{pq}}\operatorname{Erfi}\left(\frac{\sqrt{2}\,\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\,\sqrt{p}\,\sqrt{q}}\right)}{3b^{5/2}f^2p^{5/2}q^{5/2}}+\frac{4(e+fx)(fg-eh)}{3b^2f^2p^2q^2\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}-\frac{8(e+fx)(g+hx)}{3b^2fp^2q^2\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}-\frac{2(e+fx)(g+hx)}{3bfpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(g + h*x)/(a + b*Log[c*(d*(e + f*x)^p)^q])^(5/2),x]
```

```
[Out] (4*(f*g - e*h)*Sqrt[Pi]*(e + f*x)*Erfi[Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]
/(Sqrt[b]*Sqrt[p]*Sqrt[q])])/(3*b^(5/2)*E^(a/(b*p*q))*f^2*p^(5/2)*q^(5/2)*(
c*(d*(e + f*x)^p)^q)^(1/(p*q))) + (8*h*Sqrt[2*Pi]*(e + f*x)^2*Erfi[(Sqrt[2]
*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]])/(Sqrt[b]*Sqrt[p]*Sqrt[q])])/(3*b^(5/
2)*E^((2*a)/(b*p*q))*f^2*p^(5/2)*q^(5/2)*(c*(d*(e + f*x)^p)^q)^(2/(p*q))) -
 (2*(e + f*x)*(g + h*x))/(3*b*f*p*q*(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2))
 + (4*(f*g - e*h)*(e + f*x))/(3*b^2*f^2*p^2*q^2*Sqrt[a + b*Log[c*(d*(e + f*
x)^p)^q]]) - (8*(e + f*x)*(g + h*x))/(3*b^2*f*p^2*q^2*Sqrt[a + b*Log[c*(d*(
e + f*x)^p)^q]])
```

Rule 2211

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - c*(f/d)) + f*g*(x^2/d)), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !TrueQ[$UseGamma]
```

Rule 2235

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[F^a*Sqrt
[Pi]*(Erfi[(c + d*x)*Rt[b*Log[F], 2]]/(2*d*Rt[b*Log[F], 2])), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2334

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Simp[x*((a + b
*Log[c*x^n])^(p + 1)/(b*n*(p + 1))), x] - Dist[1/(b*n*(p + 1)), Int[(a + b*
Log[c*x^n])^(p + 1), x], x] /; FreeQ[{a, b, c, n}, x] && LtQ[p, -1] && Inte
gerQ[2*p]
```

Rule 2337

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2347

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_)*((d_.)*(x_))^(m_.), x_Symbol
] :> Dist[(d*x)^(m + 1)/(d*n*(c*x^n)^((m + 1)/n)), Subst[Int[E^(((m + 1)/n)
*x)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b, c, d, m, n, p}, x]
```

Rule 2436

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2437

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[(f*(x/d))^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2447

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[(d + e*x)*(f + g*x)^q*((a + b*Log[c*(d + e
*x)^n])^(p + 1)/(b*e*n*(p + 1))), x] + (-Dist[(q + 1)/(b*n*(p + 1)), Int[(f
 + g*x)^q*(a + b*Log[c*(d + e*x)^n])^(p + 1), x], x] + Dist[q*((e*f - d*g)/
(b*e*n*(p + 1))), Int[(f + g*x)^(q - 1)*(a + b*Log[c*(d + e*x)^n])^(p + 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0] && LtQ[
```

```
p, -1] && GtQ[q, 0]
```

Rule 2448

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q*(a + b*Log[c*(d
 + e*x)^n])^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f -
 d*g, 0] && IGtQ[q, 0]
```

Rule 2495

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{g+hx}{(a+b\log(c(d(e+fx)^p)^q))^{5/2}}\,dx = \text{Subst}\left(\int \frac{g+hx}{(a+b\log(cd^q(e+fx)^{pq}))^{5/2}}\,dx, cd^q(e+fx)^{pq}, c(d(e+fx\right.$$

$$= -\frac{2(e+fx)(g+hx)}{3bfpq\,(a+b\log(c(d(e+fx)^p)^q))^{3/2}} + \text{Subst}\left(\frac{4\int \frac{g+hx}{(a+b\log(cd^q(e+fx)^p}}{3bpq}\right.$$

$$= -\frac{2(e+fx)(g+hx)}{3bfpq\,(a+b\log(c(d(e+fx)^p)^q))^{3/2}} - \frac{8(e+fx)(g+hx}{3b^2fp^2q^2\sqrt{a+b\log(c(d(e}}$$

$$= -\frac{2(e+fx)(g+hx)}{3bfpq\,(a+b\log(c(d(e+fx)^p)^q))^{3/2}} + \frac{4(fg-eh)(e+f}{3b^2f^2p^2q^2\sqrt{a+b\log(c(d(e}}$$

$$= -\frac{2(e+fx)(g+hx)}{3bfpq\,(a+b\log(c(d(e+fx)^p)^q))^{3/2}} + \frac{4(fg-eh)(e+f}{3b^2f^2p^2q^2\sqrt{a+b\log(c(d(e}}$$

$$= -\frac{2(e+fx)(g+hx)}{3bfpq\,(a+b\log(c(d(e+fx)^p)^q))^{3/2}} + \frac{4(fg-eh)(e+f}{3b^2f^2p^2q^2\sqrt{a+b\log(c(d(e}}$$

$$= -\frac{4e^{-\frac{a}{bpq}}(fg-eh)\sqrt{\pi}\,(e+fx)\,(c(d(e+fx)^p)^q)^{-\frac{1}{pq}}\,\text{erfi}\left(\frac{\sqrt{a+b\log}}{\sqrt{b}}\right.}{b^{5/2}f^2p^{5/2}q^{5/2}}$$

$$= -\frac{4e^{-\frac{a}{bpq}}(fg-eh)\sqrt{\pi}\,(e+fx)\,(c(d(e+fx)^p)^q)^{-\frac{1}{pq}}\,\text{erfi}\left(\frac{\sqrt{a+b\log}}{\sqrt{b}}\right.}{b^{5/2}f^2p^{5/2}q^{5/2}}$$

$$= \frac{4e^{-\frac{a}{bpq}}(fg-eh)\sqrt{\pi}\,(e+fx)\,(c(d(e+fx)^p)^q)^{-\frac{1}{pq}}\,\text{erfi}\left(\frac{\sqrt{a+b\log(c}}{\sqrt{b}\,\sqrt{}}\right.}{3b^{5/2}f^2p^{5/2}q^{5/2}}$$

Mathematica [A]

time = 1.52, size = 491, normalized size = 1.29

$$-\frac{2e^{-\frac{2a}{bpq}}(e+fx)\left(c(d(e+fx)^p)^q\right)^{-\frac{2}{pq}}\left(8ee^{\frac{a}{bpq}}h\sqrt{\pi}\left(c(d(e+fx)^p)^q\right)^{\frac{1}{pq}}\operatorname{erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\sqrt{p}\sqrt{q}}\right)\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)^{3/2}-4h\sqrt{2\pi}(e+fx)\operatorname{erfi}\left(\frac{\sqrt{2}\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\sqrt{p}\sqrt{q}}\right)\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)^{3/2}+\sqrt{b}e^{\frac{a}{bpq}}\sqrt{p}\sqrt{q}\left(c(d(e+fx)^p)^q\right)^{\frac{1}{pq}}\left(2b(fg+3eh)pq\Gamma\left(\frac{1}{2},-\frac{a+b\log(c(d(e+fx)^p)^q)}{bpq}\right)\left(-\frac{a+b\log(c(d(e+fx)^p)^q)}{bpq}\right)^{3/2}+e^{\frac{a}{bpq}}\left(c(d(e+fx)^p)^q\right)^{\frac{1}{pq}}\left(bfpq(g+hx)+2a(fg+eh+2fhx)+2b(eh+f(g+2hx))\log\left(c(d(e+fx)^p)^q\right)\right)\right)\right)}{3b^{5/2}f^2p^{5/2}q^{5/2}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(g + h*x)/(a + b*Log[c*(d*(e + f*x)^p)^q])^(5/2),x]
```

```
[Out] (-2*(e + f*x)*(8*e*E^(a/(b*p*q))*h*Sqrt[Pi]*(c*(d*(e + f*x)^p)^q)^(1/(p*q))
*Erfi[Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]/(Sqrt[b]*Sqrt[p]*Sqrt[q])]*(a +
b*Log[c*(d*(e + f*x)^p)^q])^(3/2) - 4*h*Sqrt[2*Pi]*(e + f*x)*Erfi[(Sqrt[2]*
Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]])/(Sqrt[b]*Sqrt[p]*Sqrt[q])]*(a + b*Log
[c*(d*(e + f*x)^p)^q])^(3/2) + Sqrt[b]*E^(a/(b*p*q))*Sqrt[p]*Sqrt[q]*(c*(d*
(e + f*x)^p)^q)^(1/(p*q))*(2*b*(f*g + 3*e*h)*p*q*Gamma[1/2, -((a + b*Log[c*
(d*(e + f*x)^p)^q])/(b*p*q))]*(-((a + b*Log[c*(d*(e + f*x)^p)^q])/(b*p*q)))
^(3/2) + E^(a/(b*p*q))*(c*(d*(e + f*x)^p)^q)^(1/(p*q))*(b*f*p*q*(g + h*x) +
 2*a*(f*g + e*h + 2*f*h*x) + 2*b*(e*h + f*(g + 2*h*x))*Log[c*(d*(e + f*x)^p
)^q]))))/(3*b^(5/2)*E^((2*a)/(b*p*q))*f^2*p^(5/2)*q^(5/2)*(c*(d*(e + f*x)^p
)^q)^(2/(p*q))*(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2))
```

Maple [F]
time = 0.03, size = 0, normalized size = 0.00

$$\int \frac{hx+g}{\left(a+b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)\right)^{\frac{5}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x+g)/(a+b*ln(c*(d*(f*x+e)^p)^q))^(5/2),x)
```

```
[Out] int((h*x+g)/(a+b*ln(c*(d*(f*x+e)^p)^q))^(5/2),x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q))^(5/2),x, algorithm="maxima")
```

```
[Out] integrate((h*x + g)/(b*log(((f*x + e)^p*d)^q*c) + a)^(5/2), x)
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q))^(5/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{g + hx}{\left(a + b\log \left(c\left(d\left(e + fx\right)^{p}\right)^{q}\right)\right)^{\frac{5}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)/(a+b*ln(c*(d*(f*x+e)**p)**q))**(5/2),x)
```

```
[Out] Integral((g + h*x)/(a + b*log(c*(d*(e + f*x)**p)**q))**(5/2), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q))^(5/2),x, algorithm="giac")
```

```
[Out] integrate((h*x + g)/(b*log(((f*x + e)^p*d)^q*c) + a)^(5/2), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{g+h\,x}{{\left(a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)\right)}^{5/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g + h*x)/(a + b*log(c*(d*(e + f*x)^p)^q))^(5/2),x)
```

```
[Out] int((g + h*x)/(a + b*log(c*(d*(e + f*x)^p)^q))^(5/2), x)
```

3.480 $\int \frac{1}{(a+b\log(c(d(e+fx)^p)^q))^{5/2}}\,dx$

Optimal. Leaf size=194

$$\frac{4e^{-\frac{a}{bpq}}\sqrt{\pi}\,(e+fx)\,(c(d(e+fx)^p)^q)^{-\frac{1}{pq}}\operatorname{erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\,\sqrt{p}\,\sqrt{q}}\right)}{3b^{5/2}fp^{5/2}q^{5/2}}-\frac{2(e+fx)}{3bfpq\left(a+b\log\left(c\left(d(e+fx\right.\right.\right.}$$

```
[Out] -2/3*(f*x+e)/b/f/p/q/(a+b*ln(c*(d*(f*x+e)^p)^q))^(3/2)+4/3*(f*x+e)*erfi((a+
b*ln(c*(d*(f*x+e)^p)^q))^(1/2)/b^(1/2)/p^(1/2)/q^(1/2))*Pi^(1/2)/b^(5/2)/ex
p(a/b/p/q)/f/p^(5/2)/q^(5/2)/((c*(d*(f*x+e)^p)^q)^(1/p/q))-4/3*(f*x+e)/b^2/
f/p^2/q^2/(a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2)
```

Rubi [A]
time = 0.22, antiderivative size = 194, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.273$, Rules used = {2436, 2334, 2337, 2211, 2235, 2495}

$$\frac{4\sqrt{\pi}\,(e+fx)e^{-\frac{a}{bpq}}(c(d(e+fx)^p)^q)^{-\frac{1}{pq}}\operatorname{Erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\,\sqrt{p}\,\sqrt{q}}\right)}{3b^{5/2}fp^{5/2}q^{5/2}}-\frac{4(e+fx)}{3b^2fp^2q^2\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}-\frac{2(e+fx)}{3bfpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])^(-5/2),x]
```

```
[Out] (4*Sqrt[Pi]*(e + f*x)*Erfi[Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]/(Sqrt[b]*Sq
rt[p]*Sqrt[q])])/(3*b^(5/2)*E^(a/(b*p*q))*f*p^(5/2)*q^(5/2)*(c*(d*(e + f*x)
^p)^q)^(1/(p*q))) - (2*(e + f*x))/(3*b*f*p*q*(a + b*Log[c*(d*(e + f*x)^p)^q
])^(3/2)) - (4*(e + f*x))/(3*b^2*f*p^2*q^2*Sqrt[a + b*Log[c*(d*(e + f*x)^p)
^q]])
```

Rule 2211

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - c*(f/d)) + f*g*(x^2/d)), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !TrueQ[$UseGamma]
```

Rule 2235

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[F^a*Sqrt
[Pi]*(Erfi[(c + d*x)*Rt[b*Log[F], 2]]/(2*d*Rt[b*Log[F], 2])), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2334

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Simp[x*((a + b
*Log[c*x^n])^(p + 1)/(b*n*(p + 1))), x] - Dist[1/(b*n*(p + 1)), Int[(a + b*
Log[c*x^n])^(p + 1), x], x] /; FreeQ[{a, b, c, n}, x] && LtQ[p, -1] && Inte
gerQ[2*p]
```

Rule 2337

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2436

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2495

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{1}{(a+b\log(c(d(e+fx)^p)^q))^{5/2}}\,dx = \text{Subst}\left(\int \frac{1}{(a+b\log(cd^q(e+fx)^{pq}))^{5/2}}\,dx, cd^q(e+fx)^{pq}, c(d(e+f$$

$$= \text{Subst}\left(\frac{\text{Subst}\left(\int \frac{1}{(a+b\log(cd^q x^{pq}))^{5/2}}\,dx, x, e+fx\right)}{f}, cd^q(e+fx)^{pq}, c(d($$

$$= -\frac{2(e+fx)}{3bfpq\,(a+b\log(c(d(e+fx)^p)^q))^{3/2}} + \text{Subst}\left(\frac{2\text{Subst}\left(\int \frac{}{(a+b\log(}\right.}{}\right.$$

$$= -\frac{2(e+fx)}{3bfpq\,(a+b\log(c(d(e+fx)^p)^q))^{3/2}} - \frac{4(e+fx)}{3b^2fp^2q^2\sqrt{a+b\log(c(d(}}$$

$$= -\frac{2(e+fx)}{3bfpq\,(a+b\log(c(d(e+fx)^p)^q))^{3/2}} - \frac{4(e+fx)}{3b^2fp^2q^2\sqrt{a+b\log(c(d(}}$$

$$= -\frac{2(e+fx)}{3bfpq\,(a+b\log(c(d(e+fx)^p)^q))^{3/2}} - \frac{4(e+fx)}{3b^2fp^2q^2\sqrt{a+b\log(c(d(}}$$

$$= \frac{4e^{-\frac{a}{bpq}}\sqrt{\pi}\,(e+fx)\,(c(d(e+fx)^p)^q)^{-\frac{1}{pq}}\,\text{erfi}\left(\frac{\sqrt{a+b\log(c(d(e+f}}{\sqrt{b}\,\sqrt{p}\,\sqrt{q}}\right.}{3b^{5/2}fp^{5/2}q^{5/2}}$$

Mathematica [A]
time = 0.24, size = 211, normalized size = 1.09

$$-\frac{2e^{-\frac{a}{bpq}}(e+fx)\,(c(d(e+fx)^p)^q)^{-\frac{1}{pq}}\left(2bpq\Gamma\left(\frac{1}{2}, -\frac{a+b\log(c(d(e+fx)^p)^q)}{bpq}\right)\left(-\frac{a+b\log(c(d(e+fx)^p)^q)}{bpq}\right)^{3/2} + e^{\frac{a}{bpq}}(c(d(e+fx)^p)^q)^{\frac{1}{pq}}\,(2a+bpq+2b\log(c(d(e+fx)^p)^q))\right)}{3b^2fp^2q^2\,(a+b\log(c(d(e+fx)^p)^q))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])^(-5/2),x]
```

```
[Out] (-2*(e + f*x)*(2*b*p*q*Gamma[1/2, -((a + b*Log[c*(d*(e + f*x)^p)^q])/(b*p*q
))]*(-((a + b*Log[c*(d*(e + f*x)^p)^q])/(b*p*q)))^(3/2) + E^(a/(b*p*q))*(c*
(d*(e + f*x)^p)^q)^(1/(p*q))*(2*a + b*p*q + 2*b*Log[c*(d*(e + f*x)^p)^q])))
/(3*b^2*E^(a/(b*p*q))*f*p^2*q^2*(c*(d*(e + f*x)^p)^q)^(1/(p*q))*(a + b*Log[
c*(d*(e + f*x)^p)^q])^(3/2))
```

Maple [F]
time = 0.04, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(a+b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+b*ln(c*(d*(f*x+e)^p)^q))^(5/2),x)
```

```
[Out] int(1/(a+b*ln(c*(d*(f*x+e)^p)^q))^(5/2),x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(d*(f*x+e)^p)^q))^(5/2),x, algorithm="maxima")
```

```
[Out] integrate((b*log(((f*x + e)^p*d)^q*c) + a)^(-5/2), x)
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(d*(f*x+e)^p)^q))^(5/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(a+b\log\left(c\left(d\left(e+fx\right)^{p}\right)^{q}\right)\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*ln(c*(d*(f*x+e)**p)**q))**(5/2),x)
```

```
[Out] Integral((a + b*log(c*(d*(e + f*x)**p)**q))**(-5/2), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(d*(f*x+e)^p)^q))^(5/2),x, algorithm="giac")
```

```
[Out] integrate((b*log(((f*x + e)^p*d)^q*c) + a)^(-5/2), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{1}{\left(a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)\right)^{5/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a + b*log(c*(d*(e + f*x)^p)^q))^(5/2),x)
```

```
[Out] int(1/(a + b*log(c*(d*(e + f*x)^p)^q))^(5/2), x)
```

3.481 $\int \frac{1}{(g+hx)(a+b\log(c(d(e+fx)^p)^q))^{5/2}}\,dx$

Optimal. Leaf size=33

$$\text{Int}\left(\frac{1}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{5/2}},x\right)$$

```
[Out] Unintegrable(1/(h*x+g)/(a+b*ln(c*(d*(f*x+e)^p)^q))^(5/2),x)
```

Rubi [A]
time = 0.08, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int \frac{1}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{5/2}}\,dx$$

Verification is not applicable to the result.

```
[In] Int[1/((g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^(5/2)),x]
[Out] Defer[Int][1/((g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^(5/2)), x]
```

Rubi steps

$$\int \frac{1}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{5/2}}\,dx=\int \frac{1}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{5/2}}\,dx$$

Mathematica [A]
time = 0.57, size = 0, normalized size = 0.00

$$\int \frac{1}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{5/2}}\,dx$$

Verification is not applicable to the result.

```
[In] Integrate[1/((g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^(5/2)),x]
[Out] Integrate[1/((g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^(5/2)), x]
```

Maple [A]
time = 0.18, size = 0, normalized size = 0.00

$$\int \frac{1}{(hx+g)\left(a+b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(h*x+g)/(a+b*ln(c*(d*(f*x+e)^p)^q))^(5/2),x)
```

```
[Out] int(1/(h*x+g)/(a+b*ln(c*(d*(f*x+e)^p)^q))^(5/2),x)
```

Maxima [A]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q))^(5/2),x, algorithm="maxima
")
```

```
[Out] integrate(1/((h*x + g)*(b*log(((f*x + e)^p*d)^q*c) + a)^(5/2)), x)
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q))^(5/2),x, algorithm="fricas
")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [F(-1)] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(a+b*ln(c*(d*(f*x+e)**p)**q))**(5/2),x)
```

```
[Out] Timed out
```

Giac [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q))^(5/2),x, algorithm="giac")
```

```
[Out] integrate(1/((h*x + g)*(b*log(((f*x + e)^p*d)^q*c) + a)^(5/2)), x)
```

Mupad [A]

time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{1}{(g+h\,x)\,\left(a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)\right)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((g + h*x)*(a + b*log(c*(d*(e + f*x)^p)^q))^(5/2)),x)
[Out] int(1/((g + h*x)*(a + b*log(c*(d*(e + f*x)^p)^q))^(5/2)), x)
```

3.482 $\int (g+hx)^{3/2} (a+b\log(c(d(e+fx)^p)^q)) \, dx$

Optimal. Leaf size=171

$$-\frac{4b(fg-eh)^2pq\sqrt{g+hx}}{5f^2h}-\frac{4b(fg-eh)pq(g+hx)^{3/2}}{15fh}-\frac{4bpq(g+hx)^{5/2}}{25h}+\frac{4b(fg-eh)^{5/2}pq\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)}{5f^{5/2}h}$$

```
[Out] -4/15*b*(-e*h+f*g)*p*q*(h*x+g)^(3/2)/f/h-4/25*b*p*q*(h*x+g)^(5/2)/h+4/5*b*(
-e*h+f*g)^(5/2)*p*q*arctanh(f^(1/2)*(h*x+g)^(1/2)/(-e*h+f*g)^(1/2))/f^(5/2)
/h+2/5*(h*x+g)^(5/2)*(a+b*ln(c*(d*(f*x+e)^p)^q))/h-4/5*b*(-e*h+f*g)^2*p*q*(
h*x+g)^(1/2)/f^2/h
```

Rubi [A]
time = 0.20, antiderivative size = 171, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}} = 0.179$, Rules used = {2442, 52, 65, 214, 2495}

$$\frac{2(g+hx)^{5/2}(a+b\log(c(d(e+fx)^p)^q))}{5h}+\frac{4bpq(fg-eh)^{5/2}\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)}{5f^{5/2}h}-\frac{4bpq\sqrt{g+hx}(fg-eh)^2}{5f^2h}-\frac{4bpq(g+hx)^{3/2}(fg-eh)}{15fh}-\frac{4bpq(g+hx)^{5/2}}{25h}$$

Antiderivative was successfully verified.

```
[In] Int[(g + h*x)^(3/2)*(a + b*Log[c*(d*(e + f*x)^p)^q]),x]
```

```
[Out] (-4*b*(f*g - e*h)^2*p*q*Sqrt[g + h*x])/(5*f^2*h) - (4*b*(f*g - e*h)*p*q*(g
+ h*x)^(3/2))/(15*f*h) - (4*b*p*q*(g + h*x)^(5/2))/(25*h) + (4*b*(f*g - e*h
)^(5/2)*p*q*ArcTanh[(Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h]])/(5*f^(5/2)*h)
 + (2*(g + h*x)^(5/2)*(a + b*Log[c*(d*(e + f*x)^p)^q]))/(5*h)
```

Rule 52

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
(a + b*x)^(m + 1)*((c + d*x)^n/(b*(m + n + 1))), x] + Dist[n*((b*c - a*d)/(
b*(m + n + 1))), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 65

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - a*(d/b) +
d*(x^p/b))^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 214

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-a/b, 2]/a)*ArcTanh[x
/Rt[-a/b, 2]], x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 2442

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[(f + g*x)^(q + 1)*((a + b*Log[c*(d + e*x)^n])/(
g*(q + 1))), x] - Dist[b*e*(n/(g*(q + 1))), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 2495

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int (g+hx)^{3/2} \left(a+b\log\left(c(d(e+fx)^p)^q\right)\right) dx = \text{Subst}\left(\int (g+hx)^{3/2} \left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right) dx, cd^q(e+\right.$$

$$= \frac{2(g+hx)^{5/2} \left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)}{5h} - \text{Subst}\left(\frac{(2bfpq)}{}\right.$$

$$= -\frac{4bpq(g+hx)^{5/2}}{25h} + \frac{2(g+hx)^{5/2} \left(a+b\log\left(c(d(e+fx)^p)^q\right.\right.}{5h}$$

$$= -\frac{4b(fg-eh)pq(g+hx)^{3/2}}{15fh} - \frac{4bpq(g+hx)^{5/2}}{25h} + \frac{2(g+hx}{}$$

$$= -\frac{4b(fg-eh)^2pq\sqrt{g+hx}}{5f^2h} - \frac{4b(fg-eh)pq(g+hx)^{3/2}}{15fh} -$$

$$= -\frac{4b(fg-eh)^2pq\sqrt{g+hx}}{5f^2h} - \frac{4b(fg-eh)pq(g+hx)^{3/2}}{15fh} -$$

$$= -\frac{4b(fg-eh)^2pq\sqrt{g+hx}}{5f^2h} - \frac{4b(fg-eh)pq(g+hx)^{3/2}}{15fh} -$$

Mathematica [A]
time = 0.39, size = 163, normalized size = 0.95

$$\frac{2\left(30b(fg-eh)^{5/2}pq\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)+\sqrt{f}\sqrt{g+hx}\left(15af^2(g+hx)^2-2bpq(15e^2h^2-5efh(7g+hx)+f^2(23g^2+11ghx+3h^2x^2))+15bf^2(g+hx)^2\log\left(c(d(e+fx)^p)^q\right)\right)\right)}{75f^{5/2}h}$$

Antiderivative was successfully verified.

```
[In] Integrate[(g + h*x)^(3/2)*(a + b*Log[c*(d*(e + f*x)^p)^q]),x]
```

```
[Out] (2*(30*b*(f*g - e*h)^(5/2)*p*q*ArcTanh[(Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g - e
*h]] + Sqrt[f]*Sqrt[g + h*x]*(15*a*f^2*(g + h*x)^2 - 2*b*p*q*(15*e^2*h^2 -
5*e*f*h*(7*g + h*x) + f^2*(23*g^2 + 11*g*h*x + 3*h^2*x^2)) + 15*b*f^2*(g +
h*x)^2*Log[c*(d*(e + f*x)^p)^q])))/(75*f^(5/2)*h)
```

Maple [F]
time = 0.19, size = 0, normalized size = 0.00

$$\int (hx+g)^{\frac{3}{2}} \left(a+b\ln\left(c(d(fx+e)^p)^q\right)\right) dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x+g)^(3/2)*(a+b*ln(c*(d*(f*x+e)^p)^q)),x)
```

```
[Out] int((h*x+g)^(3/2)*(a+b*ln(c*(d*(f*x+e)^p)^q)),x)
```

Maxima [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^(3/2)*(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(%e*h-f*g>0)', see `assume?` for mor
e detai
```

Fricas [B] Leaf count of result is larger than twice the leaf count of optimal. 318 vs. 2(148) = 296.
time = 0.42, size = 647, normalized size = 3.78

$$\left[\frac{2\left(15\left(bf^2g^2pq-2bfghpqe+bh^2pqe^2\right)\sqrt{\frac{fg-he}{f}}\log\left(\frac{fhx+2fg+2\sqrt{hx+g}\,f\sqrt{\frac{fg-he}{f}}-he}{fx+e}\right)-\left(46bf^2g^2pq+30bh^2pqe^2-15af^2g^2+3\left(2bf^2h^2pq-5af^2h^2\right)x^2+2\left(11bf^2ghpq-15af^2gh\right)x-10\left(bfh^2pqx+7bfghpq\right)e-15\left(bf^2h^2pqx^2+2bf^2ghpqx+bf^2g^2pq\right)\log\left(fx+e\right)-15\left(bf^2h^2x^2+2bf^2ghx+bf^2g^2\right)\log\left(c\right)-15\left(bf^2h^2qx^2+2bf^2ghqx+bf^2g^2q\right)\log\left(d\right)\right)\sqrt{hx+g}\right)}{75f^2h},\ \frac{2\left(30\left(bf^2g^2pq-2bfghpqe+bh^2pqe^2\right)\sqrt{-\frac{fg-he}{f}}\arctan\left(-\frac{\sqrt{hx+g}\,f\sqrt{-\frac{fg-he}{f}}}{fg-he}\right)-\left(46bf^2g^2pq+30bh^2pqe^2-15af^2g^2+3\left(2bf^2h^2pq-5af^2h^2\right)x^2+2\left(11bf^2ghpq-15af^2gh\right)x-10\left(bfh^2pqx+7bfghpq\right)e-15\left(bf^2h^2pqx^2+2bf^2ghpqx+bf^2g^2pq\right)\log\left(fx+e\right)-15\left(bf^2h^2x^2+2bf^2ghx+bf^2g^2\right)\log\left(c\right)-15\left(bf^2h^2qx^2+2bf^2ghqx+bf^2g^2q\right)\log\left(d\right)\right)\sqrt{hx+g}\right)}{75f^2h}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^(3/2)*(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="fricas")
```

```
[Out] [2/75*(15*(b*f^2*g^2*p*q - 2*b*f*g*h*p*q*e + b*h^2*p*q*e^2)*sqrt((f*g - h*e
)/f)*log((f*h*x + 2*f*g + 2*sqrt(h*x + g)*f*sqrt((f*g - h*e)/f) - h*e)/(f*x
 + e)) - (46*b*f^2*g^2*p*q + 30*b*h^2*p*q*e^2 - 15*a*f^2*g^2 + 3*(2*b*f^2*h
^2*p*q - 5*a*f^2*h^2)*x^2 + 2*(11*b*f^2*g*h*p*q - 15*a*f^2*g*h)*x - 10*(b*f
*h^2*p*q*x + 7*b*f*g*h*p*q)*e - 15*(b*f^2*h^2*p*q*x^2 + 2*b*f^2*g*h*p*q*x +
 b*f^2*g^2*p*q)*log(f*x + e) - 15*(b*f^2*h^2*x^2 + 2*b*f^2*g*h*x + b*f^2*g^
2)*log(c) - 15*(b*f^2*h^2*q*x^2 + 2*b*f^2*g*h*q*x + b*f^2*g^2*q)*log(d))*sq
rt(h*x + g))/(f^2*h), 2/75*(30*(b*f^2*g^2*p*q - 2*b*f*g*h*p*q*e + b*h^2*p*q
*e^2)*sqrt(-(f*g - h*e)/f)*arctan(-sqrt(h*x + g)*f*sqrt(-(f*g - h*e)/f)/(f*
g - h*e)) - (46*b*f^2*g^2*p*q + 30*b*h^2*p*q*e^2 - 15*a*f^2*g^2 + 3*(2*b*f^
2*h^2*p*q - 5*a*f^2*h^2)*x^2 + 2*(11*b*f^2*g*h*p*q - 15*a*f^2*g*h)*x - 10*(
b*f*h^2*p*q*x + 7*b*f*g*h*p*q)*e - 15*(b*f^2*h^2*p*q*x^2 + 2*b*f^2*g*h*p*q*
x + b*f^2*g^2*p*q)*log(f*x + e) - 15*(b*f^2*h^2*x^2 + 2*b*f^2*g*h*x + b*f^2
*g^2)*log(c) - 15*(b*f^2*h^2*q*x^2 + 2*b*f^2*g*h*q*x + b*f^2*g^2*q)*log(d))
*sqrt(h*x + g))/(f^2*h)]
```

Sympy [A]
time = 58.76, size = 484, normalized size = 2.83

$$ag\left(\begin{cases}\sqrt{g}\,x & \text{for}\ h=0\\ \frac{2(g+hx)^{\frac{3}{2}}}{3h} & \text{otherwise}\end{cases}\right)+\frac{2a\left(-\frac{g(g+hx)^{\frac{3}{2}}}{3}+\frac{(g+hx)^{\frac{5}{2}}}{5}\right)}{h}+\frac{2bg\left(-\frac{2fpq\left(\frac{h(g+hx)^{\frac{3}{2}}}{3f}+\frac{\sqrt{g+hx}\,(-eh^2+fgh)}{f^2}+\frac{h(eh-fg)^2\operatorname{atan}\left(\frac{\sqrt{g+hx}}{\sqrt{\frac{eh-fg}{f}}}\right)}{f^3\sqrt{\frac{eh-fg}{f}}}\right)}{3h}+\frac{(g+hx)^{\frac{3}{2}}\log\left(c\left(d\left(e-\frac{fg}{h}+\frac{f(g+hx)}{h}\right)^p\right)^q\right)}{3}\right)}{h}+\frac{2b\left(-\frac{2fpq\left(\frac{h(g+hx)^{\frac{5}{2}}}{5f}+\frac{(g+hx)^{\frac{3}{2}}(-eh^2+fgh)}{3f^2}+\frac{\sqrt{g+hx}\,(e^2h^3-2efgh^2+f^2g^2h)}{f^3}-\frac{h(eh-fg)^3\operatorname{atan}\left(\frac{\sqrt{g+hx}}{\sqrt{\frac{eh-fg}{f}}}\right)}{f^4\sqrt{\frac{eh-fg}{f}}}\right)}{5h}-g\left(-\frac{2fpq\left(\frac{h(g+hx)^{\frac{3}{2}}}{3f}+\frac{\sqrt{g+hx}\,(-eh^2+fgh)}{f^2}+\frac{h(eh-fg)^2\operatorname{atan}\left(\frac{\sqrt{g+hx}}{\sqrt{\frac{eh-fg}{f}}}\right)}{f^3\sqrt{\frac{eh-fg}{f}}}\right)}{3h}+\frac{(g+hx)^{\frac{3}{2}}\log\left(c\left(d\left(e-\frac{fg}{h}+\frac{f(g+hx)}{h}\right)^p\right)^q\right)}{3}\right)+\frac{(g+hx)^{\frac{5}{2}}\log\left(c\left(d\left(e-\frac{fg}{h}+\frac{f(g+hx)}{h}\right)^p\right)^q\right)}{5}\right)}{h}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)**(3/2)*(a+b*ln(c*(d*(f*x+e)**p)**q)),x)
```

```
[Out] a*g*Piecewise((sqrt(g)*x, Eq(h, 0)), (2*(g + h*x)**(3/2)/(3*h), True)) + 2*
a*(-g*(g + h*x)**(3/2)/3 + (g + h*x)**(5/2)/5)/h + 2*b*g*(-2*f*p*q*(h*(g +
h*x)**(3/2)/(3*f) + sqrt(g + h*x)*(-e*h**2 + f*g*h)/f**2 + h*(e*h - f*g)**2
*atan(sqrt(g + h*x)/sqrt((e*h - f*g)/f))/(f**3*sqrt((e*h - f*g)/f)))/(3*h)
+ (g + h*x)**(3/2)*log(c*(d*(e - f*g/h + f*(g + h*x)/h)**p)**q)/3)/h + 2*b*
(-2*f*p*q*(h*(g + h*x)**(5/2)/(5*f) + (g + h*x)**(3/2)*(-e*h**2 + f*g*h)/(3
*f**2) + sqrt(g + h*x)*(e**2*h**3 - 2*e*f*g*h**2 + f**2*g**2*h)/f**3 - h*(e
*h - f*g)**3*atan(sqrt(g + h*x)/sqrt((e*h - f*g)/f))/(f**4*sqrt((e*h - f*g)
/f)))/(5*h) - g*(-2*f*p*q*(h*(g + h*x)**(3/2)/(3*f) + sqrt(g + h*x)*(-e*h**
2 + f*g*h)/f**2 + h*(e*h - f*g)**2*atan(sqrt(g + h*x)/sqrt((e*h - f*g)/f))/
(f**3*sqrt((e*h - f*g)/f)))/(3*h) + (g + h*x)**(3/2)*log(c*(d*(e - f*g/h +
f*(g + h*x)/h)**p)**q)/3) + (g + h*x)**(5/2)*log(c*(d*(e - f*g/h + f*(g + h
*x)/h)**p)**q)/5)/h
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^(3/2)*(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="giac")
```

```
[Out] integrate((h*x + g)^(3/2)*(b*log(((f*x + e)^p*d)^q*c) + a), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int (g+h\,x)^{3/2}\,\left(a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g + h*x)^(3/2)*(a + b*log(c*(d*(e + f*x)^p)^q)),x)
```

```
[Out] int((g + h*x)^(3/2)*(a + b*log(c*(d*(e + f*x)^p)^q)), x)
```

3.483 $\int \sqrt{g+hx}\,(a+b\log(c(d(e+fx)^p)^q))\,dx$

Optimal. Leaf size=139

$$-\frac{4b(fg-eh)pq\sqrt{g+hx}}{3fh}-\frac{4bpq(g+hx)^{3/2}}{9h}+\frac{4b(fg-eh)^{3/2}pq\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)}{3f^{3/2}h}+\frac{2(g+hx)^{3/2}\,(a$$

```
[Out] -4/9*b*p*q*(h*x+g)^(3/2)/h+4/3*b*(-e*h+f*g)^(3/2)*p*q*arctanh(f^(1/2)*(h*x+
g)^(1/2)/(-e*h+f*g)^(1/2))/f^(3/2)/h+2/3*(h*x+g)^(3/2)*(a+b*ln(c*(d*(f*x+e)
^p)^q))/h-4/3*b*(-e*h+f*g)*p*q*(h*x+g)^(1/2)/f/h
```

Rubi [A]

time = 0.13, antiderivative size = 139, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}} = 0.179$, Rules used = {2442, 52, 65, 214, 2495}

$$\frac{2(g+hx)^{3/2}\,(a+b\log(c(d(e+fx)^p)^q))}{3h}+\frac{4bpq(fg-eh)^{3/2}\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)}{3f^{3/2}h}-\frac{4bpq\sqrt{g+hx}\,(fg-eh)}{3fh}-\frac{4bpq(g+hx)^{3/2}}{9h}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[g + h*x]*(a + b*Log[c*(d*(e + f*x)^p)^q]),x]
```

```
[Out] (-4*b*(f*g - e*h)*p*q*Sqrt[g + h*x])/(3*f*h) - (4*b*p*q*(g + h*x)^(3/2))/(9
*h) + (4*b*(f*g - e*h)^(3/2)*p*q*ArcTanh[(Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g -
 e*h]])/(3*f^(3/2)*h) + (2*(g + h*x)^(3/2)*(a + b*Log[c*(d*(e + f*x)^p)^q])
)/(3*h)
```

Rule 52

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
(a + b*x)^(m + 1)*((c + d*x)^n/(b*(m + n + 1))), x] + Dist[n*((b*c - a*d)/(
b*(m + n + 1))), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 65

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - a*(d/b) +
d*(x^p/b))^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 214

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-a/b, 2]/a)*ArcTanh[x
/Rt[-a/b, 2]], x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 2442

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[(f + g*x)^(q + 1)*((a + b*Log[c*(d + e*x)^n])/(
g*(q + 1))), x] - Dist[b*e*(n/(g*(q + 1))), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 2495

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \sqrt{g+hx}\,(a+b\log(c(d(e+fx)^p)^q))\,dx = \text{Subst}\left(\int \sqrt{g+hx}\,(a+b\log(cd^q(e+fx)^{pq}))\,dx, cd^q(e+f\right.$$

$$= \frac{2(g+hx)^{3/2}(a+b\log(c(d(e+fx)^p)^q))}{3h} - \text{Subst}\left(\frac{(2bfpq)\int}{}\right.$$

$$= -\frac{4bpq(g+hx)^{3/2}}{9h} + \frac{2(g+hx)^{3/2}(a+b\log(c(d(e+fx)^p)^q)}{3h}$$

$$= -\frac{4b(fg-eh)pq\sqrt{g+hx}}{3fh} - \frac{4bpq(g+hx)^{3/2}}{9h} + \frac{2(g+hx)^{3/}}{}$$

$$= -\frac{4b(fg-eh)pq\sqrt{g+hx}}{3fh} - \frac{4bpq(g+hx)^{3/2}}{9h} + \frac{2(g+hx)^{3/}}{}$$

$$= -\frac{4b(fg-eh)pq\sqrt{g+hx}}{3fh} - \frac{4bpq(g+hx)^{3/2}}{9h} + \frac{4b(fg-eh}{}$$

Mathematica [A]
time = 0.23, size = 124, normalized size = 0.89

$$\frac{2\left(6b(fg-eh)^{3/2}pq\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)+\sqrt{f}\sqrt{g+hx}\,(3af(g+hx)-2bpq(4fg-3eh+fhx)+3bf(g+hx)\log\left(c(d(e+fx)^p)^q\right))\right)}{9f^{3/2}h}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[g + h*x]*(a + b*Log[c*(d*(e + f*x)^p)^q]),x]
```

```
[Out] (2*(6*b*(f*g - e*h)^(3/2)*p*q*ArcTanh[(Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g - e*
h]] + Sqrt[f]*Sqrt[g + h*x]*(3*a*f*(g + h*x) - 2*b*p*q*(4*f*g - 3*e*h + f*h
*x) + 3*b*f*(g + h*x)*Log[c*(d*(e + f*x)^p)^q])))/(9*f^(3/2)*h)
```

Maple [F]
time = 0.22, size = 0, normalized size = 0.00

$$\int \sqrt{hx+g}\,\left(a+b\ln\left(c\left(d(fx+e)^p\right)^q\right)\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x+g)^(1/2)*(a+b*ln(c*(d*(f*x+e)^p)^q)),x)
```

```
[Out] int((h*x+g)^(1/2)*(a+b*ln(c*(d*(f*x+e)^p)^q)),x)
```

Maxima [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^(1/2)*(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(%e*h-f*g>0)', see `assume?` for mor
e detai
```

Fricas [A]
time = 0.42, size = 366, normalized size = 2.63

$$\left[-\frac{2\left(3\,(bfgpq-bhpqe)\sqrt{\frac{fg-he}{f}}\log\left(\frac{fhx+2\,fg-2\,\sqrt{hx+g}\,f\sqrt{\frac{fg-he}{f}}-he}{fx+e}\right)+(8\,bfgpq-6\,bhpqe-3\,afg+(2\,bfhpq-3\,afh)x-3\,(bfhpqx+bfgpq)\log\left(fx+e\right)-3\,(bfhx+bfg)\log\left(c\right)-3\,(bfhqx+bfgq)\log\left(d\right))\sqrt{hx+g}\right)}{9\,fh},\ \frac{2\left(6\,(bfgpq-bhpqe)\sqrt{-\frac{fg-he}{f}}\arctan\left(-\frac{\sqrt{hx+g}\,f\sqrt{-\frac{fg-he}{f}}}{fg-he}\right)-(8\,bfgpq-6\,bhpqe-3\,afg+(2\,bfhpq-3\,afh)x-3\,(bfhpqx+bfgpq)\log\left(fx+e\right)-3\,(bfhx+bfg)\log\left(c\right)-3\,(bfhqx+bfgq)\log\left(d\right))\sqrt{hx+g}\right)}{9\,fh}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^(1/2)*(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="fricas")
```

```
[Out] [-2/9*(3*(b*f*g*p*q - b*h*p*q*e)*sqrt((f*g - h*e)/f)*log((f*h*x + 2*f*g - 2
*sqrt(h*x + g)*f*sqrt((f*g - h*e)/f) - h*e)/(f*x + e)) + (8*b*f*g*p*q - 6*b
*h*p*q*e - 3*a*f*g + (2*b*f*h*p*q - 3*a*f*h)*x - 3*(b*f*h*p*q*x + b*f*g*p*q
)*log(f*x + e) - 3*(b*f*h*x + b*f*g)*log(c) - 3*(b*f*h*q*x + b*f*g*q)*log(d
))*sqrt(h*x + g))/(f*h), 2/9*(6*(b*f*g*p*q - b*h*p*q*e)*sqrt(-(f*g - h*e)/f
)*arctan(-sqrt(h*x + g)*f*sqrt(-(f*g - h*e)/f)/(f*g - h*e)) - (8*b*f*g*p*q
- 6*b*h*p*q*e - 3*a*f*g + (2*b*f*h*p*q - 3*a*f*h)*x - 3*(b*f*h*p*q*x + b*f*
g*p*q)*log(f*x + e) - 3*(b*f*h*x + b*f*g)*log(c) - 3*(b*f*h*q*x + b*f*g*q)*
log(d))*sqrt(h*x + g))/(f*h)]
```

Sympy [A]
time = 3.05, size = 144, normalized size = 1.04

$$\frac{2\left(\frac{a(g+hx)^{\frac{3}{2}}}{3}+b\left(-\frac{2fpq\left(\frac{h(g+hx)^{\frac{3}{2}}}{3f}+\frac{\sqrt{g+hx}\left(-eh^2+fgh\right)}{f^2}+\frac{h(eh-fg)^2\operatorname{atan}\left(\frac{\sqrt{g+hx}}{\sqrt{\frac{eh-fg}{f}}}\right)}{f^3\sqrt{\frac{eh-fg}{f}}}\right)}{3h}+\frac{(g+hx)^{\frac{3}{2}}\log\left(c\left(d\left(e-\frac{fg}{h}+\frac{f(g+hx)}{h}\right)^p\right)^q\right)}{3}\right)\right)}{h}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)**(1/2)*(a+b*ln(c*(d*(f*x+e)**p)**q)),x)
```

```
[Out] 2*(a*(g + h*x)**(3/2)/3 + b*(-2*f*p*q*(h*(g + h*x)**(3/2)/(3*f) + sqrt(g +
h*x)*(-e*h**2 + f*g*h)/f**2 + h*(e*h - f*g)**2*atan(sqrt(g + h*x)/sqrt((e*h
 - f*g)/f))/(f**3*sqrt((e*h - f*g)/f)))/(3*h) + (g + h*x)**(3/2)*log(c*(d*(
e - f*g/h + f*(g + h*x)/h)**p)**q)/3))/h
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^(1/2)*(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="giac")
```

```
[Out] integrate(sqrt(h*x + g)*(b*log(((f*x + e)^p*d)^q*c) + a), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int \sqrt{g+h\,x}\,\left(a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g + h*x)^(1/2)*(a + b*log(c*(d*(e + f*x)^p)^q)),x)
[Out] int((g + h*x)^(1/2)*(a + b*log(c*(d*(e + f*x)^p)^q)), x)
```

3.484 $\int \frac{a+b\log(c(d(e+fx)^p)^q)}{\sqrt{g+hx}}\,dx$

Optimal. Leaf size=103

$$-\frac{4bpq\sqrt{g+hx}}{h}+\frac{4b\sqrt{fg-eh}\,pq\tanh^{-1}\left(\frac{\sqrt{f}\,\sqrt{g+hx}}{\sqrt{fg-eh}}\right)}{\sqrt{f}\,h}+\frac{2\sqrt{g+hx}\,(a+b\log(c(d(e+fx)^p)^q))}{h}$$

```
[Out] 4*b*p*q*arctanh(f^(1/2)*(h*x+g)^(1/2)/(-e*h+f*g)^(1/2))*(-e*h+f*g)^(1/2)/h/
f^(1/2)-4*b*p*q*(h*x+g)^(1/2)/h+2*(a+b*ln(c*(d*(f*x+e)^p)^q))*(h*x+g)^(1/2)
/h
```

Rubi [A]
time = 0.10, antiderivative size = 103, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}} = 0.179$, Rules used = {2442, 52, 65, 214, 2495}

$$\frac{2\sqrt{g+hx}\,(a+b\log(c(d(e+fx)^p)^q))}{h}+\frac{4bpq\sqrt{fg-eh}\,\tanh^{-1}\left(\frac{\sqrt{f}\,\sqrt{g+hx}}{\sqrt{fg-eh}}\right)}{\sqrt{f}\,h}-\frac{4bpq\sqrt{g+hx}}{h}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])/Sqrt[g + h*x],x]
```

```
[Out] (-4*b*p*q*Sqrt[g + h*x])/h + (4*b*Sqrt[f*g - e*h]*p*q*ArcTanh[(Sqrt[f]*Sqrt
[g + h*x])/Sqrt[f*g - e*h]])/(Sqrt[f]*h) + (2*Sqrt[g + h*x]*(a + b*Log[c*(d
*(e + f*x)^p)^q]))/h
```

Rule 52

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
(a + b*x)^(m + 1)*((c + d*x)^n/(b*(m + n + 1))), x] + Dist[n*((b*c - a*d)/(
b*(m + n + 1))), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 65

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - a*(d/b) +
d*(x^p/b))^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 214

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-a/b, 2]/a)*ArcTanh[x
/Rt[-a/b, 2]], x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 2442

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[(f + g*x)^(q + 1)*((a + b*Log[c*(d + e*x)^n])/(
g*(q + 1))), x] - Dist[b*e*(n/(g*(q + 1))), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 2495

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{a+b\log\left(c(d(e+fx)^p)^q\right)}{\sqrt{g+hx}}\,dx = \text{Subst}\left(\int \frac{a+b\log\left(cd^q(e+fx)^{pq}\right)}{\sqrt{g+hx}}\,dx, cd^q(e+fx)^{pq}, c(d(e+fx)^p)^q\right)$$

$$= \frac{2\sqrt{g+hx}\,\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)}{h} - \text{Subst}\left(\frac{(2bfpq)\int \frac{\sqrt{g+hx}}{e+fx}\,dx}{h}\right.$$

$$= -\frac{4bpq\sqrt{g+hx}}{h} + \frac{2\sqrt{g+hx}\,\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)}{h} - \text{Subst}\left(\frac{(2b(}{}\right.$$

$$= -\frac{4bpq\sqrt{g+hx}}{h} + \frac{2\sqrt{g+hx}\,\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)}{h} - \text{Subst}\left(\frac{(4b(}{}\right.$$

$$= -\frac{4bpq\sqrt{g+hx}}{h} + \frac{4b\sqrt{fg-eh}\,pq\tanh^{-1}\left(\frac{\sqrt{f}\,\sqrt{g+hx}}{\sqrt{fg-eh}}\right)}{\sqrt{f}\,h} + \frac{2\sqrt{g+}}{}$$

Mathematica [A]

time = 0.20, size = 89, normalized size = 0.86

$$\frac{2\left(\frac{2b\sqrt{fg-eh}\,pq\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)}{\sqrt{f}}+\sqrt{g+hx}\,(a-2bpq+b\log\left(c(d(e+fx)^p)^q\right))\right)}{h}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])/Sqrt[g + h*x],x]
```

```
[Out] (2*((2*b*Sqrt[f*g - e*h]*p*q*ArcTanh[(Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h
]])/Sqrt[f] + Sqrt[g + h*x]*(a - 2*b*p*q + b*Log[c*(d*(e + f*x)^p)^q])))/h
```

Maple [A]
time = 0.77, size = 147, normalized size = 1.43

method	result
derivativedivides	$\frac{2\sqrt{hx+g}\,a+2b\ln\left(c\left(d\left(\frac{f(hx+g)+eh-fg}{h}\right)^p\right)^q\right)\sqrt{hx+g}-4bqp\sqrt{hx+g}+\frac{4bqp\arctan\left(\frac{f\sqrt{hx+g}}{\sqrt{(eh-fg)f}}\right.}{\sqrt{(eh-fg)f}}}{h}$
default	$\frac{2\sqrt{hx+g}\,a+2b\ln\left(c\left(d\left(\frac{f(hx+g)+eh-fg}{h}\right)^p\right)^q\right)\sqrt{hx+g}-4bqp\sqrt{hx+g}+\frac{4bqp\arctan\left(\frac{f\sqrt{hx+g}}{\sqrt{(eh-fg)f}}\right.}{\sqrt{(eh-fg)f}}}{h}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(d*(f*x+e)^p)^q))/(h*x+g)^(1/2),x,method=_RETURNVERBOSE)
```

```
[Out] 2/h*((h*x+g)^(1/2)*a+b*ln(c*(d*((f*(h*x+g)+e*h-f*g)/h)^p)^q)*(h*x+g)^(1/2)-
2*b*q*p*(h*x+g)^(1/2)+2*b*q*p/((e*h-f*g)*f)^(1/2)*arctan(f*(h*x+g)^(1/2)/((
e*h-f*g)*f)^(1/2))*e*h-2*b*q*p*f/((e*h-f*g)*f)^(1/2)*arctan(f*(h*x+g)^(1/2)
/((e*h-f*g)*f)^(1/2))*g)
```

Maxima [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g)^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
```

```
elp (example of legal syntax is 'assume(%e*h-f*g>0)', see `assume?` for mor
e detai
```

Fricas [A]
time = 0.38, size = 210, normalized size = 2.04

$$\left[\frac{2\left(bpq\sqrt{\frac{fg-he}{f}}\log\left(\frac{fhx+2fg+2\sqrt{hx+g}\,f\sqrt{\frac{fg-he}{f}}-he}{fx+e}\right)+\left(bpq\log\left(fx+e\right)-2bpq+bq\log\left(d\right)+b\log\left(c\right)+a\right)\sqrt{hx+g}\right)}{h},\ \frac{2\left(2bpq\sqrt{-\frac{fg-he}{f}}\arctan\left(-\frac{\sqrt{hx+g}\,f\sqrt{-\frac{fg-he}{f}}}{fg-he}\right)+\left(bpq\log\left(fx+e\right)-2bpq+bq\log\left(d\right)+b\log\left(c\right)+a\right)\sqrt{hx+g}\right)}{h}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g)^(1/2),x, algorithm="fricas")
```

```
[Out] [2*(b*p*q*sqrt((f*g - h*e)/f)*log((f*h*x + 2*f*g + 2*sqrt(h*x + g)*f*sqrt((
f*g - h*e)/f) - h*e)/(f*x + e)) + (b*p*q*log(f*x + e) - 2*b*p*q + b*q*log(d
) + b*log(c) + a)*sqrt(h*x + g))/h, 2*(2*b*p*q*sqrt(-(f*g - h*e)/f)*arctan(
-sqrt(h*x + g)*f*sqrt(-(f*g - h*e)/f)/(f*g - h*e)) + (b*p*q*log(f*x + e) -
2*b*p*q + b*q*log(d) + b*log(c) + a)*sqrt(h*x + g))/h]
```

Sympy [B] Leaf count of result is larger than twice the leaf count of optimal. 347 vs. $2(95) = 190$.
time = 17.10, size = 347, normalized size = 3.37

$$\begin{cases}\frac{-\frac{2ag}{\sqrt{g+hx}}-2a\left(-\frac{g}{\sqrt{g+hx}}-\sqrt{g+hx}\right)-2bg\left(\frac{2fpq\operatorname{atan}\left(\frac{1}{\sqrt{\frac{f}{eh-fg}}\sqrt{g+hx}}\right)}{\sqrt{\frac{f}{eh-fg}}\left(eh-fg\right)}+\frac{\log\left(c\left(d\left(e+fx\right)^{p}\right)^{q}\right)}{\sqrt{g+hx}}\right)-2b\left(-\frac{2fpq\left(-\frac{h\sqrt{g+hx}}{f}-\frac{h\operatorname{atan}\left(\frac{1}{\sqrt{\frac{f}{eh-fg}}\sqrt{g+hx}}\right)}{f\sqrt{\frac{f}{eh-fg}}}\right)}{h}-g\left(\frac{2fpq\operatorname{atan}\left(\frac{1}{\sqrt{\frac{f}{eh-fg}}\sqrt{g+hx}}\right)}{\sqrt{\frac{f}{eh-fg}}\left(eh-fg\right)}+\frac{\log\left(c\left(d\left(e-\frac{fg}{h}+\frac{f(g+hx)}{h}\right)^{p}\right)^{q}\right)}{\sqrt{g+hx}}\right)-\sqrt{g+hx}\log\left(c\left(d\left(e-\frac{fg}{h}+\frac{f(g+hx)}{h}\right)^{p}\right)^{q}\right)\right)}{h} & \text{for}\: h\neq 0\\ \frac{ax+b\left(-fpq\left(-\frac{e\left(\begin{cases}\frac{x}{e} & \text{for}\: f=0\\ \frac{\log\left(e+fx\right)}{f} & \text{otherwise}\end{cases}\right)}{f}+\frac{x}{f}\right)+x\log\left(c\left(d\left(e+fx\right)^{p}\right)^{q}\right)\right)}{\sqrt{g}} & \text{otherwise}\end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))/(h*x+g)**(1/2),x)
```

```
[Out] Piecewise(((-2*a*g/sqrt(g + h*x) - 2*a*(-g/sqrt(g + h*x) - sqrt(g + h*x)) -
 2*b*g*(2*f*p*q*atan(1/(sqrt(f/(e*h - f*g))*sqrt(g + h*x)))/(sqrt(f/(e*h -
f*g))*(e*h - f*g)) + log(c*(d*(e + f*x)**p)**q)/sqrt(g + h*x)) - 2*b*(-2*f*
p*q*(-h*sqrt(g + h*x)/f - h*atan(1/(sqrt(f/(e*h - f*g))*sqrt(g + h*x)))/(f*
sqrt(f/(e*h - f*g))))/h - g*(2*f*p*q*atan(1/(sqrt(f/(e*h - f*g))*sqrt(g + h
*x)))/(sqrt(f/(e*h - f*g))*(e*h - f*g)) + log(c*(d*(e - f*g/h + f*(g + h*x)
/h)**p)**q)/sqrt(g + h*x)) - sqrt(g + h*x)*log(c*(d*(e - f*g/h + f*(g + h*x
)/h)**p)**q)))/h, Ne(h, 0)), ((a*x + b*(-f*p*q*(-e*Piecewise((x/e, Eq(f, 0)
), (log(e + f*x)/f, True))/f + x/f) + x*log(c*(d*(e + f*x)**p)**q)))/sqrt(g
), True))
```

Giac [A]
time = 3.04, size = 128, normalized size = 1.24

$$-\frac{2\left(\left(2\,f\left(\frac{(fg-he)\arctan\left(\frac{\sqrt{hx+g}\,f}{\sqrt{-f^2g+fhe}}\right)}{\sqrt{-f^2g+fhe}\,f}+\frac{\sqrt{hx+g}}{f}\right)-\sqrt{hx+g}\,\log\left(fx+e\right)\right)bpq-\sqrt{hx+g}\,bq\log\left(d\right)-\sqrt{hx+g}\,b\log\left(c\right)-\sqrt{hx+g}\,a\right)}{h}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g)^(1/2),x, algorithm="giac")
```

```
[Out] -2*((2*f*((f*g - h*e)*arctan(sqrt(h*x + g)*f/sqrt(-f^2*g + f*h*e))/(sqrt(-f
^2*g + f*h*e)*f) + sqrt(h*x + g)/f) - sqrt(h*x + g)*log(f*x + e))*b*p*q - s
qrt(h*x + g)*b*q*log(d) - sqrt(h*x + g)*b*log(c) - sqrt(h*x + g)*a)/h
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)}{\sqrt{g+h\,x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d*(e + f*x)^p)^q))/(g + h*x)^(1/2),x)
```

```
[Out] int((a + b*log(c*(d*(e + f*x)^p)^q))/(g + h*x)^(1/2), x)
```

3.485 $\int \frac{a+b\log(c(d(e+fx)^p)^q)}{(g+hx)^{3/2}}\,dx$

Optimal. Leaf size=86

$$-\frac{4b\sqrt{f}\,pq\tanh^{-1}\left(\frac{\sqrt{f}\,\sqrt{g+hx}}{\sqrt{fg-eh}}\right)}{h\sqrt{fg-eh}}-\frac{2(a+b\log\left(c(d(e+fx)^p)^q\right))}{h\sqrt{g+hx}}$$

```
[Out] -4*b*p*q*arctanh(f^(1/2)*(h*x+g)^(1/2)/(-e*h+f*g)^(1/2))*f^(1/2)/h/(-e*h+f*
g)^(1/2)-2*(a+b*ln(c*(d*(f*x+e)^p)^q))/h/(h*x+g)^(1/2)
```

Rubi [A]
time = 0.09, antiderivative size = 86, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}} = 0.143$, Rules used = {2442, 65, 214, 2495}

$$-\frac{2(a+b\log\left(c(d(e+fx)^p)^q\right))}{h\sqrt{g+hx}}-\frac{4b\sqrt{f}\,pq\tanh^{-1}\left(\frac{\sqrt{f}\,\sqrt{g+hx}}{\sqrt{fg-eh}}\right)}{h\sqrt{fg-eh}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])/(g + h*x)^(3/2),x]
```

```
[Out] (-4*b*Sqrt[f]*p*q*ArcTanh[(Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h]])/(h*Sqrt
[f*g - e*h]) - (2*(a + b*Log[c*(d*(e + f*x)^p)^q]))/(h*Sqrt[g + h*x])
```

Rule 65

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - a*(d/b) +
d*(x^p/b))^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 214

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-a/b, 2]/a)*ArcTanh[x
/Rt[-a/b, 2]], x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 2442

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[(f + g*x)^(q + 1)*((a + b*Log[c*(d + e*x)^n])/(
g*(q + 1))), x] - Dist[b*e*(n/(g*(q + 1))), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
```

```
eQ[q, -1]
```

Rule 2495

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] && !IntegerQ[n] && !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{a+b\log\left(c(d(e+fx)^p)^q\right)}{(g+hx)^{3/2}}\,dx = \text{Subst}\left(\int \frac{a+b\log\left(cd^q(e+fx)^{pq}\right)}{(g+hx)^{3/2}}\,dx, cd^q(e+fx)^{pq}, c(d(e+fx)^p)^q\right)$$

$$= -\frac{2(a+b\log\left(c(d(e+fx)^p)^q\right))}{h\sqrt{g+hx}} + \text{Subst}\left(\frac{(2bfpq)\int \frac{1}{(e+fx)\sqrt{g+hx}}\,dx}{h}, c\right.$$

$$= -\frac{2(a+b\log\left(c(d(e+fx)^p)^q\right))}{h\sqrt{g+hx}} + \text{Subst}\left(\frac{(4bfpq)\text{Subst}\left(\int \frac{1}{e-\frac{fg}{h}+\frac{fx^2}{h}}\,dx, \right.}{h^2}\right.$$

$$= -\frac{4b\sqrt{f}\,pq\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)}{h\sqrt{fg-eh}} - \frac{2(a+b\log\left(c(d(e+fx)^p)^q\right))}{h\sqrt{g+hx}}$$

Mathematica [A]
time = 0.18, size = 84, normalized size = 0.98

$$\frac{-\frac{4b\sqrt{f}\,pq\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)}{\sqrt{fg-eh}} - \frac{2(a+b\log(c(d(e+fx)^p)^q))}{\sqrt{g+hx}}}{h}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])/(g + h*x)^(3/2),x]
[Out] ((-4*b*Sqrt[f]*p*q*ArcTanh[(Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h]])/Sqrt[f
*g - e*h] - (2*(a + b*Log[c*(d*(e + f*x)^p)^q]))/Sqrt[g + h*x])/h
```

Maple [F]
time = 0.19, size = 0, normalized size = 0.00

$$\int \frac{a+b\ln\left(c(d(fx+e)^p)^q\right)}{(hx+g)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(d*(f*x+e)^p)^q))/(h*x+g)^(3/2),x)
[Out] int((a+b*ln(c*(d*(f*x+e)^p)^q))/(h*x+g)^(3/2),x)
```

Maxima [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g)^(3/2),x, algorithm="maxima")
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(%e*h-f*g>0)', see `assume?` for mor
e detai
```

Fricas [A]
time = 0.42, size = 250, normalized size = 2.91

$$\left[\frac{2\left((bhpqx+bgpq)\sqrt{\frac{f}{fg-he}}\log\left(\frac{fhx+2\,fg-2\,(fg-he)\sqrt{hx+g}\sqrt{\frac{f}{fg-he}}-he}{fx+e}\right)-(bpq\log(fx+e)+bq\log(d)+b\log(c)+a)\sqrt{hx+g}\right)}{h^2x+gh}, -\frac{2\left(2\,(bhpqx+bgpq)\sqrt{-\frac{f}{fg-he}}\arctan\left(-\frac{(fg-he)\sqrt{hx+g}\sqrt{-\frac{f}{fg-he}}}{fhx+fg}\right)+(bpq\log(fx+e)+bq\log(d)+b\log(c)+a)\sqrt{hx+g}\right)}{h^2x+gh}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g)^(3/2),x, algorithm="fricas")
[Out] [2*((b*h*p*q*x + b*g*p*q)*sqrt(f/(f*g - h*e))*log((f*h*x + 2*f*g - 2*(f*g -
 h*e)*sqrt(h*x + g)*sqrt(f/(f*g - h*e)) - h*e)/(f*x + e)) - (b*p*q*log(f*x
+ e) + b*q*log(d) + b*log(c) + a)*sqrt(h*x + g))/(h^2*x + g*h), -2*(2*(b*h*
p*q*x + b*g*p*q)*sqrt(-f/(f*g - h*e))*arctan(-(f*g - h*e)*sqrt(h*x + g)*sqr
t(-f/(f*g - h*e))/(f*h*x + f*g)) + (b*p*q*log(f*x + e) + b*q*log(d) + b*log
(c) + a)*sqrt(h*x + g))/(h^2*x + g*h)]
```

Sympy [A]
time = 10.77, size = 90, normalized size = 1.05

$$\frac{-\frac{2a}{\sqrt{g+hx}}+2b\left(\frac{2pq\operatorname{atan}\left(\frac{\sqrt{g+hx}}{\sqrt{\frac{h\left(e-\frac{fg}{h}\right)}{f}}}\right)}{\sqrt{\frac{h\left(e-\frac{fg}{h}\right)}{f}}}-\frac{\log\left(c\left(d\left(e-\frac{fg}{h}+\frac{f(g+hx)}{h}\right)^p\right)^q\right)}{\sqrt{g+hx}}\right)}{h}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))/(h*x+g)**(3/2),x)
```

```
[Out] (-2*a/sqrt(g + h*x) + 2*b*(2*p*q*atan(sqrt(g + h*x)/sqrt(h*(e - f*g/h)/f))/
sqrt(h*(e - f*g/h)/f) - log(c*(d*(e - f*g/h + f*(g + h*x)/h)**p)**q)/sqrt(g
 + h*x)))/h
```

Giac [A]
time = 6.28, size = 99, normalized size = 1.15

$$\frac{4\,bfpq\arctan\left(\frac{\sqrt{hx+g}\,f}{\sqrt{-f^2g+fhe}}\right)}{\sqrt{-f^2g+fhe}\,h}-\frac{2\,(bpq\log\left((hx+g)f-fg+he\right)-bpq\log\left(h\right)+bq\log\left(d\right)+b\log\left(c\right)+a)}{\sqrt{hx+g}\,h}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g)^(3/2),x, algorithm="giac")
```

```
[Out] 4*b*f*p*q*arctan(sqrt(h*x + g)*f/sqrt(-f^2*g + f*h*e))/(sqrt(-f^2*g + f*h*e
)*h) - 2*(b*p*q*log((h*x + g)*f - f*g + h*e) - b*p*q*log(h) + b*q*log(d) +
b*log(c) + a)/(sqrt(h*x + g)*h)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)}{{\left(g+h\,x\right)}^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d*(e + f*x)^p)^q))/(g + h*x)^(3/2),x)
```

```
[Out] int((a + b*log(c*(d*(e + f*x)^p)^q))/(g + h*x)^(3/2), x)
```

3.486 $\int \frac{a+b\log(c(d(e+fx)^p)^q)}{(g+hx)^{5/2}}\,dx$

Optimal. Leaf size=120

$$\frac{4bfpq}{3h(fg-eh)\sqrt{g+hx}}-\frac{4bf^{3/2}pq\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)}{3h(fg-eh)^{3/2}}-\frac{2(a+b\log\left(c(d(e+fx)^p)^q\right))}{3h(g+hx)^{3/2}}$$

```
[Out] -4/3*b*f^(3/2)*p*q*arctanh(f^(1/2)*(h*x+g)^(1/2)/(-e*h+f*g)^(1/2))/h/(-e*h+
f*g)^(3/2)-2/3*(a+b*ln(c*(d*(f*x+e)^p)^q))/h/(h*x+g)^(3/2)+4/3*b*f*p*q/h/(-
e*h+f*g)/(h*x+g)^(1/2)
```

Rubi [A]
time = 0.12, antiderivative size = 120, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}} = 0.179$, Rules used = {2442, 53, 65, 214, 2495}

$$-\frac{2(a+b\log\left(c(d(e+fx)^p)^q\right))}{3h(g+hx)^{3/2}}-\frac{4bf^{3/2}pq\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)}{3h(fg-eh)^{3/2}}+\frac{4bfpq}{3h\sqrt{g+hx}\,(fg-eh)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])/(g + h*x)^(5/2),x]
```

```
[Out] (4*b*f*p*q)/(3*h*(f*g - e*h)*Sqrt[g + h*x]) - (4*b*f^(3/2)*p*q*ArcTanh[(Sqr
t[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h]])/(3*h*(f*g - e*h)^(3/2)) - (2*(a + b*L
og[c*(d*(e + f*x)^p)^q]))/(3*h*(g + h*x)^(3/2))
```

Rule 53

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
(a + b*x)^(m + 1)*((c + d*x)^(n + 1)/((b*c - a*d)*(m + 1))), x] - Dist[d*((
m + n + 2)/((b*c - a*d)*(m + 1))), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 65

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - a*(d/b) +
d*(x^p/b))^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 214

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-a/b, 2]/a)*ArcTanh[x
/Rt[-a/b, 2]], x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 2442

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[(f + g*x)^(q + 1)*((a + b*Log[c*(d + e*x)^n])/(
g*(q + 1))), x] - Dist[b*e*(n/(g*(q + 1))), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 2495

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\begin{aligned}
\int \frac{a+b\log\left(c(d(e+fx)^p)^q\right)}{(g+hx)^{5/2}}\,dx &= \text{Subst}\left(\int \frac{a+b\log\left(cd^q(e+fx)^{pq}\right)}{(g+hx)^{5/2}}\,dx, cd^q(e+fx)^{pq}, c(d(e+fx)^p)^q\right)\\
&= -\frac{2(a+b\log\left(c(d(e+fx)^p)^q\right))}{3h(g+hx)^{3/2}}+\text{Subst}\left(\frac{(2bfpq)\int \frac{1}{(e+fx)(g+hx)^{3/2}}\,dx}{3h}, cd^q\right.\\
&= \frac{4bfpq}{3h(fg-eh)\sqrt{g+hx}}-\frac{2(a+b\log\left(c(d(e+fx)^p)^q\right))}{3h(g+hx)^{3/2}}+\text{Subst}\left(\frac{(2bf^2p}{}\right.\\
&= \frac{4bfpq}{3h(fg-eh)\sqrt{g+hx}}-\frac{2(a+b\log\left(c(d(e+fx)^p)^q\right))}{3h(g+hx)^{3/2}}+\text{Subst}\left(\frac{(4bf^2p}{}\right.\\
&= \frac{4bfpq}{3h(fg-eh)\sqrt{g+hx}}-\frac{4bf^{3/2}pq\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)}{3h(fg-eh)^{3/2}}-\frac{2(a+b}{3}
\end{aligned}$$

Mathematica [A]

time = 0.32, size = 124, normalized size = 1.03

$$\frac{2\left(-\frac{2bf^{3/2}pq\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)}{(fg-eh)^{3/2}}+\frac{a(-fg+eh)+2bfpq(g+hx)+b(-fg+eh)\log(c(d(e+fx)^p)^q)}{(fg-eh)(g+hx)^{3/2}}\right)}{3h}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])/(g + h*x)^(5/2),x]
```

```
[Out] (2*((-2*b*f^(3/2)*p*q*ArcTanh[(Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h]])/(f*
g - e*h)^(3/2) + (a*(-(f*g) + e*h) + 2*b*f*p*q*(g + h*x) + b*(-(f*g) + e*h)
*Log[c*(d*(e + f*x)^p)^q])/((f*g - e*h)*(g + h*x)^(3/2))))/(3*h)
```

Maple [F]
time = 0.20, size = 0, normalized size = 0.00

$$\int \frac{a+b\ln\left(c\left(d(fx+e)^p\right)^q\right)}{(hx+g)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(d*(f*x+e)^p)^q))/(h*x+g)^(5/2),x)
```

```
[Out] int((a+b*ln(c*(d*(f*x+e)^p)^q))/(h*x+g)^(5/2),x)
```

Maxima [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g)^(5/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(%e*h-f*g>0)', see `assume?` for mor
e detai
```

Fricas [B] Leaf count of result is larger than twice the leaf count of optimal. 240 vs. 2(104) = 208.
time = 0.43, size = 491, normalized size = 4.09

$$\left[-\frac{2\left((bfh^2pqx^2+2bfghpqx+bfg^2pq)\sqrt{\frac{f}{fg-he}}\log\left(\frac{fhx+2fg+2(fg-he)\sqrt{hx+g}\sqrt{\frac{f}{fg-he}}-he}{fx+e}\right)-(2bfhpqx+2bfgpq-afg+ahe-(bfgpq-bhpqe)\log(fx+e)-(bfg-bhe)\log(c)-(bfgq-bhqe)\log(d))\sqrt{hx+g}\right)}{3(fgh^3x^2+2fg^2h^2x+fg^3h-(h^4x^2+2gh^3x+g^2h^2)e)}, -\frac{2\left(2(bfh^2pqx^2+2bfghpqx+bfg^2pq)\sqrt{-\frac{f}{fg-he}}\arctan\left(-\frac{(fg-he)\sqrt{hx+g}\sqrt{-\frac{f}{fg-he}}}{fhx+fg}\right)-(2bfhpqx+2bfgpq-afg+ahe-(bfgpq-bhpqe)\log(fx+e)-(bfg-bhe)\log(c)-(bfgq-bhqe)\log(d))\sqrt{hx+g}\right)}{3(fgh^3x^2+2fg^2h^2x+fg^3h-(h^4x^2+2gh^3x+g^2h^2)e)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g)^(5/2),x, algorithm="fricas")
```

```
[Out] [-2/3*((b*f*h^2*p*q*x^2 + 2*b*f*g*h*p*q*x + b*f*g^2*p*q)*sqrt(f/(f*g - h*e)
)*log((f*h*x + 2*f*g + 2*(f*g - h*e)*sqrt(h*x + g)*sqrt(f/(f*g - h*e)) - h*
e)/(f*x + e)) - (2*b*f*h*p*q*x + 2*b*f*g*p*q - a*f*g + a*h*e - (b*f*g*p*q -
 b*h*p*q*e)*log(f*x + e) - (b*f*g - b*h*e)*log(c) - (b*f*g*q - b*h*q*e)*log
(d))*sqrt(h*x + g))/(f*g*h^3*x^2 + 2*f*g^2*h^2*x + f*g^3*h - (h^4*x^2 + 2*g
*h^3*x + g^2*h^2)*e), -2/3*(2*(b*f*h^2*p*q*x^2 + 2*b*f*g*h*p*q*x + b*f*g^2*
p*q)*sqrt(-f/(f*g - h*e))*arctan(-(f*g - h*e)*sqrt(h*x + g)*sqrt(-f/(f*g -
h*e))/(f*h*x + f*g)) - (2*b*f*h*p*q*x + 2*b*f*g*p*q - a*f*g + a*h*e - (b*f*
g*p*q - b*h*p*q*e)*log(f*x + e) - (b*f*g - b*h*e)*log(c) - (b*f*g*q - b*h*q
*e)*log(d))*sqrt(h*x + g))/(f*g*h^3*x^2 + 2*f*g^2*h^2*x + f*g^3*h - (h^4*x^
2 + 2*g*h^3*x + g^2*h^2)*e)]
```

Sympy [A]
time = 95.07, size = 122, normalized size = 1.02

$$\frac{-\frac{2a}{3(g+hx)^{\frac{3}{2}}} + 2b\left(\frac{2fpq\left(-\frac{h}{\sqrt{g+hx}\,(eh-fg)} - \frac{h\operatorname{atan}\left(\frac{\sqrt{g+hx}}{\sqrt{\frac{eh-fg}{f}}}\right)}{\sqrt{\frac{eh-fg}{f}}\,(eh-fg)}\right)}{3h} - \frac{\log\left(c\left(d\left(e-\frac{fg}{h}+\frac{f(g+hx)}{h}\right)^{p}\right)^{q}\right)}{3(g+hx)^{\frac{3}{2}}}\right)}{h}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))/(h*x+g)**(5/2),x)
```

```
[Out] (-2*a/(3*(g + h*x)**(3/2)) + 2*b*(2*f*p*q*(-h/(sqrt(g + h*x)*(e*h - f*g)) -
 h*atan(sqrt(g + h*x)/sqrt((e*h - f*g)/f))/(sqrt((e*h - f*g)/f)*(e*h - f*g)
```

```
))/(3*h) - log(c*(d*(e - f*g/h + f*(g + h*x)/h)**p)**q)/(3*(g + h*x)**(3/2)
)))/h
```

Giac [B] Leaf count of result is larger than twice the leaf count of optimal. 209 vs. 2(104) = 208.
time = 2.73, size = 209, normalized size = 1.74

$$\frac{4\,bf^2pq\arctan\left(\frac{\sqrt{hx+g}\,f}{\sqrt{-f^2g+fhe}}\right)}{3\,\sqrt{-f^2g+fhe}\,(fgh-h^2e)}-\frac{2\,(bfgpq\log\left((hx+g)f-fg+he\right)-bhpqe\log\left((hx+g)f-fg+he\right)-bfgpq\log\left(h\right)+bhpqe\log\left(h\right)-2\,(hx+g)bfpq+bfgq\log\left(d\right)-bhqe\log\left(d\right)+bfg\log\left(c\right)-bhe\log\left(c\right)+afg-ahe)}{3\left((hx+g)^{\frac{3}{2}}fgh-(hx+g)^{\frac{3}{2}}h^2e\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g)^(5/2),x, algorithm="giac")
```

```
[Out] 4/3*b*f^2*p*q*arctan(sqrt(h*x + g)*f/sqrt(-f^2*g + f*h*e))/(sqrt(-f^2*g + f
*h*e)*(f*g*h - h^2*e)) - 2/3*(b*f*g*p*q*log((h*x + g)*f - f*g + h*e) - b*h*
p*q*e*log((h*x + g)*f - f*g + h*e) - b*f*g*p*q*log(h) + b*h*p*q*e*log(h) -
2*(h*x + g)*b*f*p*q + b*f*g*q*log(d) - b*h*q*e*log(d) + b*f*g*log(c) - b*h*
e*log(c) + a*f*g - a*h*e)/((h*x + g)^(3/2)*f*g*h - (h*x + g)^(3/2)*h^2*e)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)}{{\left(g+h\,x\right)}^{5/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d*(e + f*x)^p)^q))/(g + h*x)^(5/2),x)
```

```
[Out] int((a + b*log(c*(d*(e + f*x)^p)^q))/(g + h*x)^(5/2), x)
```

3.487 $\int \frac{a+b\log(c(d(e+fx)^p)^q)}{(g+hx)^{7/2}}\,dx$

Optimal. Leaf size=152

$$\frac{4bfpq}{15h(fg-eh)(g+hx)^{3/2}}+\frac{4bf^2pq}{5h(fg-eh)^2\sqrt{g+hx}}-\frac{4bf^{5/2}pq\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)}{5h(fg-eh)^{5/2}}-\frac{2(a+b\log(c(d(e$$

```
[Out] 4/15*b*f*p*q/h/(-e*h+f*g)/(h*x+g)^(3/2)-4/5*b*f^(5/2)*p*q*arctanh(f^(1/2)*(
h*x+g)^(1/2)/(-e*h+f*g)^(1/2))/h/(-e*h+f*g)^(5/2)-2/5*(a+b*ln(c*(d*(f*x+e)^
p)^q))/h/(h*x+g)^(5/2)+4/5*b*f^2*p*q/h/(-e*h+f*g)^2/(h*x+g)^(1/2)
```

Rubi [A]
time = 0.15, antiderivative size = 152, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}} = 0.179$, Rules used = {2442, 53, 65, 214, 2495}

$$-\frac{2(a+b\log(c(d(e+fx)^p)^q))}{5h(g+hx)^{5/2}}-\frac{4bf^{5/2}pq\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)}{5h(fg-eh)^{5/2}}+\frac{4bf^2pq}{5h\sqrt{g+hx}(fg-eh)^2}+\frac{4bfpq}{15h(g+hx)^{3/2}(fg-eh)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])/(g + h*x)^(7/2),x]
```

```
[Out] (4*b*f*p*q)/(15*h*(f*g - e*h)*(g + h*x)^(3/2)) + (4*b*f^2*p*q)/(5*h*(f*g -
e*h)^2*Sqrt[g + h*x]) - (4*b*f^(5/2)*p*q*ArcTanh[(Sqrt[f]*Sqrt[g + h*x])/Sq
rt[f*g - e*h]])/(5*h*(f*g - e*h)^(5/2)) - (2*(a + b*Log[c*(d*(e + f*x)^p)^q
]))/(5*h*(g + h*x)^(5/2))
```

Rule 53

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
(a + b*x)^(m + 1)*((c + d*x)^(n + 1)/((b*c - a*d)*(m + 1))), x] - Dist[d*((
m + n + 2)/((b*c - a*d)*(m + 1))), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 65

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - a*(d/b) +
d*(x^p/b))^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 214

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-a/b, 2]/a)*ArcTanh[x
/Rt[-a/b, 2]], x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 2442

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[(f + g*x)^(q + 1)*((a + b*Log[c*(d + e*x)^n])/(
g*(q + 1))), x] - Dist[b*e*(n/(g*(q + 1))), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 2495

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] && !IntegerQ[n] && !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{a+b\log\left(c(d(e+fx)^p)^q\right)}{(g+hx)^{7/2}}\,dx = \text{Subst}\left(\int \frac{a+b\log\left(cd^q(e+fx)^{pq}\right)}{(g+hx)^{7/2}}\,dx, cd^q(e+fx)^{pq}, c(d(e+fx)^p)^q\right)$$

$$= -\frac{2(a+b\log\left(c(d(e+fx)^p)^q\right))}{5h(g+hx)^{5/2}} + \text{Subst}\left(\frac{(2bfpq)\int\frac{1}{(e+fx)(g+hx)^{5/2}}\,dx}{5h}, cd^q(\right.$$

$$= \frac{4bfpq}{15h(fg-eh)(g+hx)^{3/2}} - \frac{2(a+b\log\left(c(d(e+fx)^p)^q\right))}{5h(g+hx)^{5/2}} + \text{Subst}\left(\frac{(2bf^2\right.$$

$$= \frac{4bfpq}{15h(fg-eh)(g+hx)^{3/2}} + \frac{4bf^2pq}{5h(fg-eh)^2\sqrt{g+hx}} - \frac{2(a+b\log\left(c(d(e\right.}{5h(g+hx)}$$

$$= \frac{4bfpq}{15h(fg-eh)(g+hx)^{3/2}} + \frac{4bf^2pq}{5h(fg-eh)^2\sqrt{g+hx}} - \frac{2(a+b\log\left(c(d(e\right.}{5h(g+hx)}$$

$$= \frac{4bfpq}{15h(fg-eh)(g+hx)^{3/2}} + \frac{4bf^2pq}{5h(fg-eh)^2\sqrt{g+hx}} - \frac{4bf^{5/2}pq\tanh^{-1}\left(\right.}{5h(fg-}$$

Mathematica [A]
time = 0.53, size = 135, normalized size = 0.89

$$\frac{2\left(-\frac{3a}{(g+hx)^{5/2}}+\frac{2bfpq(4fg-eh+3fhx)}{(fg-eh)^2(g+hx)^{3/2}}-\frac{6bf^{5/2}pq\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)}{(fg-eh)^{5/2}}-\frac{3b\log(c(d(e+fx)^p)^q)}{(g+hx)^{5/2}}\right)}{15h}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])/(g + h*x)^(7/2),x]
```

```
[Out] (2*((-3*a)/(g + h*x)^(5/2) + (2*b*f*p*q*(4*f*g - e*h + 3*f*h*x))/((f*g - e*
h)^2*(g + h*x)^(3/2)) - (6*b*f^(5/2)*p*q*ArcTanh[(Sqrt[f]*Sqrt[g + h*x])/Sq
rt[f*g - e*h]])/(f*g - e*h)^(5/2) - (3*b*Log[c*(d*(e + f*x)^p)^q])/(g + h*x
)^(5/2)))/(15*h)
```

Maple [F]
time = 0.22, size = 0, normalized size = 0.00

$$\int \frac{a+b\ln\left(c\left(d(fx+e)^p\right)^q\right)}{(hx+g)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(d*(f*x+e)^p)^q))/(h*x+g)^(7/2),x)
```

```
[Out] int((a+b*ln(c*(d*(f*x+e)^p)^q))/(h*x+g)^(7/2),x)
```

Maxima [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g)^(7/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(%e*h-f*g>0)', see `assume?` for mor
e detai
```

Fricas [B] Leaf count of result is larger than twice the leaf count of optimal. 436 vs. 2(133) = 266.
time = 0.43, size = 883, normalized size = 5.81

$$\left[\frac{2\left(3\left(bf^2h^3pqx^3+3bf^2gh^2pqx^2+3bf^2g^2hpqx+bf^2g^3pq\right)\sqrt{\frac{f}{fg-he}}\log\left(\frac{fhx+2fg-2(fg-he)\sqrt{hx+g}\sqrt{\frac{f}{fg-he}}-he}{fx+e}\right)+\left(6bf^2h^2pqx^2+14bf^2ghpqx+8bf^2g^2pq-3af^2g^2-3ah^2e^2-2\left(bfh^2pqx+bfghpq-3afgh\right)e-3\left(bf^2g^2pq-2bfghpqe+bh^2pqe^2\right)\log(fx+e)-3\left(bf^2g^2-2bfghe+bh^2e^2\right)\log(c)-3\left(bf^2g^2q-2bfghqe+bh^2qe^2\right)\log(d)\right)\sqrt{hx+g}\right)}{15\left(f^2g^2h^4x^3+3f^2g^3h^3x^2+3f^2g^4h^2x+f^2g^5h+\left(h^6x^3+3gh^5x^2+3g^2h^4x+g^3h^3\right)e^2-2\left(fgh^5x^3+3fg^2h^4x^2+3fg^3h^3x+fg^4h^2\right)e\right)}, -\frac{2\left(6\left(bf^2h^3pqx^3+3bf^2gh^2pqx^2+3bf^2g^2hpqx+bf^2g^3pq\right)\sqrt{-\frac{f}{fg-he}}\arctan\left(-\frac{(fg-he)\sqrt{hx+g}\sqrt{-\frac{f}{fg-he}}}{fhx+fg}\right)-\left(6bf^2h^2pqx^2+14bf^2ghpqx+8bf^2g^2pq-3af^2g^2-3ah^2e^2-2\left(bfh^2pqx+bfghpq-3afgh\right)e-3\left(bf^2g^2pq-2bfghpqe+bh^2pqe^2\right)\log(fx+e)-3\left(bf^2g^2-2bfghe+bh^2e^2\right)\log(c)-3\left(bf^2g^2q-2bfghqe+bh^2qe^2\right)\log(d)\right)\sqrt{hx+g}\right)}{15\left(f^2g^2h^4x^3+3f^2g^3h^3x^2+3f^2g^4h^2x+f^2g^5h+\left(h^6x^3+3gh^5x^2+3g^2h^4x+g^3h^3\right)e^2-2\left(fgh^5x^3+3fg^2h^4x^2+3fg^3h^3x+fg^4h^2\right)e\right)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g)^(7/2),x, algorithm="fricas")
```

```
[Out] [2/15*(3*(b*f^2*h^3*p*q*x^3 + 3*b*f^2*g*h^2*p*q*x^2 + 3*b*f^2*g^2*h*p*q*x +
 b*f^2*g^3*p*q)*sqrt(f/(f*g - h*e))*log((f*h*x + 2*f*g - 2*(f*g - h*e)*sqrt
(h*x + g)*sqrt(f/(f*g - h*e)) - h*e)/(f*x + e)) + (6*b*f^2*h^2*p*q*x^2 + 14
*b*f^2*g*h*p*q*x + 8*b*f^2*g^2*p*q - 3*a*f^2*g^2 - 3*a*h^2*e^2 - 2*(b*f*h^2
*p*q*x + b*f*g*h*p*q - 3*a*f*g*h)*e - 3*(b*f^2*g^2*p*q - 2*b*f*g*h*p*q*e +
b*h^2*p*q*e^2)*log(f*x + e) - 3*(b*f^2*g^2 - 2*b*f*g*h*e + b*h^2*e^2)*log(c
) - 3*(b*f^2*g^2*q - 2*b*f*g*h*q*e + b*h^2*q*e^2)*log(d))*sqrt(h*x + g))/(f
^2*g^2*h^4*x^3 + 3*f^2*g^3*h^3*x^2 + 3*f^2*g^4*h^2*x + f^2*g^5*h + (h^6*x^3
 + 3*g*h^5*x^2 + 3*g^2*h^4*x + g^3*h^3)*e^2 - 2*(f*g*h^5*x^3 + 3*f*g^2*h^4*
x^2 + 3*f*g^3*h^3*x + f*g^4*h^2)*e), -2/15*(6*(b*f^2*h^3*p*q*x^3 + 3*b*f^2*
g*h^2*p*q*x^2 + 3*b*f^2*g^2*h*p*q*x + b*f^2*g^3*p*q)*sqrt(-f/(f*g - h*e))*a
rctan(-(f*g - h*e)*sqrt(h*x + g)*sqrt(-f/(f*g - h*e))/(f*h*x + f*g)) - (6*b
*f^2*h^2*p*q*x^2 + 14*b*f^2*g*h*p*q*x + 8*b*f^2*g^2*p*q - 3*a*f^2*g^2 - 3*a
*h^2*e^2 - 2*(b*f*h^2*p*q*x + b*f*g*h*p*q - 3*a*f*g*h)*e - 3*(b*f^2*g^2*p*q
 - 2*b*f*g*h*p*q*e + b*h^2*p*q*e^2)*log(f*x + e) - 3*(b*f^2*g^2 - 2*b*f*g*h
*e + b*h^2*e^2)*log(c) - 3*(b*f^2*g^2*q - 2*b*f*g*h*q*e + b*h^2*q*e^2)*log(
d))*sqrt(h*x + g))/(f^2*g^2*h^4*x^3 + 3*f^2*g^3*h^3*x^2 + 3*f^2*g^4*h^2*x +
 f^2*g^5*h + (h^6*x^3 + 3*g*h^5*x^2 + 3*g^2*h^4*x + g^3*h^3)*e^2 - 2*(f*g*h
^5*x^3 + 3*f*g^2*h^4*x^2 + 3*f*g^3*h^3*x + f*g^4*h^2)*e)]
```

Sympy [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: SystemError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))/(h*x+g)**(7/2),x)
```

```
[Out] Exception raised: SystemError >> excessive stack use: stack is 6190 deep
```

Giac [B] Leaf count of result is larger than twice the leaf count of optimal. 378 vs. 2(133) = 266.
time = 5.71, size = 378, normalized size = 2.49

$$\frac{4\,bf^3hpq\arctan\left(\frac{\sqrt{hx+g}\,f}{\sqrt{-f^2g+fhe}}\right)}{5\left(f^2g^2h^2-2\,fgh^3e+h^4e^2\right)\sqrt{-f^2g+fhe}}-\frac{2\left(3\,bf^2g^2pq\log\left((hx+g)f-fg+he\right)-6\,bfghpqe\log\left((hx+g)f-fg+he\right)-3\,bf^2g^2pq\log\left(h\right)+6\,bfghpqe\log\left(h\right)-6\,(hx+g)^2bf^2pq-2\,(hx+g)bf^2gpq+2\,(hx+g)bfhpqe+3\,bh^2pqe^2\log\left((hx+g)f-fg+he\right)+3\,bf^2g^2q\log\left(d\right)-6\,bfghqe\log\left(d\right)-3\,bh^2pqe^2\log\left(h\right)+3\,bf^2g^2\log\left(c\right)-6\,bfghe\log\left(c\right)+3\,bh^2qe^2\log\left(d\right)+3\,af^2g^2-6\,afghe+3\,bh^2e^2\log\left(c\right)+3\,ah^2e^2\right)}{15\left((hx+g)^{\frac{5}{2}}f^2g^2h-2\,(hx+g)^{\frac{5}{2}}fgh^2e+(hx+g)^{\frac{5}{2}}h^3e^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g)^(7/2),x, algorithm="giac")
```

```
[Out] 4/5*b*f^3*h*p*q*arctan(sqrt(h*x + g)*f/sqrt(-f^2*g + f*h*e))/((f^2*g^2*h^2
- 2*f*g*h^3*e + h^4*e^2)*sqrt(-f^2*g + f*h*e)) - 2/15*(3*b*f^2*g^2*p*q*log(
(h*x + g)*f - f*g + h*e) - 6*b*f*g*h*p*q*e*log((h*x + g)*f - f*g + h*e) - 3
```

```
*b*f^2*g^2*p*q*log(h) + 6*b*f*g*h*p*q*e*log(h) - 6*(h*x + g)^2*b*f^2*p*q -
2*(h*x + g)*b*f^2*g*p*q + 2*(h*x + g)*b*f*h*p*q*e + 3*b*h^2*p*q*e^2*log((h*
x + g)*f - f*g + h*e) + 3*b*f^2*g^2*q*log(d) - 6*b*f*g*h*q*e*log(d) - 3*b*h
^2*p*q*e^2*log(h) + 3*b*f^2*g^2*log(c) - 6*b*f*g*h*e*log(c) + 3*b*h^2*q*e^2
*log(d) + 3*a*f^2*g^2 - 6*a*f*g*h*e + 3*b*h^2*e^2*log(c) + 3*a*h^2*e^2)/((h
*x + g)^(5/2)*f^2*g^2*h - 2*(h*x + g)^(5/2)*f*g*h^2*e + (h*x + g)^(5/2)*h^3
*e^2)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{a+b\,\ln\left(c\left(d\left(e+f\,x\right)^p\right)^q\right)}{\left(g+h\,x\right)^{7/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d*(e + f*x)^p)^q))/(g + h*x)^(7/2),x)
[Out] int((a + b*log(c*(d*(e + f*x)^p)^q))/(g + h*x)^(7/2), x)
```

3.488 $\int \frac{a+b\log(c(d(e+fx)^p)^q)}{(g+hx)^{9/2}}\,dx$

Optimal. Leaf size=184

$$\frac{4bfpq}{35h(fg-eh)(g+hx)^{5/2}}+\frac{4bf^2pq}{21h(fg-eh)^2(g+hx)^{3/2}}+\frac{4bf^3pq}{7h(fg-eh)^3\sqrt{g+hx}}-\frac{4bf^{7/2}pq\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g}}{\sqrt{fg-}}\right.}{7h(fg-eh)^{7/2}}$$

```
[Out] 4/35*b*f*p*q/h/(-e*h+f*g)/(h*x+g)^(5/2)+4/21*b*f^2*p*q/h/(-e*h+f*g)^2/(h*x+
g)^(3/2)-4/7*b*f^(7/2)*p*q*arctanh(f^(1/2)*(h*x+g)^(1/2)/(-e*h+f*g)^(1/2))/
h/(-e*h+f*g)^(7/2)-2/7*(a+b*ln(c*(d*(f*x+e)^p)^q))/h/(h*x+g)^(7/2)+4/7*b*f^
3*p*q/h/(-e*h+f*g)^3/(h*x+g)^(1/2)
```

Rubi [A]

time = 0.20, antiderivative size = 184, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}} = 0.179$, Rules used = {2442, 53, 65, 214, 2495}

$$-\frac{2(a+b\log(c(d(e+fx)^p)^q))}{7h(g+hx)^{7/2}}-\frac{4bf^{7/2}pq\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)}{7h(fg-eh)^{7/2}}+\frac{4bf^3pq}{7h\sqrt{g+hx}(fg-eh)^3}+\frac{4bf^2pq}{21h(g+hx)^{3/2}(fg-eh)^2}+\frac{4bfpq}{35h(g+hx)^{5/2}(fg-eh)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])/(g + h*x)^(9/2),x]
```

```
[Out] (4*b*f*p*q)/(35*h*(f*g - e*h)*(g + h*x)^(5/2)) + (4*b*f^2*p*q)/(21*h*(f*g -
 e*h)^2*(g + h*x)^(3/2)) + (4*b*f^3*p*q)/(7*h*(f*g - e*h)^3*Sqrt[g + h*x])
- (4*b*f^(7/2)*p*q*ArcTanh[(Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h]])/(7*h*(
f*g - e*h)^(7/2)) - (2*(a + b*Log[c*(d*(e + f*x)^p)^q]))/(7*h*(g + h*x)^(7/
2))
```

Rule 53

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
(a + b*x)^(m + 1)*((c + d*x)^(n + 1)/((b*c - a*d)*(m + 1))), x] - Dist[d*((
m + n + 2)/((b*c - a*d)*(m + 1))), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 65

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - a*(d/b) +
d*(x^p/b))^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
```

```
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 214

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-a/b, 2]/a)*ArcTanh[x
/Rt[-a/b, 2]], x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 2442

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[(f + g*x)^(q + 1)*((a + b*Log[c*(d + e*x)^n])/(
g*(q + 1))), x] - Dist[b*e*(n/(g*(q + 1))), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 2495

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{a+b\log\left(c(d(e+fx)^p)^q\right)}{(g+hx)^{9/2}}\,dx = \text{Subst}\left(\int \frac{a+b\log\left(cd^q(e+fx)^{pq}\right)}{(g+hx)^{9/2}}\,dx, cd^q(e+fx)^{pq}, c(d(e+fx)^p)^q\right)$$

$$= -\frac{2(a+b\log\left(c(d(e+fx)^p)^q\right))}{7h(g+hx)^{7/2}} + \text{Subst}\left(\frac{(2bfpq)\int \frac{1}{(e+fx)(g+hx)^{7/2}}\,dx}{7h}, cd^q(\right.$$

$$= \frac{4bfpq}{35h(fg-eh)(g+hx)^{5/2}} - \frac{2(a+b\log\left(c(d(e+fx)^p)^q\right))}{7h(g+hx)^{7/2}} + \text{Subst}\left(\frac{(2bf^2\right.$$

$$= \frac{4bfpq}{35h(fg-eh)(g+hx)^{5/2}} + \frac{4bf^2pq}{21h(fg-eh)^2(g+hx)^{3/2}} - \frac{2(a+b\log(c(d(}{7h(g+h}$$

$$= \frac{4bfpq}{35h(fg-eh)(g+hx)^{5/2}} + \frac{4bf^2pq}{21h(fg-eh)^2(g+hx)^{3/2}} + \frac{4bf^3pq}{7h(fg-eh)^3\sqrt{g}}$$

$$= \frac{4bfpq}{35h(fg-eh)(g+hx)^{5/2}} + \frac{4bf^2pq}{21h(fg-eh)^2(g+hx)^{3/2}} + \frac{4bf^3pq}{7h(fg-eh)^3\sqrt{g}}$$

$$= \frac{4bfpq}{35h(fg-eh)(g+hx)^{5/2}} + \frac{4bf^2pq}{21h(fg-eh)^2(g+hx)^{3/2}} + \frac{4bf^3pq}{7h(fg-eh)^3\sqrt{g}}$$

Mathematica [A]
time = 0.56, size = 160, normalized size = 0.87

$$\frac{2\left(-\frac{30bf^{7/2}pq\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)}{(fg-eh)^{7/2}} + \frac{-15a+\frac{6bfpq(g+hx)}{fg-eh}+\frac{10bf^2pq(g+hx)^2}{(fg-eh)^2}+\frac{30bf^3pq(g+hx)^3}{(fg-eh)^3}-15b\log(c(d(e+fx)^p)^q)}{(g+hx)^{7/2}}\right)}{105h}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])/(g + h*x)^(9/2),x]
[Out] (2*((-30*b*f^(7/2)*p*q*ArcTanh[(Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h]])/(f
*g - e*h)^(7/2) + (-15*a + (6*b*f*p*q*(g + h*x))/(f*g - e*h) + (10*b*f^2*p*
q*(g + h*x)^2)/(f*g - e*h)^2 + (30*b*f^3*p*q*(g + h*x)^3)/(f*g - e*h)^3 - 1
5*b*Log[c*(d*(e + f*x)^p)^q])/(g + h*x)^(7/2)))/(105*h)
```

Maple [F]
time = 0.21, size = 0, normalized size = 0.00

$$\int \frac{a+b\ln\left(c(d(fx+e)^p)^q\right)}{(hx+g)^{\frac{9}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(d*(f*x+e)^p)^q))/(h*x+g)^(9/2),x)
```

```
[Out] int((a+b*ln(c*(d*(f*x+e)^p)^q))/(h*x+g)^(9/2),x)
```

Maxima [**F(-2)**]
time = 0.00, size = 0, normalized size = 0.00

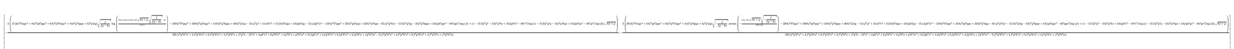
Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g)^(9/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(%e*h-f*g>0)', see `assume?` for mor
e detai
```

Fricas [**B**] Leaf count of result is larger than twice the leaf count of optimal. 684 vs. $2(162) = 324$.
time = 0.45, size = 1380, normalized size = 7.50



Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g)^(9/2),x, algorithm="fricas")
```

```
[Out] [-2/105*(15*(b*f^3*h^4*p*q*x^4 + 4*b*f^3*g*h^3*p*q*x^3 + 6*b*f^3*g^2*h^2*p*
q*x^2 + 4*b*f^3*g^3*h*p*q*x + b*f^3*g^4*p*q)*sqrt(f/(f*g - h*e))*log((f*h*x
 + 2*f*g + 2*(f*g - h*e)*sqrt(h*x + g)*sqrt(f/(f*g - h*e)) - h*e)/(f*x + e)
) - (30*b*f^3*h^3*p*q*x^3 + 100*b*f^3*g*h^2*p*q*x^2 + 116*b*f^3*g^2*h*p*q*x
 + 46*b*f^3*g^3*p*q - 15*a*f^3*g^3 + 15*a*h^3*e^3 + 3*(2*b*f*h^3*p*q*x + 2*
b*f*g*h^2*p*q - 15*a*f*g*h^2)*e^2 - (10*b*f^2*h^3*p*q*x^2 + 32*b*f^2*g*h^2*
p*q*x + 22*b*f^2*g^2*h*p*q - 45*a*f^2*g^2*h)*e - 15*(b*f^3*g^3*p*q - 3*b*f^
2*g^2*h*p*q*e + 3*b*f*g*h^2*p*q*e^2 - b*h^3*p*q*e^3)*log(f*x + e) - 15*(b*f
^3*g^3 - 3*b*f^2*g^2*h*e + 3*b*f*g*h^2*e^2 - b*h^3*e^3)*log(c) - 15*(b*f^3*
g^3*q - 3*b*f^2*g^2*h*q*e + 3*b*f*g*h^2*q*e^2 - b*h^3*q*e^3)*log(d))*sqrt(h
*x + g))/(f^3*g^3*h^5*x^4 + 4*f^3*g^4*h^4*x^3 + 6*f^3*g^5*h^3*x^2 + 4*f^3*g
^6*h^2*x + f^3*g^7*h - (h^8*x^4 + 4*g*h^7*x^3 + 6*g^2*h^6*x^2 + 4*g^3*h^5*x
 + g^4*h^4)*e^3 + 3*(f*g*h^7*x^4 + 4*f*g^2*h^6*x^3 + 6*f*g^3*h^5*x^2 + 4*f*
g^4*h^4*x + f*g^5*h^3)*e^2 - 3*(f^2*g^2*h^6*x^4 + 4*f^2*g^3*h^5*x^3 + 6*f^2
*g^4*h^4*x^2 + 4*f^2*g^5*h^3*x + f^2*g^6*h^2)*e), -2/105*(30*(b*f^3*h^4*p*q
*x^4 + 4*b*f^3*g*h^3*p*q*x^3 + 6*b*f^3*g^2*h^2*p*q*x^2 + 4*b*f^3*g^3*h*p*q*
x + b*f^3*g^4*p*q)*sqrt(-f/(f*g - h*e))*arctan(-(f*g - h*e)*sqrt(h*x + g)*s
qrt(-f/(f*g - h*e))/(f*h*x + f*g)) - (30*b*f^3*h^3*p*q*x^3 + 100*b*f^3*g*h^
```

```
2*p*q*x^2 + 116*b*f^3*g^2*h*p*q*x + 46*b*f^3*g^3*p*q - 15*a*f^3*g^3 + 15*a*
h^3*e^3 + 3*(2*b*f*h^3*p*q*x + 2*b*f*g*h^2*p*q - 15*a*f*g*h^2)*e^2 - (10*b*
f^2*h^3*p*q*x^2 + 32*b*f^2*g*h^2*p*q*x + 22*b*f^2*g^2*h*p*q - 45*a*f^2*g^2*
h)*e - 15*(b*f^3*g^3*p*q - 3*b*f^2*g^2*h*p*q*e + 3*b*f*g*h^2*p*q*e^2 - b*h^
3*p*q*e^3)*log(f*x + e) - 15*(b*f^3*g^3 - 3*b*f^2*g^2*h*e + 3*b*f*g*h^2*e^2
 - b*h^3*e^3)*log(c) - 15*(b*f^3*g^3*q - 3*b*f^2*g^2*h*q*e + 3*b*f*g*h^2*q*
e^2 - b*h^3*q*e^3)*log(d))*sqrt(h*x + g))/(f^3*g^3*h^5*x^4 + 4*f^3*g^4*h^4*
x^3 + 6*f^3*g^5*h^3*x^2 + 4*f^3*g^6*h^2*x + f^3*g^7*h - (h^8*x^4 + 4*g*h^7*
x^3 + 6*g^2*h^6*x^2 + 4*g^3*h^5*x + g^4*h^4)*e^3 + 3*(f*g*h^7*x^4 + 4*f*g^2
*h^6*x^3 + 6*f*g^3*h^5*x^2 + 4*f*g^4*h^4*x + f*g^5*h^3)*e^2 - 3*(f^2*g^2*h^
6*x^4 + 4*f^2*g^3*h^5*x^3 + 6*f^2*g^4*h^4*x^2 + 4*f^2*g^5*h^3*x + f^2*g^6*h
^2)*e)]
```

Sympy [**F(-1)**] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))/(h*x+g)**(9/2),x)
[Out] Timed out
```

Giac [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g)^(9/2),x, algorithm="giac")
[Out] integrate((b*log(((f*x + e)^p*d)^q*c) + a)/(h*x + g)^(9/2), x)
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)}{{\left(g+h\,x\right)}^{9/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d*(e + f*x)^p)^q))/(g + h*x)^(9/2),x)
[Out] int((a + b*log(c*(d*(e + f*x)^p)^q))/(g + h*x)^(9/2), x)
```

3.489 $\int (g+hx)^{3/2} \left(a+b\log \left(c(d(e+fx)^p)^q\right)\right)^2 \, dx$

Optimal. Leaf size=635

$$\frac{368b^2(fg-eh)^2p^2q^2\sqrt{g+hx}}{75f^2h}+\frac{128b^2(fg-eh)p^2q^2(g+hx)^{3/2}}{225fh}+\frac{16b^2p^2q^2(g+hx)^{5/2}}{125h}-\frac{368b^2(fg-eh)^{5/2}p}{}$$

```
[Out] 128/225*b^2*(-e*h+f*g)*p^2*q^2*(h*x+g)^(3/2)/f/h+16/125*b^2*p^2*q^2*(h*x+g)
^(5/2)/h-368/75*b^2*(-e*h+f*g)^(5/2)*p^2*q^2*arctanh(f^(1/2)*(h*x+g)^(1/2)/
(-e*h+f*g)^(1/2))/f^(5/2)/h-8/5*b^2*(-e*h+f*g)^(5/2)*p^2*q^2*arctanh(f^(1/2
)*(h*x+g)^(1/2)/(-e*h+f*g)^(1/2))^2/f^(5/2)/h-8/15*b*(-e*h+f*g)*p*q*(h*x+g)
^(3/2)*(a+b*ln(c*(d*(f*x+e)^p)^q))/f/h-8/25*b*p*q*(h*x+g)^(5/2)*(a+b*ln(c*(
d*(f*x+e)^p)^q))/h+8/5*b*(-e*h+f*g)^(5/2)*p*q*arctanh(f^(1/2)*(h*x+g)^(1/2)
/(-e*h+f*g)^(1/2))*(a+b*ln(c*(d*(f*x+e)^p)^q))/f^(5/2)/h+2/5*(h*x+g)^(5/2)*
(a+b*ln(c*(d*(f*x+e)^p)^q))^2/h+16/5*b^2*(-e*h+f*g)^(5/2)*p^2*q^2*arctanh(f
^(1/2)*(h*x+g)^(1/2)/(-e*h+f*g)^(1/2))*ln(2/(1-f^(1/2)*(h*x+g)^(1/2)/(-e*h+
f*g)^(1/2)))/f^(5/2)/h+8/5*b^2*(-e*h+f*g)^(5/2)*p^2*q^2*polylog(2,1-2/(1-f^
(1/2)*(h*x+g)^(1/2)/(-e*h+f*g)^(1/2)))/f^(5/2)/h+368/75*b^2*(-e*h+f*g)^2*p^
2*q^2*(h*x+g)^(1/2)/f^2/h-8/5*b*(-e*h+f*g)^2*p*q*(a+b*ln(c*(d*(f*x+e)^p)^q)
)*(h*x+g)^(1/2)/f^2/h
```

Rubi [A]
time = 2.92, antiderivative size = 635, normalized size of antiderivative = 1.00, number of steps used = 29, number of rules used = 16, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}} = 0.533$, Rules used = {2445, 2458, 2388, 65, 214, 2390, 12, 1601, 6873, 6131, 6055, 2449, 2352, 2356, 52, 2495}

$$\frac{8b^2p^2q^2(fg-eh)^{5/2}\text{PolyLog}\left(2,1-\frac{2}{1-\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}}\right)}{5f^{5/2}h}+\frac{8bpq(fg-eh)^{5/2}\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)}{5f^{5/2}h}-\frac{8bpq\sqrt{g+hx}(fg-eh)^2\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)}{5f^2h}-\frac{8bpq(g+hx)^{3/2}(fg-eh)\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)}{15fh}+\frac{2(g+hx)^{5/2}\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)^2}{5h}-\frac{8bpq(g+hx)^{5/2}\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)}{25h}-\frac{8b^2p^2q^2(fg-eh)^{5/2}\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)^2}{5f^{5/2}h}-\frac{368b^2p^2q^2(fg-eh)^{5/2}\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)}{75f^{5/2}h}+\frac{16b^2p^2q^2(fg-eh)^{5/2}\log\left(\frac{2}{1-\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}}\right)\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)}{5f^{5/2}h}+\frac{368b^2p^2q^2\sqrt{g+hx}(fg-eh)^2}{75f^2h}+\frac{128b^2p^2q^2(g+hx)^{3/2}(fg-eh)}{225fh}+\frac{16b^2p^2q^2(g+hx)^{5/2}}{125h}$$

Antiderivative was successfully verified.

```
[In] Int[(g + h*x)^(3/2)*(a + b*Log[c*(d*(e + f*x)^p)^q])^2,x]
```

```
[Out] (368*b^2*(f*g - e*h)^2*p^2*q^2*Sqrt[g + h*x])/(75*f^2*h) + (128*b^2*(f*g -
e*h)*p^2*q^2*(g + h*x)^(3/2))/(225*f*h) + (16*b^2*p^2*q^2*(g + h*x)^(5/2))/
(125*h) - (368*b^2*(f*g - e*h)^(5/2)*p^2*q^2*ArcTanh[(Sqrt[f]*Sqrt[g + h*x]
)/Sqrt[f*g - e*h]])/(75*f^(5/2)*h) - (8*b^2*(f*g - e*h)^(5/2)*p^2*q^2*ArcTa
nh[(Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h]]^2)/(5*f^(5/2)*h) - (8*b*(f*g -
e*h)^2*p*q*Sqrt[g + h*x]*(a + b*Log[c*(d*(e + f*x)^p)^q]))/(5*f^2*h) - (8*b
*(f*g - e*h)*p*q*(g + h*x)^(3/2)*(a + b*Log[c*(d*(e + f*x)^p)^q]))/(15*f*h)
 - (8*b*p*q*(g + h*x)^(5/2)*(a + b*Log[c*(d*(e + f*x)^p)^q]))/(25*h) + (8*b
*(f*g - e*h)^(5/2)*p*q*ArcTanh[(Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h]]*(a
```

```
+ b*Log[c*(d*(e + f*x)^p)^q]))/(5*f^(5/2)*h) + (2*(g + h*x)^(5/2)*(a + b*Lo
g[c*(d*(e + f*x)^p)^q])^2)/(5*h) + (16*b^2*(f*g - e*h)^(5/2)*p^2*q^2*ArcTan
h[(Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h]]*Log[2/(1 - (Sqrt[f]*Sqrt[g + h*x
])/Sqrt[f*g - e*h])])/(5*f^(5/2)*h) + (8*b^2*(f*g - e*h)^(5/2)*p^2*q^2*Poly
Log[2, 1 - 2/(1 - (Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h])])/(5*f^(5/2)*h)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 52

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
(a + b*x)^(m + 1)*((c + d*x)^n/(b*(m + n + 1))), x] + Dist[n*((b*c - a*d)/(
b*(m + n + 1))), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 65

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - a*(d/b) +
d*(x^p/b))^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 214

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-a/b, 2]/a)*ArcTanh[x
/Rt[-a/b, 2]], x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 1601

```
Int[(Pp_)/(Qq_), x_Symbol] :> With[{p = Expon[Pp, x], q = Expon[Qq, x]}, Si
mp[Coeff[Pp, x, p]*(Log[RemoveContent[Qq, x]]/(q*Coeff[Qq, x, q])), x] /; E
qQ[p, q - 1] && EqQ[Pp, Simplify[(Coeff[Pp, x, p]/(q*Coeff[Qq, x, q]))*D[Qq
, x]]]] /; PolyQ[Pp, x] && PolyQ[Qq, x]
```

Rule 2352

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> Simp[(-e^(-1))*PolyLo
g[2, 1 - c*x], x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2356

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.),
x_Symbol] :> Simp[(d + e*x)^(q + 1)*((a + b*Log[c*x^n])^p/(e*(q + 1))), x]
- Dist[b*n*(p/(e*(q + 1))), Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^(p -
1))/x, x], x] /; FreeQ[{a, b, c, d, e, n, p, q}, x] && GtQ[p, 0] && NeQ[q,
-1] && (EqQ[p, 1] || (IntegersQ[2*p, 2*q] &&  !IGtQ[q, 0]) || (EqQ[p, 2] &&
 NeQ[q, 1]))
```

Rule 2388

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.))
/(x_), x_Symbol] :> Dist[d, Int[(d + e*x)^(q - 1)*((a + b*Log[c*x^n])^p/x),
 x], x] + Dist[e, Int[(d + e*x)^(q - 1)*(a + b*Log[c*x^n])^p, x], x] /; Fre
eQ[{a, b, c, d, e, n}, x] && IGtQ[p, 0] && GtQ[q, 0] && IntegerQ[2*q]
```

Rule 2390

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_) + (e_.)*(x_)^(r_.))^(q_.))
/(x_), x_Symbol] :> With[{u = IntHide[(d + e*x^r)^q/x, x]}, Simp[u*(a + b*L
og[c*x^n]), x] - Dist[b*n, Int[Dist[1/x, u, x], x], x]] /; FreeQ[{a, b, c,
d, e, n, r}, x] && IntegerQ[q - 1/2]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[(f + g*x)^(q + 1)*((a + b*Log[c*(d + e*x)^
n])^p/(g*(q + 1))), x] - Dist[b*e*n*(p/(g*(q + 1))), Int[(f + g*x)^(q + 1)*
((a + b*Log[c*(d + e*x)^n])^(p - 1)/(d + e*x)), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && GtQ[p, 0] && NeQ[q, -1] && Int
egersQ[2*p, 2*q] && ( !IGtQ[q, 0] || (EqQ[p, 2] && NeQ[q, 1]))
```

Rule 2449

```
Int[Log[(c_.)/((d_) + (e_.)*(x_))]/((f_) + (g_.)*(x_)^2), x_Symbol] :> Dist
[-e/g, Subst[Int[Log[2*d*x]/(1 - 2*d*x), x], x, 1/(d + e*x)], x] /; FreeQ[{
c, d, e, f, g}, x] && EqQ[c, 2*d] && EqQ[e^2*f + d^2*g, 0]
```

Rule 2458

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[(g*(x/e))^q*((e*h - d*i)/e + i*(x/e))^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2495

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] && !IntegerQ[n] && !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rule 6055

```
Int[((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symbol
] :> Simp[(-(a + b*ArcTanh[c*x])^p)*(Log[2/(1 + e*(x/d))]/e), x] + Dist[b*c
*(p/e), Int[(a + b*ArcTanh[c*x])^(p - 1)*(Log[2/(1 + e*(x/d))]/(1 - c^2*x^2
)), x], x] /; FreeQ[{a, b, c, d, e}, x] && IGtQ[p, 0] && EqQ[c^2*d^2 - e^2,
 0]
```

Rule 6131

```
Int[(((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)*(x_))/((d_) + (e_.)*(x_)^2),
 x_Symbol] :> Simp[(a + b*ArcTanh[c*x])^(p + 1)/(b*e*(p + 1)), x] + Dist[1/
(c*d), Int[(a + b*ArcTanh[c*x])^p/(1 - c*x), x], x] /; FreeQ[{a, b, c, d, e
}, x] && EqQ[c^2*d + e, 0] && IGtQ[p, 0]
```

Rule 6873

```
Int[u_, x_Symbol] :> With[{v = NormalizeIntegrand[u, x]}, Int[v, x] /; v =!
= u]
```

Rubi steps

$$\int (g+hx)^{3/2} \left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)^2 \, dx = \text{Subst}\left(\int (g+hx)^{3/2} \left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^2 \, dx, cd^q(e$$

$$= \frac{2(g+hx)^{5/2}\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)^2}{5h} - \text{Subst}\left(\frac{(4bfp}{}\right.$$

$$= \frac{2(g+hx)^{5/2}\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)^2}{5h} - \text{Subst}\left(\frac{(4bpq)}{}\right.$$

$$= \frac{2(g+hx)^{5/2}\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)^2}{5h} - \text{Subst}\left(\frac{(4bpq)}{}\right.$$

$$= -\frac{8bpq(g+hx)^{5/2}\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)}{25h} + \frac{2(g+hx)}{}$$

$$= \frac{16b^2p^2q^2(g+hx)^{5/2}}{125h} - \frac{8b(fg-eh)pq(g+hx)^{3/2}(a+b\log}{15fh}$$

$$= \frac{128b^2(fg-eh)p^2q^2(g+hx)^{3/2}}{225fh} + \frac{16b^2p^2q^2(g+hx)^{5/2}}{125h} - \frac{8}{}$$

Mathematica [C] Result contains higher order function than in optimal. Order 5 vs. order 4 in optimal.
time = 6.62, size = 1168, normalized size = 1.84

[illegible]

Antiderivative was successfully verified.

```
[In] Integrate[(g + h*x)^(3/2)*(a + b*Log[c*(d*(e + f*x)^p)^q])^2,x]
```

```
[Out] (2*((-15*b^2*p^2*q^2*Sqrt[g + h*x]*(-10*h*(-(f*g) + e*h)*(e + f*x)*Hypergeo
metricPFQ[{-3/2, 1, 1, 1}, {2, 2, 2}, (h*(e + f*x))/(-(f*g) + e*h)] + 15*e^
2*h^2*HypergeometricPFQ[{-1/2, 1, 1, 1}, {2, 2, 2}, (h*(e + f*x))/(-(f*g) +
 e*h)] + 15*e*f*h^2*x*HypergeometricPFQ[{-1/2, 1, 1, 1}, {2, 2, 2}, (h*(e +
 f*x))/(-(f*g) + e*h)] - 4*f^2*g^2*Log[e + f*x] + 8*e*f*g*h*Log[e + f*x] -
4*e^2*h^2*Log[e + f*x] + 4*f^2*g^2*Sqrt[(f*(g + h*x))/(f*g - e*h)]*Log[e +
f*x] + 8*f^2*g*h*x*Sqrt[(f*(g + h*x))/(f*g - e*h)]*Log[e + f*x] + 4*f^2*h^2
*x^2*Sqrt[(f*(g + h*x))/(f*g - e*h)]*Log[e + f*x] - 15*e^2*h^2*Hypergeometr
icPFQ[{-1/2, 1, 1}, {2, 2}, (h*(e + f*x))/(-(f*g) + e*h)]*Log[e + f*x] - 15
*e*f*h^2*x*HypergeometricPFQ[{-1/2, 1, 1}, {2, 2}, (h*(e + f*x))/(-(f*g) +
e*h)]*Log[e + f*x] - 2*f^2*g^2*Log[e + f*x]^2 - e*f*g*h*Log[e + f*x]^2 + 3*
e^2*h^2*Log[e + f*x]^2 + 2*f^2*g^2*Sqrt[(f*(g + h*x))/(f*g - e*h)]*Log[e +
f*x]^2 - f^2*g*h*x*Sqrt[(f*(g + h*x))/(f*g - e*h)]*Log[e + f*x]^2 - 3*f^2*h
^2*x^2*Sqrt[(f*(g + h*x))/(f*g - e*h)]*Log[e + f*x]^2 + 10*h*(-(f*g) + e*h)
*(e + f*x)*HypergeometricPFQ[{-3/2, 1, 1}, {2, 2}, (h*(e + f*x))/(-(f*g) +
e*h)]*(1 + Log[e + f*x])))/(f^2*Sqrt[(f*(g + h*x))/(f*g - e*h)]) + (75*b^2*
g*p^2*q^2*Sqrt[g + h*x]*(3*h*(e + f*x)*HypergeometricPFQ[{-1/2, 1, 1, 1}, {
2, 2, 2}, (h*(e + f*x))/(-(f*g) + e*h)] + Log[e + f*x]*(-3*h*(e + f*x)*Hype
rgeometricPFQ[{-1/2, 1, 1}, {2, 2}, (h*(e + f*x))/(-(f*g) + e*h)] + (e*h +
f*h*x*Sqrt[(f*(g + h*x))/(f*g - e*h)] + f*g*(-1 + Sqrt[(f*(g + h*x))/(f*g -
 e*h)]))*Log[e + f*x])))/(f*Sqrt[(f*(g + h*x))/(f*g - e*h)]) - (50*b*g*p*q*
(6*(f*g - e*h)^(3/2)*ArcTanh[(Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h]] + Sqr
t[f]*Sqrt[g + h*x]*(6*e*h - 2*f*(4*g + h*x) + 3*f*(g + h*x)*Log[e + f*x]))*
(-a + b*p*q*Log[e + f*x] - b*Log[c*(d*(e + f*x)^p)^q]))/f^(3/2) + (2*b*p*q*
(30*Sqrt[f*g - e*h]*(2*f^2*g^2 + e*f*g*h - 3*e^2*h^2)*ArcTanh[(Sqrt[f]*Sqrt
[g + h*x])/Sqrt[f*g - e*h]] + Sqrt[f]*Sqrt[g + h*x]*(90*e^2*h^2 - 30*e*f*h*
(2*g + h*x) + 2*f^2*(-31*g^2 + 8*g*h*x + 9*h^2*x^2) + 15*f^2*(2*g^2 - g*h*x
 - 3*h^2*x^2)*Log[e + f*x]))*(-a + b*p*q*Log[e + f*x] - b*Log[c*(d*(e + f*x
)^p)^q]))/f^(5/2) + 45*(g + h*x)^(5/2)*(a - b*p*q*Log[e + f*x] + b*Log[c*(d
*(e + f*x)^p)^q])^2))/(225*h)
```

Maple [F]
time = 0.16, size = 0, normalized size = 0.00

$$\int (hx+g)^{\frac{3}{2}} \left(a+b\ln\left(c(d(fx+e)^{p})^{q}\right)\right)^{2} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x+g)^(3/2)*(a+b*ln(c*(d*(f*x+e)^p)^q))^2,x)
```

```
[Out] int((h*x+g)^(3/2)*(a+b*ln(c*(d*(f*x+e)^p)^q))^2,x)
```

Maxima [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^(3/2)*(a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="maxima
")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(%e*h-f*g>0)', see `assume?` for mor
e detai
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^(3/2)*(a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="fricas
")
```

```
[Out] integral((b^2*h*x + b^2*g)*sqrt(h*x + g)*log(((f*x + e)^p*d)^q*c)^2 + 2*(a*
b*h*x + a*b*g)*sqrt(h*x + g)*log(((f*x + e)^p*d)^q*c) + (a^2*h*x + a^2*g)*s
qrt(h*x + g), x)
```

Sympy [F(-1)] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)**(3/2)*(a+b*ln(c*(d*(f*x+e)**p)**q))**2,x)
```

```
[Out] Timed out
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^(3/2)*(a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="giac")
[Out] integrate((h*x + g)^(3/2)*(b*log(((f*x + e)^p*d)^q*c) + a)^2, x)
```

Mupad [**F**]

time = 0.00, size = -1, normalized size = -0.00

$$\int (g+h\,x)^{3/2}\,{\left(a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)\right)}^2 \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g + h*x)^(3/2)*(a + b*log(c*(d*(e + f*x)^p)^q))^2,x)
[Out] int((g + h*x)^(3/2)*(a + b*log(c*(d*(e + f*x)^p)^q))^2, x)
```

3.490 $\int \sqrt{g+hx}\,(a+b\log(c(d(e+fx)^p)^q))^2\,dx$

Optimal. Leaf size=547

$$\frac{64b^2(fg-eh)p^2q^2\sqrt{g+hx}}{9fh}+\frac{16b^2p^2q^2(g+hx)^{3/2}}{27h}-\frac{64b^2(fg-eh)^{3/2}p^2q^2\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)}{9f^{3/2}h}-\frac{8b^2(}{}$$

```
[Out] 16/27*b^2*p^2*q^2*(h*x+g)^(3/2)/h-64/9*b^2*(-e*h+f*g)^(3/2)*p^2*q^2*arctanh
(f^(1/2)*(h*x+g)^(1/2)/(-e*h+f*g)^(1/2))/f^(3/2)/h-8/3*b^2*(-e*h+f*g)^(3/2)
*p^2*q^2*arctanh(f^(1/2)*(h*x+g)^(1/2)/(-e*h+f*g)^(1/2))^2/f^(3/2)/h-8/9*b*
p*q*(h*x+g)^(3/2)*(a+b*ln(c*(d*(f*x+e)^p)^q))/h+8/3*b*(-e*h+f*g)^(3/2)*p*q*
arctanh(f^(1/2)*(h*x+g)^(1/2)/(-e*h+f*g)^(1/2))*(a+b*ln(c*(d*(f*x+e)^p)^q))
/f^(3/2)/h+2/3*(h*x+g)^(3/2)*(a+b*ln(c*(d*(f*x+e)^p)^q))^2/h+16/3*b^2*(-e*h
+f*g)^(3/2)*p^2*q^2*arctanh(f^(1/2)*(h*x+g)^(1/2)/(-e*h+f*g)^(1/2))*ln(2/(1
-f^(1/2)*(h*x+g)^(1/2)/(-e*h+f*g)^(1/2)))/f^(3/2)/h+8/3*b^2*(-e*h+f*g)^(3/2
)*p^2*q^2*polylog(2,1-2/(1-f^(1/2)*(h*x+g)^(1/2)/(-e*h+f*g)^(1/2)))/f^(3/2)
/h+64/9*b^2*(-e*h+f*g)*p^2*q^2*(h*x+g)^(1/2)/f/h-8/3*b*(-e*h+f*g)*p*q*(a+b*
ln(c*(d*(f*x+e)^p)^q))*(h*x+g)^(1/2)/f/h
```

Rubi [A]

time = 2.08, antiderivative size = 547, normalized size of antiderivative = 1.00, number of steps used = 22, number of rules used = 16, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}} = 0.533$, Rules used = {2445, 2458, 2388, 65, 214, 2390, 12, 1601, 6873, 6131, 6055, 2449, 2352, 2356, 52, 2495}

$$\frac{8b^2p^2q^2(fg-eh)^{3/2}\text{PolyLog}\left(2,1-\frac{2}{1-\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}}\right)}{3f^{3/2}h}+\frac{8bpq(fg-eh)^{3/2}\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)(a+b\log(c(d(e+fx)^p)^q))}{3f^{3/2}h}-\frac{8bpq(g+hx)^{3/2}(a+b\log(c(d(e+fx)^p)^q))}{9h}-\frac{8bpq\sqrt{g+hx}(fg-eh)(a+b\log(c(d(e+fx)^p)^q))}{3fh}+\frac{2(g+hx)^{3/2}(a+b\log(c(d(e+fx)^p)^q))^2}{3h}-\frac{8b^2p^2q^2(fg-eh)^{3/2}\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)^2}{3f^{3/2}h}-\frac{64b^2p^2q^2(fg-eh)^{3/2}\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)}{9f^{3/2}h}+\frac{16b^2p^2q^2(fg-eh)^{3/2}\log\left(\frac{2}{1-\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}}\right)\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)}{3f^{3/2}h}+\frac{64b^2p^2q^2\sqrt{g+hx}(fg-eh)}{9fh}+\frac{16b^2p^2q^2(g+hx)^{3/2}}{27h}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[g + h*x]*(a + b*Log[c*(d*(e + f*x)^p)^q])^2,x]
```

```
[Out] (64*b^2*(f*g - e*h)*p^2*q^2*Sqrt[g + h*x])/(9*f*h) + (16*b^2*p^2*q^2*(g + h
*x)^(3/2))/(27*h) - (64*b^2*(f*g - e*h)^(3/2)*p^2*q^2*ArcTanh[(Sqrt[f]*Sqrt
[g + h*x])/Sqrt[f*g - e*h]])/(9*f^(3/2)*h) - (8*b^2*(f*g - e*h)^(3/2)*p^2*q
^2*ArcTanh[(Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h]]^2)/(3*f^(3/2)*h) - (8*b
*(f*g - e*h)*p*q*Sqrt[g + h*x]*(a + b*Log[c*(d*(e + f*x)^p)^q]))/(3*f*h) -
(8*b*p*q*(g + h*x)^(3/2)*(a + b*Log[c*(d*(e + f*x)^p)^q]))/(9*h) + (8*b*(f*
g - e*h)^(3/2)*p*q*ArcTanh[(Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h]]*(a + b*
Log[c*(d*(e + f*x)^p)^q]))/(3*f^(3/2)*h) + (2*(g + h*x)^(3/2)*(a + b*Log[c*
(d*(e + f*x)^p)^q])^2)/(3*h) + (16*b^2*(f*g - e*h)^(3/2)*p^2*q^2*ArcTanh[(S
qrt[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h]]*Log[2/(1 - (Sqrt[f]*Sqrt[g + h*x])/S
qrt[f*g - e*h])])/(3*f^(3/2)*h) + (8*b^2*(f*g - e*h)^(3/2)*p^2*q^2*PolyLog[
2, 1 - 2/(1 - (Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h])])/(3*f^(3/2)*h)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 52

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
(a + b*x)^(m + 1)*((c + d*x)^n/(b*(m + n + 1))), x] + Dist[n*((b*c - a*d)/(
b*(m + n + 1))), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 65

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - a*(d/b) +
d*(x^p/b))^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 214

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-a/b, 2]/a)*ArcTanh[x
/Rt[-a/b, 2]], x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 1601

```
Int[(Pp_)/(Qq_), x_Symbol] :> With[{p = Expon[Pp, x], q = Expon[Qq, x]}, Si
mp[Coeff[Pp, x, p]*(Log[RemoveContent[Qq, x]]/(q*Coeff[Qq, x, q])), x] /; E
qQ[p, q - 1] && EqQ[Pp, Simplify[(Coeff[Pp, x, p]/(q*Coeff[Qq, x, q]))*D[Qq
, x]]]] /; PolyQ[Pp, x] && PolyQ[Qq, x]
```

Rule 2352

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> Simp[(-e^(-1))*PolyLo
g[2, 1 - c*x], x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2356

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.),
x_Symbol] :> Simp[(d + e*x)^(q + 1)*((a + b*Log[c*x^n])^p/(e*(q + 1))), x]
- Dist[b*n*(p/(e*(q + 1))), Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^(p -
1))/x, x], x] /; FreeQ[{a, b, c, d, e, n, p, q}, x] && GtQ[p, 0] && NeQ[q,
-1] && (EqQ[p, 1] || (IntegersQ[2*p, 2*q] &&  !IGtQ[q, 0]) || (EqQ[p, 2] &&
```

```
NeQ[q, 1]))
```

Rule 2388

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.))
/(x_), x_Symbol] :> Dist[d, Int[(d + e*x)^(q - 1)*((a + b*Log[c*x^n])^p/x),
 x], x] + Dist[e, Int[(d + e*x)^(q - 1)*(a + b*Log[c*x^n])^p, x], x] /; Fre
eQ[{a, b, c, d, e, n}, x] && IGtQ[p, 0] && GtQ[q, 0] && IntegerQ[2*q]
```

Rule 2390

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_) + (e_.)*(x_)^(r_.))^(q_.))
/(x_), x_Symbol] :> With[{u = IntHide[(d + e*x^r)^q/x, x]}, Simp[u*(a + b*L
og[c*x^n]), x] - Dist[b*n, Int[Dist[1/x, u, x], x], x]] /; FreeQ[{a, b, c,
d, e, n, r}, x] && IntegerQ[q - 1/2]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[(f + g*x)^(q + 1)*((a + b*Log[c*(d + e*x)^
n])^p/(g*(q + 1))), x] - Dist[b*e*n*(p/(g*(q + 1))), Int[(f + g*x)^(q + 1)*
((a + b*Log[c*(d + e*x)^n])^(p - 1)/(d + e*x)), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && GtQ[p, 0] && NeQ[q, -1] && Int
egersQ[2*p, 2*q] && ( !IGtQ[q, 0] || (EqQ[p, 2] && NeQ[q, 1]))
```

Rule 2449

```
Int[Log[(c_.)/((d_) + (e_.)*(x_))]/((f_) + (g_.)*(x_)^2), x_Symbol] :> Dist
[-e/g, Subst[Int[Log[2*d*x]/(1 - 2*d*x), x], x, 1/(d + e*x)], x] /; FreeQ[{
c, d, e, f, g}, x] && EqQ[c, 2*d] && EqQ[e^2*f + d^2*g, 0]
```

Rule 2458

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[(g*(x/e))^q*((e*h - d*i)/e + i*(x/e))^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2495

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rule 6055

```
Int[((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symbol
] :> Simp[(-(a + b*ArcTanh[c*x])^p)*(Log[2/(1 + e*(x/d))]/e), x] + Dist[b*c
*(p/e), Int[(a + b*ArcTanh[c*x])^(p - 1)*(Log[2/(1 + e*(x/d))]/(1 - c^2*x^2
)), x], x] /; FreeQ[{a, b, c, d, e}, x] && IGtQ[p, 0] && EqQ[c^2*d^2 - e^2,
 0]
```

Rule 6131

```
Int[(((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)*(x_))/((d_) + (e_.)*(x_)^2),
 x_Symbol] :> Simp[(a + b*ArcTanh[c*x])^(p + 1)/(b*e*(p + 1)), x] + Dist[1/
(c*d), Int[(a + b*ArcTanh[c*x])^p/(1 - c*x), x], x] /; FreeQ[{a, b, c, d, e
}, x] && EqQ[c^2*d + e, 0] && IGtQ[p, 0]
```

Rule 6873

```
Int[u_, x_Symbol] :> With[{v = NormalizeIntegrand[u, x]}, Int[v, x] /; v =!
= u]
```

Rubi steps

$$\int \sqrt{g+hx}\,(a+b\log(c(d(e+fx)^p)^q))^2\,dx = \text{Subst}\bigg(\int \sqrt{g+hx}\,(a+b\log(cd^q(e+fx)^{pq}))^2\,dx, cd^q(e+$$

$$= \frac{2(g+hx)^{3/2}(a+b\log(c(d(e+fx)^p)^q))^2}{3h} - \text{Subst}\Bigg(\frac{(4bfpq}{}$$

$$= \frac{2(g+hx)^{3/2}(a+b\log(c(d(e+fx)^p)^q))^2}{3h} - \text{Subst}\Bigg(\frac{(4bpq)\text{S}}{}$$

$$= \frac{2(g+hx)^{3/2}(a+b\log(c(d(e+fx)^p)^q))^2}{3h} - \text{Subst}\Bigg(\frac{(4bpq)\text{S}}{}$$

$$= -\frac{8bpq(g+hx)^{3/2}(a+b\log(c(d(e+fx)^p)^q))}{9h} + \frac{2(g+hx)^3}{}$$

$$= \frac{16b^2p^2q^2(g+hx)^{3/2}}{27h} - \frac{8b(fg-eh)pq\sqrt{g+hx}\,(a+b\log(c}{3fh}$$

Mathematica [C] Result contains higher order function than in optimal. Order 5 vs. order 4 in optimal.
time = 1.21, size = 365, normalized size = 0.67

$$\frac{2\left(\frac{3b^2p^2q^2\sqrt{g+hx}\left(3h(e+fx)\,{}_4F_3\left(-\frac{1}{2},1,1,1;2,2,2;\frac{h(e+fx)}{-fg+eh}\right)+\log(e+fx)\left(-3h(e+fx)\,{}_3F_2\left(-\frac{1}{2},1,1;2,2;\frac{h(e+fx)}{-fg+eh}\right)+\left(eh+fhx\sqrt{\frac{f(g+hx)}{fg-eh}}+fg\left(-1+\sqrt{\frac{f(g+hx)}{fg-eh}}\right)\right)\log(e+fx)\right)\right)}{f\sqrt{\frac{f(g+hx)}{fg-eh}}}-\frac{2bpq\left(6(fg-eh)^{3/2}\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)+\sqrt{f}\sqrt{g+hx}\,(6eh-2f(4g+hx)+3f(g+hx)\log(e+fx))\right)(-a+bpq\log(e+fx)-b\log(c(d(e+fx)^p)^q))}{f^{3/2}}+3(g+hx)^{3/2}\left(a-bpq\log(e+fx)+b\log\left(c(d(e+fx)^p)^q\right)\right)^2\right)}{9h}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[g + h*x]*(a + b*Log[c*(d*(e + f*x)^p)^q])^2,x]
```

```
[Out] (2*((3*b^2*p^2*q^2*Sqrt[g + h*x]*(3*h*(e + f*x)*HypergeometricPFQ[{-1/2, 1,
 1, 1}, {2, 2, 2}, (h*(e + f*x))/(-(f*g) + e*h)] + Log[e + f*x]*(-3*h*(e +
f*x)*HypergeometricPFQ[{-1/2, 1, 1}, {2, 2}, (h*(e + f*x))/(-(f*g) + e*h)]
+ (e*h + f*h*x*Sqrt[(f*(g + h*x))/(f*g - e*h)] + f*g*(-1 + Sqrt[(f*(g + h*x
))/(f*g - e*h)]))*Log[e + f*x])))/(f*Sqrt[(f*(g + h*x))/(f*g - e*h)]) - (2*
b*p*q*(6*(f*g - e*h)^(3/2)*ArcTanh[(Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h]]
 + Sqrt[f]*Sqrt[g + h*x]*(6*e*h - 2*f*(4*g + h*x) + 3*f*(g + h*x)*Log[e + f
*x]))*(-a + b*p*q*Log[e + f*x] - b*Log[c*(d*(e + f*x)^p)^q]))/f^(3/2) + 3*(
g + h*x)^(3/2)*(a - b*p*q*Log[e + f*x] + b*Log[c*(d*(e + f*x)^p)^q])^2))/(9
*h)
```

Maple [F]
time = 0.22, size = 0, normalized size = 0.00

$$\int \sqrt{hx+g}\,\left(a+b\ln\left(c(d(fx+e)^{p})^{q}\right)\right)^{2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x+g)^(1/2)*(a+b*ln(c*(d*(f*x+e)^p)^q))^2,x)
```

```
[Out] int((h*x+g)^(1/2)*(a+b*ln(c*(d*(f*x+e)^p)^q))^2,x)
```

Maxima [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^(1/2)*(a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="maxima
")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(%e*h-f*g>0)', see `assume?` for mor
e detai
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^(1/2)*(a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="fricas
")
```

```
[Out] integral(sqrt(h*x + g)*b^2*log(((f*x + e)^p*d)^q*c)^2 + 2*sqrt(h*x + g)*a*b
*log(((f*x + e)^p*d)^q*c) + sqrt(h*x + g)*a^2, x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int (a + b \log (c(d(e + fx)^p)^q))^2 \sqrt{g + hx}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)**(1/2)*(a+b*ln(c*(d*(f*x+e)**p)**q))**2,x)
```

```
[Out] Integral((a + b*log(c*(d*(e + f*x)**p)**q))**2*sqrt(g + h*x), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^(1/2)*(a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="giac")
```

```
[Out] integrate(sqrt(h*x + g)*(b*log(((f*x + e)^p*d)^q*c) + a)^2, x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \sqrt{g+h\,x}\,{\left(a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)\right)}^2 \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g + h*x)^(1/2)*(a + b*log(c*(d*(e + f*x)^p)^q))^2,x)
```

```
[Out] int((g + h*x)^(1/2)*(a + b*log(c*(d*(e + f*x)^p)^q))^2, x)
```

3.491 $\int \frac{(a+b\log(c(d(e+fx)^p)^q))^2}{\sqrt{g+hx}}\,dx$

Optimal. Leaf size=447

$$\frac{16b^2p^2q^2\sqrt{g+hx}}{h}-\frac{16b^2\sqrt{fg-eh}\,p^2q^2\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)}{\sqrt{f}\,h}-\frac{8b^2\sqrt{fg-eh}\,p^2q^2\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g-}}{\sqrt{fg-}}\right.}{\sqrt{f}\,h}$$

```
[Out] -16*b^2*p^2*q^2*arctanh(f^(1/2)*(h*x+g)^(1/2)/(-e*h+f*g)^(1/2))*(-e*h+f*g)^
(1/2)/h/f^(1/2)-8*b^2*p^2*q^2*arctanh(f^(1/2)*(h*x+g)^(1/2)/(-e*h+f*g)^(1/2
))^2*(-e*h+f*g)^(1/2)/h/f^(1/2)+8*b*p*q*arctanh(f^(1/2)*(h*x+g)^(1/2)/(-e*h
+f*g)^(1/2))*(a+b*ln(c*(d*(f*x+e)^p)^q))*(-e*h+f*g)^(1/2)/h/f^(1/2)+16*b^2*
p^2*q^2*arctanh(f^(1/2)*(h*x+g)^(1/2)/(-e*h+f*g)^(1/2))*ln(2/(1-f^(1/2)*(h*
x+g)^(1/2)/(-e*h+f*g)^(1/2)))*(-e*h+f*g)^(1/2)/h/f^(1/2)+8*b^2*p^2*q^2*poly
log(2,1-2/(1-f^(1/2)*(h*x+g)^(1/2)/(-e*h+f*g)^(1/2)))*(-e*h+f*g)^(1/2)/h/f^
(1/2)+16*b^2*p^2*q^2*(h*x+g)^(1/2)/h-8*b*p*q*(a+b*ln(c*(d*(f*x+e)^p)^q))*(h
*x+g)^(1/2)/h+2*(a+b*ln(c*(d*(f*x+e)^p)^q))^2*(h*x+g)^(1/2)/h
```

Rubi [A]
time = 1.52, antiderivative size = 447, normalized size of antiderivative = 1.00, number of steps used = 16, number of rules used = 16, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}} = 0.533$, Rules used = {2445, 2458, 2388, 65, 214, 2390, 12, 1601, 6873, 6131, 6055, 2449, 2352, 2356, 52, 2495}

$$\frac{8b^2p^2q^2\sqrt{fg-eh}\,\text{PolyLog}\left(2,1-\frac{2}{1-\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}}\right)}{\sqrt{f}\,h}-\frac{8bpq\sqrt{g+hx}\,(a+b\log(c(d(e+fx)^p)^q))}{h}+\frac{2\sqrt{g+hx}\,(a+b\log(c(d(e+fx)^p)^q))^2}{h}+\frac{8bpq\sqrt{fg-eh}\,\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)(a+b\log(c(d(e+fx)^p)^q))}{\sqrt{f}\,h}-\frac{8b^2p^2q^2\sqrt{fg-eh}\,\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)^2}{\sqrt{f}\,h}-\frac{16b^2p^2q^2\sqrt{fg-eh}\,\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)}{\sqrt{f}\,h}+\frac{16b^2p^2q^2\sqrt{fg-eh}\,\log\left(\frac{2}{1-\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}}\right)\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)}{\sqrt{f}\,h}+\frac{16b^2p^2q^2\sqrt{g+hx}}{h}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])^2/Sqrt[g + h*x],x]
```

```
[Out] (16*b^2*p^2*q^2*Sqrt[g + h*x])/h - (16*b^2*Sqrt[f*g - e*h]*p^2*q^2*ArcTanh[
(Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h]])/(Sqrt[f]*h) - (8*b^2*Sqrt[f*g - e
*h]*p^2*q^2*ArcTanh[(Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h]]^2)/(Sqrt[f]*h)
 - (8*b*p*q*Sqrt[g + h*x]*(a + b*Log[c*(d*(e + f*x)^p)^q]))/h + (8*b*Sqrt[f
*g - e*h]*p*q*ArcTanh[(Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h]]*(a + b*Log[c
*(d*(e + f*x)^p)^q]))/(Sqrt[f]*h) + (2*Sqrt[g + h*x]*(a + b*Log[c*(d*(e + f
*x)^p)^q])^2)/h + (16*b^2*Sqrt[f*g - e*h]*p^2*q^2*ArcTanh[(Sqrt[f]*Sqrt[g +
 h*x])/Sqrt[f*g - e*h]]*Log[2/(1 - (Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h])
])/(Sqrt[f]*h) + (8*b^2*Sqrt[f*g - e*h]*p^2*q^2*PolyLog[2, 1 - 2/(1 - (Sqrt
[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h])])/(Sqrt[f]*h)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 52

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
(a + b*x)^(m + 1)*((c + d*x)^n/(b*(m + n + 1))), x] + Dist[n*((b*c - a*d)/(
b*(m + n + 1))), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 65

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - a*(d/b) +
d*(x^p/b))^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 214

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-a/b, 2]/a)*ArcTanh[x
/Rt[-a/b, 2]], x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 1601

```
Int[(Pp_)/(Qq_), x_Symbol] :> With[{p = Expon[Pp, x], q = Expon[Qq, x]}, Si
mp[Coeff[Pp, x, p]*(Log[RemoveContent[Qq, x]]/(q*Coeff[Qq, x, q])), x] /; E
qQ[p, q - 1] && EqQ[Pp, Simplify[(Coeff[Pp, x, p]/(q*Coeff[Qq, x, q]))*D[Qq
, x]]]] /; PolyQ[Pp, x] && PolyQ[Qq, x]
```

Rule 2352

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> Simp[(-e^(-1))*PolyLo
g[2, 1 - c*x], x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2356

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.),
x_Symbol] :> Simp[(d + e*x)^(q + 1)*((a + b*Log[c*x^n])^p/(e*(q + 1))), x]
- Dist[b*n*(p/(e*(q + 1))), Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^(p -
1))/x, x], x] /; FreeQ[{a, b, c, d, e, n, p, q}, x] && GtQ[p, 0] && NeQ[q,
-1] && (EqQ[p, 1] || (IntegersQ[2*p, 2*q] &&  !IGtQ[q, 0]) || (EqQ[p, 2] &&
 NeQ[q, 1]))
```

Rule 2388

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.))
/(x_), x_Symbol] :> Dist[d, Int[(d + e*x)^(q - 1)*((a + b*Log[c*x^n])^p/x),
 x], x] + Dist[e, Int[(d + e*x)^(q - 1)*(a + b*Log[c*x^n])^p, x], x] /; Fre
eQ[{a, b, c, d, e, n}, x] && IGtQ[p, 0] && GtQ[q, 0] && IntegerQ[2*q]
```

Rule 2390

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_) + (e_.)*(x_)^(r_.))^(q_.))
/(x_), x_Symbol] :> With[{u = IntHide[(d + e*x^r)^q/x, x]}, Simp[u*(a + b*L
og[c*x^n]), x] - Dist[b*n, Int[Dist[1/x, u, x], x], x]] /; FreeQ[{a, b, c,
d, e, n, r}, x] && IntegerQ[q - 1/2]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[(f + g*x)^(q + 1)*((a + b*Log[c*(d + e*x)^
n])^p/(g*(q + 1))), x] - Dist[b*e*n*(p/(g*(q + 1))), Int[(f + g*x)^(q + 1)*
((a + b*Log[c*(d + e*x)^n])^(p - 1)/(d + e*x)), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && GtQ[p, 0] && NeQ[q, -1] && Int
egersQ[2*p, 2*q] && ( !IGtQ[q, 0] || (EqQ[p, 2] && NeQ[q, 1]))
```

Rule 2449

```
Int[Log[(c_.)/((d_) + (e_.)*(x_))]/((f_) + (g_.)*(x_)^2), x_Symbol] :> Dist
[-e/g, Subst[Int[Log[2*d*x]/(1 - 2*d*x), x], x, 1/(d + e*x)], x] /; FreeQ[{
c, d, e, f, g}, x] && EqQ[c, 2*d] && EqQ[e^2*f + d^2*g, 0]
```

Rule 2458

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[(g*(x/e))^q*((e*h - d*i)/e + i*(x/e))^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2495

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rule 6055

```
Int[((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symbol
] :> Simp[(-(a + b*ArcTanh[c*x])^p)*(Log[2/(1 + e*(x/d))]/e), x] + Dist[b*c
*(p/e), Int[(a + b*ArcTanh[c*x])^(p - 1)*(Log[2/(1 + e*(x/d))]/(1 - c^2*x^2
)), x], x] /; FreeQ[{a, b, c, d, e}, x] && IGtQ[p, 0] && EqQ[c^2*d^2 - e^2,
 0]
```

Rule 6131

```
Int[(((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)*(x_))/((d_) + (e_.)*(x_)^2),
 x_Symbol] :> Simp[(a + b*ArcTanh[c*x])^(p + 1)/(b*e*(p + 1)), x] + Dist[1/
(c*d), Int[(a + b*ArcTanh[c*x])^p/(1 - c*x), x], x] /; FreeQ[{a, b, c, d, e
}, x] && EqQ[c^2*d + e, 0] && IGtQ[p, 0]
```

Rule 6873

```
Int[u_, x_Symbol] :> With[{v = NormalizeIntegrand[u, x]}, Int[v, x] /; v =!
= u]
```

Rubi steps

$$\int \frac{(a+b\log(c(d(e+fx)^p)^q))^2}{\sqrt{g+hx}}\,dx = \text{Subst}\left(\int \frac{(a+b\log(cd^q(e+fx)^{pq}))^2}{\sqrt{g+hx}}\,dx, cd^q(e+fx)^{pq}, c(d(e+fx)^p)^q\right.$$

$$= \frac{2\sqrt{g+hx}\,(a+b\log(c(d(e+fx)^p)^q))^2}{h} - \text{Subst}\left(\frac{(4bfpq)\int \frac{\sqrt{g+hx}}{}}{}\right.$$

$$= \frac{2\sqrt{g+hx}\,(a+b\log(c(d(e+fx)^p)^q))^2}{h} - \text{Subst}\left(\frac{(4bpq)\text{Subst}\left(\int \frac{\sqrt{f}}{}\right.}{}\right.$$

$$= \frac{2\sqrt{g+hx}\,(a+b\log(c(d(e+fx)^p)^q))^2}{h} - \text{Subst}\left(\frac{(4bpq)\text{Subst}\left(\int \frac{}{\sqrt{f}}\right.}{}\right.$$

$$= -\frac{8bpq\sqrt{g+hx}\,(a+b\log(c(d(e+fx)^p)^q))}{h} + \frac{8b\sqrt{fg-eh}\,pq\tanh^{-1}}{}$$

Mathematica [C] Result contains higher order function than in optimal. Order 5 vs. order 4 in optimal.
time = 1.25, size = 646, normalized size = 1.45

$$\frac{2\left(a^2fg-4abfgpq+a^2fhx-4abfhpqx+4ab\sqrt{f}\sqrt{fg-eh}\,pq\sqrt{g+hx}\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)+b^2hp^2q^2(e+fx)\sqrt{\frac{f(g+hx)}{fg-eh}}\,{}_4F_3\left(\frac{1}{2},1,1,1;2,2,2;\frac{h(e+fx)}{-fg+eh}\right)+4b^2fgp^2q^2\log(e+fx)+4b^2fhp^2q^2x\log(e+fx)-4b^2\sqrt{f}\sqrt{fg-eh}\,p^2q^2\sqrt{g+hx}\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)\log(e+fx)-b^2hp^2q^2(e+fx)\sqrt{\frac{f(g+hx)}{fg-eh}}\,{}_3F_2\left(\frac{1}{2},1,1;2,2;\frac{h(e+fx)}{-fg+eh}\right)\log(e+fx)-b^2fgp^2q^2\sqrt{\frac{f(g+hx)}{fg-eh}}\log^2(e+fx)+b^2ehp^2q^2\sqrt{\frac{f(g+hx)}{fg-eh}}\log^2(e+fx)+2abfg\log\left(c(d(e+fx)^p)^q\right)-4b^2fgpq\log\left(c(d(e+fx)^p)^q\right)+2abfhx\log\left(c(d(e+fx)^p)^q\right)-4b^2fhpqx\log\left(c(d(e+fx)^p)^q\right)+4b^2\sqrt{f}\sqrt{fg-eh}\,pq\sqrt{g+hx}\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)\log\left(c(d(e+fx)^p)^q\right)+b^2fg\log^2\left(c(d(e+fx)^p)^q\right)+b^2fhx\log^2\left(c(d(e+fx)^p)^q\right)\right)}{fh\sqrt{g+hx}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])^2/Sqrt[g + h*x],x]
```

```
[Out] (2*(a^2*f*g - 4*a*b*f*g*p*q + a^2*f*h*x - 4*a*b*f*h*p*q*x + 4*a*b*Sqrt[f]*S
qrt[f*g - e*h]*p*q*Sqrt[g + h*x]*ArcTanh[(Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g -
 e*h]] + b^2*h*p^2*q^2*(e + f*x)*Sqrt[(f*(g + h*x))/(f*g - e*h)]*Hypergeome
tricPFQ[{1/2, 1, 1, 1}, {2, 2, 2}, (h*(e + f*x))/(-(f*g) + e*h)] + 4*b^2*f*
g*p^2*q^2*Log[e + f*x] + 4*b^2*f*h*p^2*q^2*x*Log[e + f*x] - 4*b^2*Sqrt[f]*S
qrt[f*g - e*h]*p^2*q^2*Sqrt[g + h*x]*ArcTanh[(Sqrt[f]*Sqrt[g + h*x])/Sqrt[f
*g - e*h]]*Log[e + f*x] - b^2*h*p^2*q^2*(e + f*x)*Sqrt[(f*(g + h*x))/(f*g -
 e*h)]*HypergeometricPFQ[{1/2, 1, 1}, {2, 2}, (h*(e + f*x))/(-(f*g) + e*h)]
*Log[e + f*x] - b^2*f*g*p^2*q^2*Sqrt[(f*(g + h*x))/(f*g - e*h)]*Log[e + f*x
]^2 + b^2*e*h*p^2*q^2*Sqrt[(f*(g + h*x))/(f*g - e*h)]*Log[e + f*x]^2 + 2*a*
b*f*g*Log[c*(d*(e + f*x)^p)^q] - 4*b^2*f*g*p*q*Log[c*(d*(e + f*x)^p)^q] + 2
*a*b*f*h*x*Log[c*(d*(e + f*x)^p)^q] - 4*b^2*f*h*p*q*x*Log[c*(d*(e + f*x)^p)
^q] + 4*b^2*Sqrt[f]*Sqrt[f*g - e*h]*p*q*Sqrt[g + h*x]*ArcTanh[(Sqrt[f]*Sqrt
[g + h*x])/Sqrt[f*g - e*h]]*Log[c*(d*(e + f*x)^p)^q] + b^2*f*g*Log[c*(d*(e
 + f*x)^p)^q]^2 + b^2*f*h*x*Log[c*(d*(e + f*x)^p)^q]^2))/(f*h*Sqrt[g + h*x])
```

Maple [F]
time = 0.19, size = 0, normalized size = 0.00

$$\int \frac{\left(a+b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)\right)^{2}}{\sqrt{hx+g}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(d*(f*x+e)^p)^q))^2/(h*x+g)^(1/2),x)
```

```
[Out] int((a+b*ln(c*(d*(f*x+e)^p)^q))^2/(h*x+g)^(1/2),x)
```

Maxima [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^2/(h*x+g)^(1/2),x, algorithm="maxima
")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(%e*h-f*g>0)', see `assume?` for mor
e detai
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^2/(h*x+g)^(1/2),x, algorithm="fricas
")
```

```
[Out] integral((sqrt(h*x + g)*b^2*log(((f*x + e)^p*d)^q*c)^2 + 2*sqrt(h*x + g)*a*
b*log(((f*x + e)^p*d)^q*c) + sqrt(h*x + g)*a^2)/(h*x + g), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(a + b\log\left(c\left(d\left(e + fx\right)^{p}\right)^{q}\right)\right)^{2}}{\sqrt{g + hx}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))**2/(h*x+g)**(1/2),x)
```

```
[Out] Integral((a + b*log(c*(d*(e + f*x)**p)**q))**2/sqrt(g + h*x), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^2/(h*x+g)^(1/2),x, algorithm="giac")
```

```
[Out] integrate((b*log(((f*x + e)^p*d)^q*c) + a)^2/sqrt(h*x + g), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{{\left(a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)\right)}^2}{\sqrt{g+h\,x}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d*(e + f*x)^p)^q))^2/(g + h*x)^(1/2),x)
```

```
[Out] int((a + b*log(c*(d*(e + f*x)^p)^q))^2/(g + h*x)^(1/2), x)
```

3.492 $\int \frac{(a+b\log(c(d(e+fx)^p)^q))^2}{(g+hx)^{3/2}}\,dx$

Optimal. Leaf size=330

$$\frac{8b^2\sqrt{f}\,p^2q^2\tanh^{-1}\left(\frac{\sqrt{f}\,\sqrt{g+hx}}{\sqrt{fg-eh}}\right)^2}{h\sqrt{fg-eh}}-\frac{8b\sqrt{f}\,pq\tanh^{-1}\left(\frac{\sqrt{f}\,\sqrt{g+hx}}{\sqrt{fg-eh}}\right)(a+b\log(c(d(e+fx)^p)^q))}{h\sqrt{fg-eh}}-$$

```
[Out] 8*b^2*p^2*q^2*arctanh(f^(1/2)*(h*x+g)^(1/2)/(-e*h+f*g)^(1/2))^2*f^(1/2)/h/(
-e*h+f*g)^(1/2)-8*b*p*q*arctanh(f^(1/2)*(h*x+g)^(1/2)/(-e*h+f*g)^(1/2))*(a+
b*ln(c*(d*(f*x+e)^p)^q))*f^(1/2)/h/(-e*h+f*g)^(1/2)-16*b^2*p^2*q^2*arctanh(
f^(1/2)*(h*x+g)^(1/2)/(-e*h+f*g)^(1/2))*ln(2/(1-f^(1/2)*(h*x+g)^(1/2)/(-e*h
+f*g)^(1/2)))*f^(1/2)/h/(-e*h+f*g)^(1/2)-8*b^2*p^2*q^2*polylog(2,1-2/(1-f^(
1/2)*(h*x+g)^(1/2)/(-e*h+f*g)^(1/2)))*f^(1/2)/h/(-e*h+f*g)^(1/2)-2*(a+b*ln(
c*(d*(f*x+e)^p)^q))^2/h/(h*x+g)^(1/2)
```

Rubi [A]
time = 1.13, antiderivative size = 330, normalized size of antiderivative = 1.00, number of steps used = 11, number of rules used = 13, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}} = 0.433$, Rules used = {2445, 2458, 65, 214, 2390, 12, 1601, 6873, 6131, 6055, 2449, 2352, 2495}

$$-\frac{8b^2\sqrt{f}\,p^2q^2\,\text{PolyLog}\left(2,1-\frac{2}{1-\frac{\sqrt{f}\,\sqrt{g+hx}}{\sqrt{fg-eh}}}\right)}{h\sqrt{fg-eh}}-\frac{2(a+b\log(c(d(e+fx)^p)^q))^2}{h\sqrt{g+hx}}-\frac{8b\sqrt{f}\,pq\tanh^{-1}\left(\frac{\sqrt{f}\,\sqrt{g+hx}}{\sqrt{fg-eh}}\right)(a+b\log(c(d(e+fx)^p)^q))}{h\sqrt{fg-eh}}+\frac{8b^2\sqrt{f}\,p^2q^2\tanh^{-1}\left(\frac{\sqrt{f}\,\sqrt{g+hx}}{\sqrt{fg-eh}}\right)^2}{h\sqrt{fg-eh}}-\frac{16b^2\sqrt{f}\,p^2q^2\log\left(\frac{2}{1-\frac{\sqrt{f}\,\sqrt{g+hx}}{\sqrt{fg-eh}}}\right)\tanh^{-1}\left(\frac{\sqrt{f}\,\sqrt{g+hx}}{\sqrt{fg-eh}}\right)}{h\sqrt{fg-eh}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])^2/(g + h*x)^(3/2),x]
```

```
[Out] (8*b^2*Sqrt[f]*p^2*q^2*ArcTanh[(Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h]]^2)/
(h*Sqrt[f*g - e*h]) - (8*b*Sqrt[f]*p*q*ArcTanh[(Sqrt[f]*Sqrt[g + h*x])/Sqrt
[f*g - e*h]]*(a + b*Log[c*(d*(e + f*x)^p)^q]))/(h*Sqrt[f*g - e*h]) - (2*(a
+ b*Log[c*(d*(e + f*x)^p)^q])^2)/(h*Sqrt[g + h*x]) - (16*b^2*Sqrt[f]*p^2*q^
2*ArcTanh[(Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h]]*Log[2/(1 - (Sqrt[f]*Sqrt
[g + h*x])/Sqrt[f*g - e*h])])/(h*Sqrt[f*g - e*h]) - (8*b^2*Sqrt[f]*p^2*q^2*
PolyLog[2, 1 - 2/(1 - (Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h])])/(h*Sqrt[f*
g - e*h])
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 65

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - a*(d/b) +
d*(x^p/b))^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 214

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-a/b, 2]/a)*ArcTanh[x
/Rt[-a/b, 2]], x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 1601

```
Int[(Pp_)/(Qq_), x_Symbol] :> With[{p = Expon[Pp, x], q = Expon[Qq, x]}, Si
mp[Coeff[Pp, x, p]*(Log[RemoveContent[Qq, x]]/(q*Coeff[Qq, x, q])), x] /; E
qQ[p, q - 1] && EqQ[Pp, Simplify[(Coeff[Pp, x, p]/(q*Coeff[Qq, x, q]))*D[Qq
, x]]]] /; PolyQ[Pp, x] && PolyQ[Qq, x]
```

Rule 2352

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> Simp[(-e^(-1))*PolyLo
g[2, 1 - c*x], x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2390

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_) + (e_.)*(x_)^(r_.))^(q_.))
/(x_), x_Symbol] :> With[{u = IntHide[(d + e*x^r)^q/x, x]}, Simp[u*(a + b*L
og[c*x^n]), x] - Dist[b*n, Int[Dist[1/x, u, x], x], x]] /; FreeQ[{a, b, c,
d, e, n, r}, x] && IntegerQ[q - 1/2]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[(f + g*x)^(q + 1)*((a + b*Log[c*(d + e*x)^
n])^p/(g*(q + 1))), x] - Dist[b*e*n*(p/(g*(q + 1))), Int[(f + g*x)^(q + 1)*
((a + b*Log[c*(d + e*x)^n])^(p - 1)/(d + e*x)), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && GtQ[p, 0] && NeQ[q, -1] && Int
egersQ[2*p, 2*q] && ( !IGtQ[q, 0] || (EqQ[p, 2] && NeQ[q, 1]))
```

Rule 2449

```
Int[Log[(c_.)/((d_) + (e_.)*(x_))]/((f_) + (g_.)*(x_)^2), x_Symbol] :> Dist
[-e/g, Subst[Int[Log[2*d*x]/(1 - 2*d*x), x], x, 1/(d + e*x)], x] /; FreeQ[{
c, d, e, f, g}, x] && EqQ[c, 2*d] && EqQ[e^2*f + d^2*g, 0]
```

Rule 2458

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[(g*(x/e))^q*((e*h - d*i)/e + i*(x/e))^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2495

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rule 6055

```
Int[((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symbol
] :> Simp[(-(a + b*ArcTanh[c*x])^p)*(Log[2/(1 + e*(x/d))]/e), x] + Dist[b*c
*(p/e), Int[(a + b*ArcTanh[c*x])^(p - 1)*(Log[2/(1 + e*(x/d))]/(1 - c^2*x^2
)), x], x] /; FreeQ[{a, b, c, d, e}, x] && IGtQ[p, 0] && EqQ[c^2*d^2 - e^2,
 0]
```

Rule 6131

```
Int[(((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)*(x_))/((d_) + (e_.)*(x_)^2),
 x_Symbol] :> Simp[(a + b*ArcTanh[c*x])^(p + 1)/(b*e*(p + 1)), x] + Dist[1/
(c*d), Int[(a + b*ArcTanh[c*x])^p/(1 - c*x), x], x] /; FreeQ[{a, b, c, d, e
}, x] && EqQ[c^2*d + e, 0] && IGtQ[p, 0]
```

Rule 6873

```
Int[u_, x_Symbol] :> With[{v = NormalizeIntegrand[u, x]}, Int[v, x] /; v =!
= u]
```

Rubi steps

$$\int \frac{(a+b\log(c(d(e+fx)^p)^q))^2}{(g+hx)^{3/2}}\,dx = \text{Subst}\left(\int \frac{(a+b\log(cd^q(e+fx)^{pq}))^2}{(g+hx)^{3/2}}\,dx, cd^q(e+fx)^{pq}, c(d(e+fx)^p)^q\right.$$

$$= -\frac{2(a+b\log(c(d(e+fx)^p)^q))^2}{h\sqrt{g+hx}} + \text{Subst}\left(\frac{(4bfpq)\int \frac{a+b\log(cd^q(e+fx)^{pq})}{(e+fx)\sqrt{g+hx}}\,d}{h}\right.$$

$$= -\frac{2(a+b\log(c(d(e+fx)^p)^q))^2}{h\sqrt{g+hx}} + \text{Subst}\left(\frac{(4bpq)\text{Subst}\left(\int \frac{a+b\log(cd^q}{x\sqrt{\frac{fg-eh}{f}}}\right.}{h}\right.$$

$$= -\frac{8b\sqrt{f}\,pq\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)(a+b\log(c(d(e+fx)^p)^q))}{h\sqrt{fg-eh}} - \frac{2(}{}$$

$$= -\frac{8b\sqrt{f}\,pq\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)(a+b\log(c(d(e+fx)^p)^q))}{h\sqrt{fg-eh}} - \frac{2(}{}$$

Mathematica [C] Result contains higher order function than in optimal. Order 5 vs. order 4 in optimal.
time = 2.61, size = 356, normalized size = 1.08

$$\frac{2\left(\frac{2bpq\left(2\sqrt{f}(g+hx)\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)+\sqrt{fg-eh}\sqrt{g+hx}\log(e+fx)\right)(-a+bpq\log(e+fx)-b\log(c(d(e+fx)^p)^q))}{\sqrt{fg-eh}(g+hx)}-\frac{(a-bpq\log(e+fx)+b\log(c(d(e+fx)^p)^q))^2}{\sqrt{g+hx}}+\frac{b^2p^2q^2\left(h(e+fx)\sqrt{\frac{f(g+hx)}{fg-eh}}\,{}_4F_3\left(1,1,1,\frac{3}{2};2,2,2;\frac{h(e+fx)}{-fg+eh}\right)+(fg-eh)\log(e+fx)\left(\left(-1+\sqrt{\frac{f(g+hx)}{fg-eh}}\right)\log(e+fx)-4\sqrt{\frac{f(g+hx)}{fg-eh}}\log\left(\frac{1}{2}\left(1+\sqrt{\frac{f(g+hx)}{fg-eh}}\right)\right)\right)\right)}{(fg-eh)\sqrt{g+hx}}\right)}{h}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])^2/(g + h*x)^(3/2),x]
```

```
[Out] (2*((2*b*p*q*(2*Sqrt[f]*(g + h*x)*ArcTanh[(Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g
- e*h]] + Sqrt[f*g - e*h]*Sqrt[g + h*x]*Log[e + f*x])*(-a + b*p*q*Log[e + f
*x] - b*Log[c*(d*(e + f*x)^p)^q]))/(Sqrt[f*g - e*h]*(g + h*x)) - (a - b*p*q
*Log[e + f*x] + b*Log[c*(d*(e + f*x)^p)^q])^2/Sqrt[g + h*x] + (b^2*p^2*q^2*
(h*(e + f*x)*Sqrt[(f*(g + h*x))/(f*g - e*h)]*HypergeometricPFQ[{1, 1, 1, 3/
2}, {2, 2, 2}, (h*(e + f*x))/(-(f*g) + e*h)] + (f*g - e*h)*Log[e + f*x]*((-
1 + Sqrt[(f*(g + h*x))/(f*g - e*h)])*Log[e + f*x] - 4*Sqrt[(f*(g + h*x))/(f
*g - e*h)]*Log[(1 + Sqrt[(f*(g + h*x))/(f*g - e*h)])/2])))/((f*g - e*h)*Sqr
t[g + h*x])))/h
```

Maple [F]
time = 0.22, size = 0, normalized size = 0.00

$$\int \frac{\left(a+b\ln\left(c\left(d(fx+e)^{p}\right)^{q}\right)\right)^{2}}{(hx+g)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(d*(f*x+e)^p)^q))^2/(h*x+g)^(3/2),x)
```

```
[Out] int((a+b*ln(c*(d*(f*x+e)^p)^q))^2/(h*x+g)^(3/2),x)
```

Maxima [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^2/(h*x+g)^(3/2),x, algorithm="maxima
")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(%e*h-f*g>0)', see `assume?` for mor
e detai
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^2/(h*x+g)^(3/2),x, algorithm="fricas
")
```

```
[Out] integral((sqrt(h*x + g)*b^2*log(((f*x + e)^p*d)^q*c)^2 + 2*sqrt(h*x + g)*a*
b*log(((f*x + e)^p*d)^q*c) + sqrt(h*x + g)*a^2)/(h^2*x^2 + 2*g*h*x + g^2),
x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a + b\log{(c(d(e + fx)^p)^q)})^2}{(g + hx)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))**2/(h*x+g)**(3/2),x)
```

```
[Out] Integral((a + b*log(c*(d*(e + f*x)**p)**q))**2/(g + h*x)**(3/2), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^2/(h*x+g)^(3/2),x, algorithm="giac")
```

```
[Out] integrate((b*log(((f*x + e)^p*d)^q*c) + a)^2/(h*x + g)^(3/2), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{{\left(a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)\right)}^2}{{\left(g+h\,x\right)}^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d*(e + f*x)^p)^q))^2/(g + h*x)^(3/2),x)
```

```
[Out] int((a + b*log(c*(d*(e + f*x)^p)^q))^2/(g + h*x)^(3/2), x)
```

3.493 $\int \frac{(a+b\log(c(d(e+fx)^p)^q))^2}{(g+hx)^{5/2}}\,dx$

Optimal. Leaf size=449

$$\frac{16b^2f^{3/2}p^2q^2\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)}{3h(fg-eh)^{3/2}}+\frac{8b^2f^{3/2}p^2q^2\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)^2}{3h(fg-eh)^{3/2}}+\frac{8bfpq(a+b\log(c(d(e+}{3h(fg-eh)\sqrt{g+}}$$

```
[Out] 16/3*b^2*f^(3/2)*p^2*q^2*arctanh(f^(1/2)*(h*x+g)^(1/2)/(-e*h+f*g)^(1/2))/h/
(-e*h+f*g)^(3/2)+8/3*b^2*f^(3/2)*p^2*q^2*arctanh(f^(1/2)*(h*x+g)^(1/2)/(-e*
h+f*g)^(1/2))^2/h/(-e*h+f*g)^(3/2)-8/3*b*f^(3/2)*p*q*arctanh(f^(1/2)*(h*x+g
)^(1/2)/(-e*h+f*g)^(1/2))*(a+b*ln(c*(d*(f*x+e)^p)^q))/h/(-e*h+f*g)^(3/2)-2/
3*(a+b*ln(c*(d*(f*x+e)^p)^q))^2/h/(h*x+g)^(3/2)-16/3*b^2*f^(3/2)*p^2*q^2*ar
ctanh(f^(1/2)*(h*x+g)^(1/2)/(-e*h+f*g)^(1/2))*ln(2/(1-f^(1/2)*(h*x+g)^(1/2)
/(-e*h+f*g)^(1/2)))/h/(-e*h+f*g)^(3/2)-8/3*b^2*f^(3/2)*p^2*q^2*polylog(2,1-
2/(1-f^(1/2)*(h*x+g)^(1/2)/(-e*h+f*g)^(1/2)))/h/(-e*h+f*g)^(3/2)+8/3*b*f*p*
q*(a+b*ln(c*(d*(f*x+e)^p)^q))/h/(-e*h+f*g)/(h*x+g)^(1/2)
```

Rubi [A]
time = 1.60, antiderivative size = 449, normalized size of antiderivative = 1.00, number of steps used = 15, number of rules used = 15, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}} = 0.500$, Rules used = {2445, 2458, 2389, 65, 214, 2390, 12, 1601, 6873, 6131, 6055, 2449, 2352, 2356, 2495}

$$-\frac{8b^2f^{3/2}p^2q^2\text{PolyLog}\left(2,1-\frac{2}{1-\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}}\right)}{3h(fg-eh)^{3/2}}-\frac{8bf^{3/2}pq\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)(a+b\log(c(d(e+fx)^p)^q))}{3h(fg-eh)^{3/2}}+\frac{8bfpq(a+b\log(c(d(e+fx)^p)^q))}{3h\sqrt{g+hx}(fg-eh)}-\frac{2(a+b\log(c(d(e+fx)^p)^q))^2}{3h(g+hx)^{3/2}}+\frac{8b^2f^{3/2}p^2q^2\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)^2}{3h(fg-eh)^{3/2}}+\frac{16b^2f^{3/2}p^2q^2\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)}{3h(fg-eh)^{3/2}}-\frac{16b^2f^{3/2}p^2q^2\log\left(\frac{2}{1-\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}}\right)\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)}{3h(fg-eh)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])^2/(g + h*x)^(5/2),x]
```

```
[Out] (16*b^2*f^(3/2)*p^2*q^2*ArcTanh[(Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h]])/(
3*h*(f*g - e*h)^(3/2)) + (8*b^2*f^(3/2)*p^2*q^2*ArcTanh[(Sqrt[f]*Sqrt[g + h
*x])/Sqrt[f*g - e*h]]^2)/(3*h*(f*g - e*h)^(3/2)) + (8*b*f*p*q*(a + b*Log[c*
(d*(e + f*x)^p)^q]))/(3*h*(f*g - e*h)*Sqrt[g + h*x]) - (8*b*f^(3/2)*p*q*Arc
Tanh[(Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h]]*(a + b*Log[c*(d*(e + f*x)^p)^
q]))/(3*h*(f*g - e*h)^(3/2)) - (2*(a + b*Log[c*(d*(e + f*x)^p)^q])^2)/(3*h*
(g + h*x)^(3/2)) - (16*b^2*f^(3/2)*p^2*q^2*ArcTanh[(Sqrt[f]*Sqrt[g + h*x])/
Sqrt[f*g - e*h]]*Log[2/(1 - (Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h])])/(3*h
*(f*g - e*h)^(3/2)) - (8*b^2*f^(3/2)*p^2*q^2*PolyLog[2, 1 - 2/(1 - (Sqrt[f]
*Sqrt[g + h*x])/Sqrt[f*g - e*h])])/(3*h*(f*g - e*h)^(3/2))
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 65

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - a*(d/b) +
d*(x^p/b))^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 214

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-a/b, 2]/a)*ArcTanh[x
/Rt[-a/b, 2]], x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 1601

```
Int[(Pp_)/(Qq_), x_Symbol] :> With[{p = Expon[Pp, x], q = Expon[Qq, x]}, Si
mp[Coeff[Pp, x, p]*(Log[RemoveContent[Qq, x]]/(q*Coeff[Qq, x, q])), x] /; E
qQ[p, q - 1] && EqQ[Pp, Simplify[(Coeff[Pp, x, p]/(q*Coeff[Qq, x, q]))*D[Qq
, x]]]] /; PolyQ[Pp, x] && PolyQ[Qq, x]
```

Rule 2352

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> Simp[(-e^(-1))*PolyLo
g[2, 1 - c*x], x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2356

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.),
x_Symbol] :> Simp[(d + e*x)^(q + 1)*((a + b*Log[c*x^n])^p/(e*(q + 1))), x]
- Dist[b*n*(p/(e*(q + 1))), Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^(p -
1))/x, x], x] /; FreeQ[{a, b, c, d, e, n, p, q}, x] && GtQ[p, 0] && NeQ[q,
-1] && (EqQ[p, 1] || (IntegersQ[2*p, 2*q] &&  !IGtQ[q, 0]) || (EqQ[p, 2] &&
 NeQ[q, 1]))
```

Rule 2389

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_))/
(x_), x_Symbol] :> Dist[1/d, Int[(d + e*x)^(q + 1)*((a + b*Log[c*x^n])^p/x)
, x], x] - Dist[e/d, Int[(d + e*x)^q*(a + b*Log[c*x^n])^p, x], x] /; FreeQ[
{a, b, c, d, e, n}, x] && IGtQ[p, 0] && LtQ[q, -1] && IntegerQ[2*q]
```

Rule 2390

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_) + (e_.)*(x_)^(r_.))^(q_.))
/(x_), x_Symbol] :> With[{u = IntHide[(d + e*x^r)^q/x, x]}, Simp[u*(a + b*L
og[c*x^n]), x] - Dist[b*n, Int[Dist[1/x, u, x], x], x]] /; FreeQ[{a, b, c,
d, e, n, r}, x] && IntegerQ[q - 1/2]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[(f + g*x)^(q + 1)*((a + b*Log[c*(d + e*x)^
n])^p/(g*(q + 1))), x] - Dist[b*e*n*(p/(g*(q + 1))), Int[(f + g*x)^(q + 1)*
((a + b*Log[c*(d + e*x)^n])^(p - 1)/(d + e*x)), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && GtQ[p, 0] && NeQ[q, -1] && Int
egersQ[2*p, 2*q] && ( !IGtQ[q, 0] || (EqQ[p, 2] && NeQ[q, 1]))
```

Rule 2449

```
Int[Log[(c_.)/((d_) + (e_.)*(x_))]/((f_) + (g_.)*(x_)^2), x_Symbol] :> Dist
[-e/g, Subst[Int[Log[2*d*x]/(1 - 2*d*x), x], x, 1/(d + e*x)], x] /; FreeQ[{
c, d, e, f, g}, x] && EqQ[c, 2*d] && EqQ[e^2*f + d^2*g, 0]
```

Rule 2458

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[(g*(x/e))^q*((e*h - d*i)/e + i*(x/e))^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2495

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rule 6055

```
Int[((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symbol
] :> Simp[(-(a + b*ArcTanh[c*x])^p)*(Log[2/(1 + e*(x/d))]/e), x] + Dist[b*c
*(p/e), Int[(a + b*ArcTanh[c*x])^(p - 1)*(Log[2/(1 + e*(x/d))]/(1 - c^2*x^2
)), x], x] /; FreeQ[{a, b, c, d, e}, x] && IGtQ[p, 0] && EqQ[c^2*d^2 - e^2,
 0]
```

Rule 6131

```
Int[(((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)*(x_))/((d_) + (e_.)*(x_)^2),
 x_Symbol] :> Simp[(a + b*ArcTanh[c*x])^(p + 1)/(b*e*(p + 1)), x] + Dist[1/
(c*d), Int[(a + b*ArcTanh[c*x])^p/(1 - c*x), x], x] /; FreeQ[{a, b, c, d, e
}, x] && EqQ[c^2*d + e, 0] && IGtQ[p, 0]
```

Rule 6873

```
Int[u_, x_Symbol] :> With[{v = NormalizeIntegrand[u, x]}, Int[v, x] /; v =!
= u]
```

Rubi steps

$$\int \frac{(a+b\log(c(d(e+fx)^p)^q))^2}{(g+hx)^{5/2}}\,dx = \text{Subst}\left(\int \frac{(a+b\log(cd^q(e+fx)^{pq}))^2}{(g+hx)^{5/2}}\,dx, cd^q(e+fx)^{pq}, c(d(e+fx)^p)\right.$$

$$= -\frac{2(a+b\log(c(d(e+fx)^p)^q))^2}{3h(g+hx)^{3/2}} + \text{Subst}\left(\frac{(4bfpq)\int \frac{a+b\log(cd^q(e+fx)^{pq})}{(e+fx)(g+hx)^{3/2}}}{3h}\right.$$

$$= -\frac{2(a+b\log(c(d(e+fx)^p)^q))^2}{3h(g+hx)^{3/2}} + \text{Subst}\left(\frac{(4bpq)\text{Subst}\left(\int \frac{a+b\log(cd^qx^{\cdot}}{x\left(\frac{fg-eh}{f}+\frac{hx}{f}\right.}\right.}{3h}\right.$$

$$= -\frac{2(a+b\log(c(d(e+fx)^p)^q))^2}{3h(g+hx)^{3/2}} - \text{Subst}\left(\frac{(4bpq)\text{Subst}\left(\int \frac{a+b\log(cd^qx^p}{\left(\frac{fg-eh}{f}+\frac{hx}{f}\right)^{3}}\right.}{3(fg-eh}\right.$$

$$= \frac{8bfpq(a+b\log(c(d(e+fx)^p)^q))}{3h(fg-eh)\sqrt{g+hx}} - \frac{8bf^{3/2}pq\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right.}{3h(fg-}$$

Mathematica [C] Result contains higher order function than in optimal. Order 5 vs. order 4 in optimal.
time = 4.85, size = 657, normalized size = 1.46

$$\frac{2\left(-4abf^{3/2}\sqrt{fg-eh}\,pq(g+hx)^{3/2}\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)+3b^2fhp^2q^2(e+fx)(g+hx)\sqrt{\frac{f(g+hx)}{fg-eh}}\,{}_4F_3\left(1,1,1,\frac{5}{2};2,2,2;\frac{h(e+fx)}{-fg+eh}\right)+4b^2f^{3/2}\sqrt{fg-eh}\,p^2q^2(g+hx)^{3/2}\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)\log(e+fx)+2ab(fg-eh)pq(2f(g+hx)+(-fg+eh)\log(e+fx))-2b^2(fg-eh)p^2q^2\log(e+fx)(2f(g+hx)+(-fg+eh)\log(e+fx))-4b^2f^{3/2}\sqrt{fg-eh}\,pq(g+hx)^{3/2}\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)\log\left(c(d(e+fx)^p)^q\right)+2b^2(fg-eh)pq(2f(g+hx)+(-fg+eh)\log(e+fx))\log\left(c(d(e+fx)^p)^q\right)-(fg-eh)^2\left(a-bpq\log(e+fx)+b\log\left(c(d(e+fx)^p)^q\right)\right)^2+b^2(fg-eh)p^2q^2\log(e+fx)\left(\left(eh+fhx\sqrt{\frac{f(g+hx)}{fg-eh}}+fg\left(-1+\sqrt{\frac{f(g+hx)}{fg-eh}}\right)\right)\log(e+fx)-4f(g+hx)\left(-1+\sqrt{\frac{f(g+hx)}{fg-eh}}+\sqrt{\frac{f(g+hx)}{fg-eh}}\log\left(\frac{1}{2}\left(1+\sqrt{\frac{f(g+hx)}{fg-eh}}\right)\right)\right)\right)\right)}{3h(fg-eh)^2(g+hx)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])^2/(g + h*x)^(5/2),x]
```

```
[Out] (2*(-4*a*b*f^(3/2)*Sqrt[f*g - e*h]*p*q*(g + h*x)^(3/2)*ArcTanh[(Sqrt[f]*Sqr
t[g + h*x])/Sqrt[f*g - e*h]] + 3*b^2*f*h*p^2*q^2*(e + f*x)*(g + h*x)*Sqrt[(
f*(g + h*x))/(f*g - e*h)]*HypergeometricPFQ[{1, 1, 1, 5/2}, {2, 2, 2}, (h*(
e + f*x))/(-(f*g) + e*h)] + 4*b^2*f^(3/2)*Sqrt[f*g - e*h]*p^2*q^2*(g + h*x)
^(3/2)*ArcTanh[(Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h]]*Log[e + f*x] + 2*a*
b*(f*g - e*h)*p*q*(2*f*(g + h*x) + (-(f*g) + e*h)*Log[e + f*x]) - 2*b^2*(f*
g - e*h)*p^2*q^2*Log[e + f*x]*(2*f*(g + h*x) + (-(f*g) + e*h)*Log[e + f*x])
 - 4*b^2*f^(3/2)*Sqrt[f*g - e*h]*p*q*(g + h*x)^(3/2)*ArcTanh[(Sqrt[f]*Sqrt[
g + h*x])/Sqrt[f*g - e*h]]*Log[c*(d*(e + f*x)^p)^q] + 2*b^2*(f*g - e*h)*p*q
*(2*f*(g + h*x) + (-(f*g) + e*h)*Log[e + f*x])*Log[c*(d*(e + f*x)^p)^q] - (
f*g - e*h)^2*(a - b*p*q*Log[e + f*x] + b*Log[c*(d*(e + f*x)^p)^q])^2 + b^2*
(f*g - e*h)*p^2*q^2*Log[e + f*x]*((e*h + f*h*x*Sqrt[(f*(g + h*x))/(f*g - e*
h)] + f*g*(-1 + Sqrt[(f*(g + h*x))/(f*g - e*h)]))*Log[e + f*x] - 4*f*(g + h
*x)*(-1 + Sqrt[(f*(g + h*x))/(f*g - e*h)] + Sqrt[(f*(g + h*x))/(f*g - e*h)]
*Log[(1 + Sqrt[(f*(g + h*x))/(f*g - e*h)])/2]))))/(3*h*(f*g - e*h)^2*(g + h
*x)^(3/2))
```

Maple [F]
time = 0.21, size = 0, normalized size = 0.00

$$\int \frac{\left(a+b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)\right)^{2}}{\left(hx+g\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(d*(f*x+e)^p)^q))^2/(h*x+g)^(5/2),x)
```

```
[Out] int((a+b*ln(c*(d*(f*x+e)^p)^q))^2/(h*x+g)^(5/2),x)
```

Maxima [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^2/(h*x+g)^(5/2),x, algorithm="maxima
")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(%e*h-f*g>0)', see `assume?` for mor
e detai
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^2/(h*x+g)^(5/2),x, algorithm="fricas
")
```

```
[Out] integral((sqrt(h*x + g)*b^2*log(((f*x + e)^p*d)^q*c)^2 + 2*sqrt(h*x + g)*a*
b*log(((f*x + e)^p*d)^q*c) + sqrt(h*x + g)*a^2)/(h^3*x^3 + 3*g*h^2*x^2 + 3*
g^2*h*x + g^3), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(a + b\log\left(c(d(e + fx)^p)^q\right)\right)^2}{(g + hx)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))**2/(h*x+g)**(5/2),x)
```

```
[Out] Integral((a + b*log(c*(d*(e + f*x)**p)**q))**2/(g + h*x)**(5/2), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^2/(h*x+g)^(5/2),x, algorithm="giac")
```

```
[Out] integrate((b*log(((f*x + e)^p*d)^q*c) + a)^2/(h*x + g)^(5/2), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{{\left(a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)\right)}^2}{{\left(g+h\,x\right)}^{5/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d*(e + f*x)^p)^q))^2/(g + h*x)^(5/2),x)
```

```
[Out] int((a + b*log(c*(d*(e + f*x)^p)^q))^2/(g + h*x)^(5/2), x)
```

3.494 $\int \frac{(a+b\log(c(d(e+fx)^p)^q))^2}{(g+hx)^{7/2}}\,dx$

Optimal. Leaf size=537

$$-\frac{16b^2f^2p^2q^2}{15h(fg-eh)^2\sqrt{g+hx}}+\frac{64b^2f^{5/2}p^2q^2\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)}{15h(fg-eh)^{5/2}}+\frac{8b^2f^{5/2}p^2q^2\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)}{5h(fg-eh)^{5/2}}$$

[Out] 64/15*b^2*f^(5/2)*p^2*q^2*arctanh(f^(1/2)*(h*x+g)^(1/2)/(-e*h+f*g)^(1/2))/h/(-e*h+f*g)^(5/2)+8/5*b^2*f^(5/2)*p^2*q^2*arctanh(f^(1/2)*(h*x+g)^(1/2)/(-e*h+f*g)^(1/2))^2/h/(-e*h+f*g)^(5/2)+8/15*b*f*p*q*(a+b*ln(c*(d*(f*x+e)^p)^q))/h/(-e*h+f*g)/(h*x+g)^(3/2)-8/5*b*f^(5/2)*p*q*arctanh(f^(1/2)*(h*x+g)^(1/2)/(-e*h+f*g)^(1/2))*(a+b*ln(c*(d*(f*x+e)^p)^q))/h/(-e*h+f*g)^(5/2)-2/5*(a+b*ln(c*(d*(f*x+e)^p)^q))^2/h/(h*x+g)^(5/2)-16/5*b^2*f^(5/2)*p^2*q^2*arctanh(f^(1/2)*(h*x+g)^(1/2)/(-e*h+f*g)^(1/2))*ln(2/(1-f^(1/2)*(h*x+g)^(1/2)/(-e*h+f*g)^(1/2)))/h/(-e*h+f*g)^(5/2)-8/5*b^2*f^(5/2)*p^2*q^2*polylog(2,1-2/(1-f^(1/2)*(h*x+g)^(1/2)/(-e*h+f*g)^(1/2)))/h/(-e*h+f*g)^(5/2)-16/15*b^2*f^2*p^2*q^2/h/(-e*h+f*g)^2/(h*x+g)^(1/2)+8/5*b*f^2*p*q*(a+b*ln(c*(d*(f*x+e)^p)^q))/h/(-e*h+f*g)^2/(h*x+g)^(1/2)

Rubi [A]
time = 2.10, antiderivative size = 537, normalized size of antiderivative = 1.00, number of steps used = 20, number of rules used = 16, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}} = 0.533$, Rules used = {2445, 2458, 2389, 65, 214, 2390, 12, 1601, 6873, 6131, 6055, 2449, 2352, 2356, 53, 2495}

$$-\frac{8b^2f^{5/2}p^2q^2\text{PolyLog}\left(2,1-\frac{2}{1-\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}}\right)}{5h(fg-eh)^{5/2}}-\frac{8bf^{5/2}pq\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)(a+b\log(c(d(e+fx)^p)^q))}{5h(fg-eh)^{5/2}}+\frac{8bf^2pq(a+b\log(c(d(e+fx)^p)^q))}{5h\sqrt{g+hx}(fg-eh)^2}+\frac{8bfpq(a+b\log(c(d(e+fx)^p)^q))}{15h(g+hx)^{3/2}(fg-eh)}-\frac{2(a+b\log(c(d(e+fx)^p)^q))^2}{5h(g+hx)^{5/2}}+\frac{8b^2f^{5/2}p^2q^2\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)^2}{5h(fg-eh)^{5/2}}+\frac{64b^2f^{5/2}p^2q^2\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)}{15h(fg-eh)^{5/2}}-\frac{16b^2f^{5/2}p^2q^2\log\left(\frac{2}{1-\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}}\right)\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)}{5h(fg-eh)^{5/2}}-\frac{16b^2f^2p^2q^2}{15h\sqrt{g+hx}(fg-eh)^2}$$

Antiderivative was successfully verified.

[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])^2/(g + h*x)^(7/2),x]

[Out] (-16*b^2*f^2*p^2*q^2)/(15*h*(f*g - e*h)^2*Sqrt[g + h*x]) + (64*b^2*f^(5/2)*p^2*q^2*ArcTanh[(Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h]])/(15*h*(f*g - e*h)^(5/2)) + (8*b^2*f^(5/2)*p^2*q^2*ArcTanh[(Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h]]^2)/(5*h*(f*g - e*h)^(5/2)) + (8*b*f*p*q*(a + b*Log[c*(d*(e + f*x)^p)^q]))/(15*h*(f*g - e*h)*(g + h*x)^(3/2)) + (8*b*f^2*p*q*(a + b*Log[c*(d*(e + f*x)^p)^q]))/(5*h*(f*g - e*h)^2*Sqrt[g + h*x]) - (8*b*f^(5/2)*p*q*ArcTanh[(Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h]]*(a + b*Log[c*(d*(e + f*x)^p)^q]))/(5*h*(f*g - e*h)^(5/2)) - (2*(a + b*Log[c*(d*(e + f*x)^p)^q])^2)/(5*h*(g + h*x)^(5/2)) - (16*b^2*f^(5/2)*p^2*q^2*ArcTanh[(Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h]]*Log[2/(1 - (Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h])])/(5*h*(f*

```
g - e*h)^(5/2)) - (8*b^2*f^(5/2)*p^2*q^2*PolyLog[2, 1 - 2/(1 - (Sqrt[f]*Sqr
t[g + h*x])/Sqrt[f*g - e*h])])/(5*h*(f*g - e*h)^(5/2))
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 53

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
(a + b*x)^(m + 1)*((c + d*x)^(n + 1)/((b*c - a*d)*(m + 1))), x] - Dist[d*((
m + n + 2)/((b*c - a*d)*(m + 1))), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 65

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - a*(d/b) +
d*(x^p/b))^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 214

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-a/b, 2]/a)*ArcTanh[x
/Rt[-a/b, 2]], x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 1601

```
Int[(Pp_)/(Qq_), x_Symbol] :> With[{p = Expon[Pp, x], q = Expon[Qq, x]}, Si
mp[Coeff[Pp, x, p]*(Log[RemoveContent[Qq, x]]/(q*Coeff[Qq, x, q])), x] /; E
qQ[p, q - 1] && EqQ[Pp, Simplify[(Coeff[Pp, x, p]/(q*Coeff[Qq, x, q]))*D[Qq
, x]]]] /; PolyQ[Pp, x] && PolyQ[Qq, x]
```

Rule 2352

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> Simp[(-e^(-1))*PolyLo
g[2, 1 - c*x], x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2356

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.),
x_Symbol] :> Simp[(d + e*x)^(q + 1)*((a + b*Log[c*x^n])^p/(e*(q + 1))), x]
- Dist[b*n*(p/(e*(q + 1))), Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^(p -
```

```
1))/x, x], x] /; FreeQ[{a, b, c, d, e, n, p, q}, x] && GtQ[p, 0] && NeQ[q,
-1] && (EqQ[p, 1] || (IntegersQ[2*p, 2*q] &&  !IGtQ[q, 0]) || (EqQ[p, 2] &&
 NeQ[q, 1]))
```

Rule 2389

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_))/
(x_), x_Symbol] :> Dist[1/d, Int[(d + e*x)^(q + 1)*((a + b*Log[c*x^n])^p/x)
, x], x] - Dist[e/d, Int[(d + e*x)^q*(a + b*Log[c*x^n])^p, x], x] /; FreeQ[
{a, b, c, d, e, n}, x] && IGtQ[p, 0] && LtQ[q, -1] && IntegerQ[2*q]
```

Rule 2390

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_) + (e_.)*(x_)^(r_.))^(q_.))
/(x_), x_Symbol] :> With[{u = IntHide[(d + e*x^r)^q/x, x]}, Simp[u*(a + b*L
og[c*x^n]), x] - Dist[b*n, Int[Dist[1/x, u, x], x], x]] /; FreeQ[{a, b, c,
d, e, n, r}, x] && IntegerQ[q - 1/2]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[(f + g*x)^(q + 1)*((a + b*Log[c*(d + e*x)^
n])^p/(g*(q + 1))), x] - Dist[b*e*n*(p/(g*(q + 1))), Int[(f + g*x)^(q + 1)*
((a + b*Log[c*(d + e*x)^n])^(p - 1)/(d + e*x)), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && GtQ[p, 0] && NeQ[q, -1] && Int
egersQ[2*p, 2*q] && ( !IGtQ[q, 0] || (EqQ[p, 2] && NeQ[q, 1]))
```

Rule 2449

```
Int[Log[(c_.)/((d_) + (e_.)*(x_))]/((f_) + (g_.)*(x_)^2), x_Symbol] :> Dist
[-e/g, Subst[Int[Log[2*d*x]/(1 - 2*d*x), x], x, 1/(d + e*x)], x] /; FreeQ[{
c, d, e, f, g}, x] && EqQ[c, 2*d] && EqQ[e^2*f + d^2*g, 0]
```

Rule 2458

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[(g*(x/e))^q*((e*h - d*i)/e + i*(x/e))^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2495

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
```

```
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rule 6055

```
Int[((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symbol
] :> Simp[(-(a + b*ArcTanh[c*x])^p)*(Log[2/(1 + e*(x/d))]/e), x] + Dist[b*c
*(p/e), Int[(a + b*ArcTanh[c*x])^(p - 1)*(Log[2/(1 + e*(x/d))]/(1 - c^2*x^2
)), x], x] /; FreeQ[{a, b, c, d, e}, x] && IGtQ[p, 0] && EqQ[c^2*d^2 - e^2,
 0]
```

Rule 6131

```
Int[(((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)*(x_))/((d_) + (e_.)*(x_)^2),
 x_Symbol] :> Simp[(a + b*ArcTanh[c*x])^(p + 1)/(b*e*(p + 1)), x] + Dist[1/
(c*d), Int[(a + b*ArcTanh[c*x])^p/(1 - c*x), x], x] /; FreeQ[{a, b, c, d, e
}, x] && EqQ[c^2*d + e, 0] && IGtQ[p, 0]
```

Rule 6873

```
Int[u_, x_Symbol] :> With[{v = NormalizeIntegrand[u, x]}, Int[v, x] /; v =!
= u]
```

Rubi steps

$$\int \frac{(a+b\log(c(d(e+fx)^p)^q))^2}{(g+hx)^{7/2}}\,dx = \text{Subst}\left(\int \frac{(a+b\log(cd^q(e+fx)^{pq}))^2}{(g+hx)^{7/2}}\,dx, cd^q(e+fx)^{pq}, c(d(e+fx)^p)^q\right.$$

$$= -\frac{2(a+b\log(c(d(e+fx)^p)^q))^2}{5h(g+hx)^{5/2}} + \text{Subst}\left(\frac{(4bfpq)\int \frac{a+b\log(cd^q(e+fx)^{pq})}{(e+fx)(g+hx)^{5/2}}\,dx}{5h}\right.$$

$$= -\frac{2(a+b\log(c(d(e+fx)^p)^q))^2}{5h(g+hx)^{5/2}} + \text{Subst}\left(\frac{(4bpq)\text{Subst}\left(\int \frac{a+b\log(cd^qx^{pq}}{x\left(\frac{fg-eh}{f}+\frac{hx}{f}\right)^{5}}\right.}{5h}\right.$$

$$= -\frac{2(a+b\log(c(d(e+fx)^p)^q))^2}{5h(g+hx)^{5/2}} - \text{Subst}\left(\frac{(4bpq)\text{Subst}\left(\int \frac{a+b\log(cd^qx^{pq})}{\left(\frac{fg-eh}{f}+\frac{hx}{f}\right)^{5/2}}\right.}{5(fg-eh)}\right.$$

$$= \frac{8bfpq(a+b\log(c(d(e+fx)^p)^q))}{15h(fg-eh)(g+hx)^{3/2}} - \frac{2(a+b\log(c(d(e+fx)^p)^q))^2}{5h(g+hx)^{5/2}} - \text{Su}$$

$$= -\frac{16b^2f^2p^2q^2}{15h(fg-eh)^2\sqrt{g+hx}} + \frac{8bfpq(a+b\log(c(d(e+fx)^p)^q))}{15h(fg-eh)(g+hx)^{3/2}} + \frac{8bf^2}{}$$

Mathematica [C] Result contains higher order function than in optimal. Order 5 vs. order 4 in optimal.
time = 6.82, size = 726, normalized size = 1.35

$$\frac{2\left(2abpq\left(-\frac{6f^{5/2}\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)}{(fg-eh)^{5/2}}+\frac{\frac{2f(g+hx)(4fg-eh+3fhx)}{(fg-eh)^2}-3\log(e+fx)}{(g+hx)^{5/2}}\right)+\frac{3b^2p^2q^2\left(5h(e+fx)\left(\frac{f(g+hx)}{fg-eh}\right)^{5/2}{}_4F_3\left(1,1,1,\frac{7}{2};2,2,2;\frac{h(e+fx)}{-fg+eh}\right)-5h(e+fx)\left(\frac{f(g+hx)}{fg-eh}\right)^{5/2}{}_3F_2\left(1,1,\frac{7}{2};2,2;\frac{h(e+fx)}{-fg+eh}\right)\log(e+fx)-fg\log^2(e+fx)+eh\log^2(e+fx)+fg\left(\frac{f(g+hx)}{fg-eh}\right)^{5/2}\log^2(e+fx)-eh\left(\frac{f(g+hx)}{fg-eh}\right)^{5/2}\log^2(e+fx)\right)}{(fg-eh)(g+hx)^{5/2}}+\frac{2b^2pq^2\left(6f^3(g+hx)^3\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)+\sqrt{f}\sqrt{fg-eh}\sqrt{g+hx}\left(-2f(g+hx)(4fg-eh+3fhx)+3(fg-eh)^2\log(e+fx)\right)\right)(p\log(e+fx)-\log(d(e+fx)^p))}{\sqrt{f}(fg-eh)^{5/2}(g+hx)^3}+\frac{2b^2pq\left(6f^3(g+hx)^3\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)+\sqrt{f}\sqrt{fg-eh}\sqrt{g+hx}\left(-2f(g+hx)(4fg-eh+3fhx)+3(fg-eh)^2\log(e+fx)\right)\right)(q\log(d(e+fx)^p)-\log(c(d(e+fx)^p)^q))}{\sqrt{f}(fg-eh)^{5/2}(g+hx)^3}-\frac{3(a-bpq\log(e+fx)+b\log(c(d(e+fx)^p)^q))^2}{(g+hx)^{5/2}}\right)}{15h}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])^2/(g + h*x)^(7/2),x]
```

```
[Out] (2*(2*a*b*p*q*((-6*f^(5/2)*ArcTanh[(Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h]]
)/(f*g - e*h)^(5/2) + ((2*f*(g + h*x)*(4*f*g - e*h + 3*f*h*x))/(f*g - e*h)^
2 - 3*Log[e + f*x])/(g + h*x)^(5/2)) + (3*b^2*p^2*q^2*(5*h*(e + f*x)*((f*(g
 + h*x))/(f*g - e*h))^(5/2)*HypergeometricPFQ[{1, 1, 1, 7/2}, {2, 2, 2}, (h
*(e + f*x))/(-(f*g) + e*h)] - 5*h*(e + f*x)*((f*(g + h*x))/(f*g - e*h))^(5/
2)*HypergeometricPFQ[{1, 1, 7/2}, {2, 2}, (h*(e + f*x))/(-(f*g) + e*h)]*Log
[e + f*x] - f*g*Log[e + f*x]^2 + e*h*Log[e + f*x]^2 + f*g*((f*(g + h*x))/(f
*g - e*h))^(5/2)*Log[e + f*x]^2 - e*h*((f*(g + h*x))/(f*g - e*h))^(5/2)*Log
[e + f*x]^2))/((f*g - e*h)*(g + h*x)^(5/2)) + (2*b^2*p*q^2*(6*f^3*(g + h*x)
^3*ArcTanh[(Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h]] + Sqrt[f]*Sqrt[f*g - e*
h]*Sqrt[g + h*x]*(-2*f*(g + h*x)*(4*f*g - e*h + 3*f*h*x) + 3*(f*g - e*h)^2*
Log[e + f*x]))*(p*Log[e + f*x] - Log[d*(e + f*x)^p]))/(Sqrt[f]*(f*g - e*h)^
(5/2)*(g + h*x)^3) + (2*b^2*p*q*(6*f^3*(g + h*x)^3*ArcTanh[(Sqrt[f]*Sqrt[g
+ h*x])/Sqrt[f*g - e*h]] + Sqrt[f]*Sqrt[f*g - e*h]*Sqrt[g + h*x]*(-2*f*(g +
 h*x)*(4*f*g - e*h + 3*f*h*x) + 3*(f*g - e*h)^2*Log[e + f*x]))*(q*Log[d*(e
+ f*x)^p] - Log[c*(d*(e + f*x)^p)^q]))/(Sqrt[f]*(f*g - e*h)^(5/2)*(g + h*x)
^3) - (3*(a - b*p*q*Log[e + f*x] + b*Log[c*(d*(e + f*x)^p)^q])^2)/(g + h*x)
^(5/2)))/(15*h)
```

Maple [F]
time = 0.18, size = 0, normalized size = 0.00

$$\int \frac{(a+b\ln(c(d(fx+e)^p)^q))^2}{(hx+g)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(d*(f*x+e)^p)^q))^2/(h*x+g)^(7/2),x)
```

```
[Out] int((a+b*ln(c*(d*(f*x+e)^p)^q))^2/(h*x+g)^(7/2),x)
```

Maxima [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^2/(h*x+g)^(7/2),x, algorithm="maxima
")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(%e*h-f*g>0)', see `assume?` for mor
e detai
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^2/(h*x+g)^(7/2),x, algorithm="fricas
")
```

```
[Out] integral((sqrt(h*x + g)*b^2*log(((f*x + e)^p*d)^q*c)^2 + 2*sqrt(h*x + g)*a*
b*log(((f*x + e)^p*d)^q*c) + sqrt(h*x + g)*a^2)/(h^4*x^4 + 4*g*h^3*x^3 + 6*
g^2*h^2*x^2 + 4*g^3*h*x + g^4), x)
```

Sympy [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: SystemError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))**2/(h*x+g)**(7/2),x)
```

```
[Out] Exception raised: SystemError >> excessive stack use: stack is 6190 deep
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^2/(h*x+g)^(7/2),x, algorithm="giac")
```

```
[Out] integrate((b*log(((f*x + e)^p*d)^q*c) + a)^2/(h*x + g)^(7/2), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)\right)^2}{{\left(g+h\,x\right)}^{7/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d*(e + f*x)^p)^q))^2/(g + h*x)^(7/2),x)
```

```
[Out] int((a + b*log(c*(d*(e + f*x)^p)^q))^2/(g + h*x)^(7/2), x)
```

3.495 $\int \frac{(a+b\log(c(d(e+fx)^p)^q))^2}{(g+hx)^{9/2}}\,dx$

Optimal. Leaf size=625

$$-\frac{16b^2f^2p^2q^2}{105h(fg-eh)^2(g+hx)^{3/2}}-\frac{128b^2f^3p^2q^2}{105h(fg-eh)^3\sqrt{g+hx}}+\frac{368b^2f^{7/2}p^2q^2\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)}{105h(fg-eh)^{7/2}}+\frac{8b^2f^{7}}{}$$

```
[Out] -16/105*b^2*f^2*p^2*q^2/h/(-e*h+f*g)^2/(h*x+g)^(3/2)+368/105*b^2*f^(7/2)*p^
2*q^2*arctanh(f^(1/2)*(h*x+g)^(1/2)/(-e*h+f*g)^(1/2))/h/(-e*h+f*g)^(7/2)+8/
7*b^2*f^(7/2)*p^2*q^2*arctanh(f^(1/2)*(h*x+g)^(1/2)/(-e*h+f*g)^(1/2))^2/h/(
-e*h+f*g)^(7/2)+8/35*b*f*p*q*(a+b*ln(c*(d*(f*x+e)^p)^q))/h/(-e*h+f*g)/(h*x+
g)^(5/2)+8/21*b*f^2*p*q*(a+b*ln(c*(d*(f*x+e)^p)^q))/h/(-e*h+f*g)^2/(h*x+g)^
(3/2)-8/7*b*f^(7/2)*p*q*arctanh(f^(1/2)*(h*x+g)^(1/2)/(-e*h+f*g)^(1/2))*(a+
b*ln(c*(d*(f*x+e)^p)^q))/h/(-e*h+f*g)^(7/2)-2/7*(a+b*ln(c*(d*(f*x+e)^p)^q))
^2/h/(h*x+g)^(7/2)-16/7*b^2*f^(7/2)*p^2*q^2*arctanh(f^(1/2)*(h*x+g)^(1/2)/(
-e*h+f*g)^(1/2))*ln(2/(1-f^(1/2)*(h*x+g)^(1/2)/(-e*h+f*g)^(1/2)))/h/(-e*h+f
*g)^(7/2)-8/7*b^2*f^(7/2)*p^2*q^2*polylog(2,1-2/(1-f^(1/2)*(h*x+g)^(1/2)/(-
e*h+f*g)^(1/2)))/h/(-e*h+f*g)^(7/2)-128/105*b^2*f^3*p^2*q^2/h/(-e*h+f*g)^3/
(h*x+g)^(1/2)+8/7*b*f^3*p*q*(a+b*ln(c*(d*(f*x+e)^p)^q))/h/(-e*h+f*g)^3/(h*x
+g)^(1/2)
```

Rubi [A]
time = 2.68, antiderivative size = 625, normalized size of antiderivative = 1.00, number of steps used = 26, number of rules used = 16, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}} = 0.533$, Rules used = {2445, 2458, 2389, 65, 214, 2390, 12, 1601, 6873, 6131, 6055, 2449, 2352, 2356, 53, 2495}

$$-\frac{8b^2f^{7/2}p^2q^2\text{PolyLog}\left(2,1-\frac{2}{1-\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}}\right)}{7h(fg-eh)^{7/2}}-\frac{8bf^{7/2}pq\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)(a+b\log(c(d(e+fx)^p)^q))}{7h(fg-eh)^{7/2}}+\frac{8bf^3pq(a+b\log(c(d(e+fx)^p)^q))}{7h\sqrt{g+hx}(fg-eh)^3}+\frac{8bf^2pq(a+b\log(c(d(e+fx)^p)^q))}{21h(g+hx)^{3/2}(fg-eh)^2}+\frac{8bfpq(a+b\log(c(d(e+fx)^p)^q))}{35h(g+hx)^{5/2}(fg-eh)}-\frac{2(a+b\log(c(d(e+fx)^p)^q))^2}{7h(g+hx)^{7/2}}+\frac{8b^2f^{7/2}p^2q^2\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)^2}{7h(fg-eh)^{7/2}}+\frac{368b^2f^{7/2}p^2q^2\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)}{105h(fg-eh)^{7/2}}-\frac{16b^2f^{7/2}p^2q^2\log\left(\frac{2}{1-\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}}\right)\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)}{7h(fg-eh)^{7/2}}-\frac{128b^2f^3p^2q^2}{105h\sqrt{g+hx}(fg-eh)^3}-\frac{16b^2f^2p^2q^2}{105h(g+hx)^{3/2}(fg-eh)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])^2/(g + h*x)^(9/2),x]
```

```
[Out] (-16*b^2*f^2*p^2*q^2)/(105*h*(f*g - e*h)^2*(g + h*x)^(3/2)) - (128*b^2*f^3*
p^2*q^2)/(105*h*(f*g - e*h)^3*Sqrt[g + h*x]) + (368*b^2*f^(7/2)*p^2*q^2*Arc
Tanh[(Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h]])/(105*h*(f*g - e*h)^(7/2)) +
(8*b^2*f^(7/2)*p^2*q^2*ArcTanh[(Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h]]^2)/
(7*h*(f*g - e*h)^(7/2)) + (8*b*f*p*q*(a + b*Log[c*(d*(e + f*x)^p)^q]))/(35*
h*(f*g - e*h)*(g + h*x)^(5/2)) + (8*b*f^2*p*q*(a + b*Log[c*(d*(e + f*x)^p)^
q]))/(21*h*(f*g - e*h)^2*(g + h*x)^(3/2)) + (8*b*f^3*p*q*(a + b*Log[c*(d*(e
 + f*x)^p)^q]))/(7*h*(f*g - e*h)^3*Sqrt[g + h*x]) - (8*b*f^(7/2)*p*q*ArcTan
```

```
h[(Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h]]*(a + b*Log[c*(d*(e + f*x)^p)^q])
)/(7*h*(f*g - e*h)^(7/2)) - (2*(a + b*Log[c*(d*(e + f*x)^p)^q])^2)/(7*h*(g
+ h*x)^(7/2)) - (16*b^2*f^(7/2)*p^2*q^2*ArcTanh[(Sqrt[f]*Sqrt[g + h*x])/Sqr
t[f*g - e*h]]*Log[2/(1 - (Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h])])/(7*h*(f
*g - e*h)^(7/2)) - (8*b^2*f^(7/2)*p^2*q^2*PolyLog[2, 1 - 2/(1 - (Sqrt[f]*Sq
rt[g + h*x])/Sqrt[f*g - e*h])])/(7*h*(f*g - e*h)^(7/2))
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 53

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
(a + b*x)^(m + 1)*((c + d*x)^(n + 1)/((b*c - a*d)*(m + 1))), x] - Dist[d*((
m + n + 2)/((b*c - a*d)*(m + 1))), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 65

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - a*(d/b) +
d*(x^p/b))^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 214

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-a/b, 2]/a)*ArcTanh[x
/Rt[-a/b, 2]], x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 1601

```
Int[(Pp_)/(Qq_), x_Symbol] :> With[{p = Expon[Pp, x], q = Expon[Qq, x]}, Si
mp[Coeff[Pp, x, p]*(Log[RemoveContent[Qq, x]]/(q*Coeff[Qq, x, q])), x] /; E
qQ[p, q - 1] && EqQ[Pp, Simplify[(Coeff[Pp, x, p]/(q*Coeff[Qq, x, q]))*D[Qq
, x]]]] /; PolyQ[Pp, x] && PolyQ[Qq, x]
```

Rule 2352

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> Simp[(-e^(-1))*PolyLo
g[2, 1 - c*x], x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2356

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.),
x_Symbol] :> Simp[(d + e*x)^(q + 1)*((a + b*Log[c*x^n])^p/(e*(q + 1))), x]
- Dist[b*n*(p/(e*(q + 1))), Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^(p -
1))/x, x], x] /; FreeQ[{a, b, c, d, e, n, p, q}, x] && GtQ[p, 0] && NeQ[q,
-1] && (EqQ[p, 1] || (IntegersQ[2*p, 2*q] &&  !IGtQ[q, 0]) || (EqQ[p, 2] &&
 NeQ[q, 1]))
```

Rule 2389

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_))/
(x_), x_Symbol] :> Dist[1/d, Int[(d + e*x)^(q + 1)*((a + b*Log[c*x^n])^p/x)
, x], x] - Dist[e/d, Int[(d + e*x)^q*(a + b*Log[c*x^n])^p, x], x] /; FreeQ[
{a, b, c, d, e, n}, x] && IGtQ[p, 0] && LtQ[q, -1] && IntegerQ[2*q]
```

Rule 2390

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_) + (e_.)*(x_)^(r_.))^(q_.))
/(x_), x_Symbol] :> With[{u = IntHide[(d + e*x^r)^q/x, x]}, Simp[u*(a + b*L
og[c*x^n]), x] - Dist[b*n, Int[Dist[1/x, u, x], x], x]] /; FreeQ[{a, b, c,
d, e, n, r}, x] && IntegerQ[q - 1/2]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[(f + g*x)^(q + 1)*((a + b*Log[c*(d + e*x)^
n])^p/(g*(q + 1))), x] - Dist[b*e*n*(p/(g*(q + 1))), Int[(f + g*x)^(q + 1)*
((a + b*Log[c*(d + e*x)^n])^(p - 1)/(d + e*x)), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && GtQ[p, 0] && NeQ[q, -1] && Int
egersQ[2*p, 2*q] && ( !IGtQ[q, 0] || (EqQ[p, 2] && NeQ[q, 1]))
```

Rule 2449

```
Int[Log[(c_.)/((d_) + (e_.)*(x_))]/((f_) + (g_.)*(x_)^2), x_Symbol] :> Dist
[-e/g, Subst[Int[Log[2*d*x]/(1 - 2*d*x), x], x, 1/(d + e*x)], x] /; FreeQ[{
c, d, e, f, g}, x] && EqQ[c, 2*d] && EqQ[e^2*f + d^2*g, 0]
```

Rule 2458

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[(g*(x/e))^q*((e*h - d*i)/e + i*(x/e))^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2495

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rule 6055

```
Int[((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symbol
] :> Simp[(-(a + b*ArcTanh[c*x])^p)*(Log[2/(1 + e*(x/d))]/e), x] + Dist[b*c
*(p/e), Int[(a + b*ArcTanh[c*x])^(p - 1)*(Log[2/(1 + e*(x/d))]/(1 - c^2*x^2
)), x], x] /; FreeQ[{a, b, c, d, e}, x] && IGtQ[p, 0] && EqQ[c^2*d^2 - e^2,
 0]
```

Rule 6131

```
Int[(((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)*(x_))/((d_) + (e_.)*(x_)^2),
 x_Symbol] :> Simp[(a + b*ArcTanh[c*x])^(p + 1)/(b*e*(p + 1)), x] + Dist[1/
(c*d), Int[(a + b*ArcTanh[c*x])^p/(1 - c*x), x], x] /; FreeQ[{a, b, c, d, e
}, x] && EqQ[c^2*d + e, 0] && IGtQ[p, 0]
```

Rule 6873

```
Int[u_, x_Symbol] :> With[{v = NormalizeIntegrand[u, x]}, Int[v, x] /; v =!
= u]
```

Rubi steps

$$\int \frac{(a+b\log(c(d(e+fx)^p)^q))^2}{(g+hx)^{9/2}}\,dx = \text{Subst}\left(\int \frac{(a+b\log(cd^q(e+fx)^{pq}))^2}{(g+hx)^{9/2}}\,dx, cd^q(e+fx)^{pq}, c(d(e+fx)^p)\right.$$

$$= -\frac{2(a+b\log(c(d(e+fx)^p)^q))^2}{7h(g+hx)^{7/2}} + \text{Subst}\left(\frac{(4bfpq)\int \frac{a+b\log(cd^q(e+fx)^{pq})}{(e+fx)(g+hx)^{7/2}}}{7h}\right.$$

$$= -\frac{2(a+b\log(c(d(e+fx)^p)^q))^2}{7h(g+hx)^{7/2}} + \text{Subst}\left(\frac{(4bpq)\text{Subst}\left(\int \frac{a+b\log(cd^qx^{}}{x\left(\frac{fg-eh}{f}+\frac{hx}{f}\right)}\right.}{7h}\right.$$

$$= -\frac{2(a+b\log(c(d(e+fx)^p)^q))^2}{7h(g+hx)^{7/2}} - \text{Subst}\left(\frac{(4bpq)\text{Subst}\left(\int \frac{a+b\log(cd^qx^p}{\left(\frac{fg-eh}{f}+\frac{hx}{f}\right)}\right.}{7(fg-eh}\right.$$

$$= \frac{8bfpq(a+b\log(c(d(e+fx)^p)^q))}{35h(fg-eh)(g+hx)^{5/2}} - \frac{2(a+b\log(c(d(e+fx)^p)^q))^2}{7h(g+hx)^{7/2}} - \text{S}$$

$$= -\frac{16b^2f^2p^2q^2}{105h(fg-eh)^2(g+hx)^{3/2}} + \frac{8bfpq(a+b\log(c(d(e+fx)^p)^q))}{35h(fg-eh)(g+hx)^{5/2}} + \frac{8}{}$$

$$= -\frac{16b^2f^2p^2q^2}{105h(fg-eh)^2(g+hx)^{3/2}} - \frac{128b^2f^3p^2q^2}{105h(fg-eh)^3\sqrt{g+hx}} + \frac{8bfpq(a}{35h}$$

Mathematica [C] Result contains higher order function than in optimal. Order 5 vs. order 4 in optimal.
time = 8.70, size = 1249, normalized size = 2.00

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])^2/(g + h*x)^(9/2),x]
```

```
[Out] (2*b^2*p^2*q^2*(1 + (h*(e + f*x))/(f*g - e*h))*(7*h*(e + f*x)*((f*g - e*h +
 h*(e + f*x))/(f*g - e*h))^(7/2)*HypergeometricPFQ[{1, 1, 1, 9/2}, {2, 2, 2
}, (h*(e + f*x))/(-(f*g) + e*h)] - 7*h*(e + f*x)*((f*g - e*h + h*(e + f*x))
/(f*g - e*h))^(7/2)*HypergeometricPFQ[{1, 1, 9/2}, {2, 2}, (h*(e + f*x))/(-
(f*g) + e*h)]*Log[e + f*x] - f*g*Log[e + f*x]^2 + e*h*Log[e + f*x]^2 + f*g*
((f*g - e*h + h*(e + f*x))/(f*g - e*h))^(7/2)*Log[e + f*x]^2 - e*h*((f*g -
e*h + h*(e + f*x))/(f*g - e*h))^(7/2)*Log[e + f*x]^2))/(7*f*h*((f*g - e*h +
 h*(e + f*x))/f)^(9/2)) + (4*a*b*f^(7/2)*p*q*((-30*ArcTanh[(Sqrt[f]*Sqrt[(f
*g - e*h + h*(e + f*x))/f])/Sqrt[f*g - e*h]])/(f*g - e*h)^(7/2) + (Sqrt[f]*
Sqrt[(f*g - e*h + h*(e + f*x))/f]*(6*(f*g - e*h)^2*(f*g + f*h*x) + 10*(f*g
- e*h)*(f*g + f*h*x)^2 + 30*(f*g + f*h*x)^3 - 15*(f*g - e*h)^3*Log[e + f*x]
))/((f*g - e*h)^3*(f*g + f*h*x)^4)))/(105*h) + (4*b^2*f^(7/2)*p*q^2*((-30*A
rcTanh[(Sqrt[f]*Sqrt[(f*g - e*h + h*(e + f*x))/f])/Sqrt[f*g - e*h]])/(f*g -
 e*h)^(7/2) + (Sqrt[f]*Sqrt[(f*g - e*h + h*(e + f*x))/f]*(6*(f*g - e*h)^2*(
f*g + f*h*x) + 10*(f*g - e*h)*(f*g + f*h*x)^2 + 30*(f*g + f*h*x)^3 - 15*(f*
g - e*h)^3*Log[e + f*x]))/((f*g - e*h)^3*(f*g + f*h*x)^4))*(-(p*Log[e + f*x
]) + Log[d*(e + f*x)^p]))/(105*h) + (4*b^2*f^(7/2)*p*q*((-30*ArcTanh[(Sqrt[
f]*Sqrt[(f*g - e*h + h*(e + f*x))/f])/Sqrt[f*g - e*h]])/(f*g - e*h)^(7/2) +
 (Sqrt[f]*Sqrt[(f*g - e*h + h*(e + f*x))/f]*(6*(f*g - e*h)^2*(f*g + f*h*x)
+ 10*(f*g - e*h)*(f*g + f*h*x)^2 + 30*(f*g + f*h*x)^3 - 15*(f*g - e*h)^3*Lo
g[e + f*x]))/((f*g - e*h)^3*(f*g + f*h*x)^4))*(-(q*(-(p*Log[e + f*x]) + Log
[d*(e + f*x)^p])) - Log[d*(e + f*x)^p]*(q - (q*(-(p*Log[e + f*x]) + Log[d*(
e + f*x)^p]))/Log[d*(e + f*x)^p]) + Log[c*E^(q*(-(p*Log[e + f*x]) + Log[d*(
e + f*x)^p]))*(d*(e + f*x)^p)^(q - (q*(-(p*Log[e + f*x]) + Log[d*(e + f*x)^
p]))/Log[d*(e + f*x)^p])]))/(105*h) - (2*(a + b*q*(-(p*Log[e + f*x]) + Log[
d*(e + f*x)^p]) + b*(-(q*(-(p*Log[e + f*x]) + Log[d*(e + f*x)^p])) - Log[d*
(e + f*x)^p]*(q - (q*(-(p*Log[e + f*x]) + Log[d*(e + f*x)^p]))/Log[d*(e + f
*x)^p]) + Log[c*E^(q*(-(p*Log[e + f*x]) + Log[d*(e + f*x)^p]))*(d*(e + f*x)
^p)^(q - (q*(-(p*Log[e + f*x]) + Log[d*(e + f*x)^p]))/Log[d*(e + f*x)^p])])
)^2)/(7*h*(g + h*x)^(7/2))
```

Maple [F]
time = 0.16, size = 0, normalized size = 0.00

$$\int \frac{\left(a + b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)\right)^{2}}{\left(hx+g\right)^{\frac{9}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(d*(f*x+e)^p)^q))^2/(h*x+g)^(9/2),x)
```

```
[Out] int((a+b*ln(c*(d*(f*x+e)^p)^q))^2/(h*x+g)^(9/2),x)
```

Maxima [**F(-2)**]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^2/(h*x+g)^(9/2),x, algorithm="maxima
")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(%e*h-f*g>0)', see `assume?` for mor
e detai
```

Fricas [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^2/(h*x+g)^(9/2),x, algorithm="fricas
")
```

```
[Out] integral((sqrt(h*x + g)*b^2*log(((f*x + e)^p*d)^q*c)^2 + 2*sqrt(h*x + g)*a*
b*log(((f*x + e)^p*d)^q*c) + sqrt(h*x + g)*a^2)/(h^5*x^5 + 5*g*h^4*x^4 + 10
*g^2*h^3*x^3 + 10*g^3*h^2*x^2 + 5*g^4*h*x + g^5), x)
```

Sympy [**F(-1)**] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))**2/(h*x+g)**(9/2),x)
```

```
[Out] Timed out
```

Giac [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^2/(h*x+g)^(9/2),x, algorithm="giac")
```

```
[Out] integrate((b*log(((f*x + e)^p*d)^q*c) + a)^2/(h*x + g)^(9/2), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)\right)^2}{{\left(g+h\,x\right)}^{9/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d*(e + f*x)^p)^q))^2/(g + h*x)^(9/2),x)
```

```
[Out] int((a + b*log(c*(d*(e + f*x)^p)^q))^2/(g + h*x)^(9/2), x)
```

3.496 $\int \frac{(g+hx)^{3/2}}{a+b\log(c(d(e+fx)^p)^q)}\,dx$

Optimal. Leaf size=33

$$\text{Int}\left(\frac{(g+hx)^{3/2}}{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)},x\right)$$

```
[Out] Unintegrable((h*x+g)^(3/2)/(a+b*ln(c*(d*(f*x+e)^p)^q)),x)
```

Rubi [A]
time = 0.05, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int \frac{(g+hx)^{3/2}}{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}\,dx$$

Verification is not applicable to the result.

```
[In] Int[(g + h*x)^(3/2)/(a + b*Log[c*(d*(e + f*x)^p)^q]),x]
[Out] Defer[Int][(g + h*x)^(3/2)/(a + b*Log[c*(d*(e + f*x)^p)^q]), x]
```

Rubi steps

$$\int \frac{(g+hx)^{3/2}}{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}\,dx = \int \frac{(g+hx)^{3/2}}{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}\,dx$$

Mathematica [A]
time = 0.76, size = 0, normalized size = 0.00

$$\int \frac{(g+hx)^{3/2}}{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}\,dx$$

Verification is not applicable to the result.

```
[In] Integrate[(g + h*x)^(3/2)/(a + b*Log[c*(d*(e + f*x)^p)^q]),x]
[Out] Integrate[(g + h*x)^(3/2)/(a + b*Log[c*(d*(e + f*x)^p)^q]), x]
```

Maple [A]
time = 0.22, size = 0, normalized size = 0.00

$$\int \frac{(hx+g)^{\frac{3}{2}}}{a+b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x+g)^(3/2)/(a+b*ln(c*(d*(f*x+e)^p)^q)),x)
[Out] int((h*x+g)^(3/2)/(a+b*ln(c*(d*(f*x+e)^p)^q)),x)
```

Maxima [A]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^(3/2)/(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="maxima")
[Out] integrate((h*x + g)^(3/2)/(b*log(((f*x + e)^p*d)^q*c) + a), x)
```

Fricas [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^(3/2)/(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="fricas")
[Out] integral((h*x + g)^(3/2)/(b*log(((f*x + e)^p*d)^q*c) + a), x)
```

Sympy [F(-1)] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)**(3/2)/(a+b*ln(c*(d*(f*x+e)**p)**q)),x)
[Out] Timed out
```

Giac [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^(3/2)/(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="giac")
[Out] integrate((h*x + g)^(3/2)/(b*log(((f*x + e)^p*d)^q*c) + a), x)
```

Mupad [A]
time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{(g+h\,x)^{3/2}}{a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g + h*x)^(3/2)/(a + b*log(c*(d*(e + f*x)^p)^q)),x)
[Out] int((g + h*x)^(3/2)/(a + b*log(c*(d*(e + f*x)^p)^q)), x)
```

3.497 $\int \frac{\sqrt{g+hx}}{a+b\log(c(d(e+fx)^p)^q)}\,dx$

Optimal. Leaf size=33

$$\mathrm{Int}\left(\frac{\sqrt{g+hx}}{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)},x\right)$$

```
[Out] Unintegrable((h*x+g)^(1/2)/(a+b*ln(c*(d*(f*x+e)^p)^q)),x)
```

Rubi [A]
time = 0.05, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int \frac{\sqrt{g+hx}}{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}\,dx$$

Verification is not applicable to the result.

```
[In] Int[Sqrt[g + h*x]/(a + b*Log[c*(d*(e + f*x)^p)^q]),x]
[Out] Defer[Int][Sqrt[g + h*x]/(a + b*Log[c*(d*(e + f*x)^p)^q]), x]
```

Rubi steps

$$\int \frac{\sqrt{g+hx}}{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}\,dx = \int \frac{\sqrt{g+hx}}{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}\,dx$$

Mathematica [A]
time = 0.69, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{g+hx}}{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}\,dx$$

Verification is not applicable to the result.

```
[In] Integrate[Sqrt[g + h*x]/(a + b*Log[c*(d*(e + f*x)^p)^q]),x]
[Out] Integrate[Sqrt[g + h*x]/(a + b*Log[c*(d*(e + f*x)^p)^q]), x]
```

Maple [A]
time = 0.20, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{hx+g}}{a+b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x+g)^(1/2)/(a+b*ln(c*(d*(f*x+e)^p)^q)),x)
[Out] int((h*x+g)^(1/2)/(a+b*ln(c*(d*(f*x+e)^p)^q)),x)
```

Maxima [A]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^(1/2)/(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="maxima")
[Out] integrate(sqrt(h*x + g)/(b*log(((f*x + e)^p*d)^q*c) + a), x)
```

Fricas [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^(1/2)/(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="fricas")
[Out] integral(sqrt(h*x + g)/(b*log(((f*x + e)^p*d)^q*c) + a), x)
```

Sympy [F(-1)] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)**(1/2)/(a+b*ln(c*(d*(f*x+e)**p)**q)),x)
[Out] Timed out
```

Giac [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^(1/2)/(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="giac")
[Out] integrate(sqrt(h*x + g)/(b*log(((f*x + e)^p*d)^q*c) + a), x)
```

Mupad [A]
time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{\sqrt{g+h\,x}}{a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g + h*x)^(1/2)/(a + b*log(c*(d*(e + f*x)^p)^q)),x)
[Out] int((g + h*x)^(1/2)/(a + b*log(c*(d*(e + f*x)^p)^q)), x)
```

3.498 $\int \frac{1}{\sqrt{g+hx}\,(a+b\log(c(d(e+fx)^p)^q))}\,dx$

Optimal. Leaf size=33

$$\text{Int}\left(\frac{1}{\sqrt{g+hx}\,\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)},x\right)$$

```
[Out] Unintegrable(1/(a+b*ln(c*(d*(f*x+e)^p)^q))/(h*x+g)^(1/2),x)
```

Rubi [A]
time = 0.05, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int \frac{1}{\sqrt{g+hx}\,\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}\,dx$$

Verification is not applicable to the result.

```
[In] Int[1/(Sqrt[g + h*x]*(a + b*Log[c*(d*(e + f*x)^p)^q])),x]
[Out] Defer[Int][1/(Sqrt[g + h*x]*(a + b*Log[c*(d*(e + f*x)^p)^q])), x]
```

Rubi steps

$$\int \frac{1}{\sqrt{g+hx}\,\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}\,dx = \int \frac{1}{\sqrt{g+hx}\,\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}\,dx$$

Mathematica [A]
time = 0.93, size = 0, normalized size = 0.00

$$\int \frac{1}{\sqrt{g+hx}\,\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}\,dx$$

Verification is not applicable to the result.

```
[In] Integrate[1/(Sqrt[g + h*x]*(a + b*Log[c*(d*(e + f*x)^p)^q])),x]
[Out] Integrate[1/(Sqrt[g + h*x]*(a + b*Log[c*(d*(e + f*x)^p)^q])), x]
```

Maple [A]
time = 0.19, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(a+b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)\right)\sqrt{hx+g}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+b*ln(c*(d*(f*x+e)^p)^q))/(h*x+g)^(1/2),x)
```

```
[Out] int(1/(a+b*ln(c*(d*(f*x+e)^p)^q))/(h*x+g)^(1/2),x)
```

Maxima [A]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g)^(1/2),x, algorithm="maxima
")
```

```
[Out] integrate(1/(sqrt(h*x + g)*(b*log(((f*x + e)^p*d)^q*c) + a)), x)
```

Fricas [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g)^(1/2),x, algorithm="fricas
")
```

```
[Out] integral(sqrt(h*x + g)/(a*h*x + a*g + (b*h*x + b*g)*log(((f*x + e)^p*d)^q*c
)), x)
```

Sympy [A]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{(a + b\log\left(c\left(d\left(e + fx\right)^{p}\right)^{q}\right))\sqrt{g + hx}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*ln(c*(d*(f*x+e)**p)**q))/(h*x+g)**(1/2),x)
```

```
[Out] Integral(1/((a + b*log(c*(d*(e + f*x)**p)**q))*sqrt(g + h*x)), x)
```

Giac [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g)^(1/2),x, algorithm="giac")
```

```
[Out] integrate(1/(sqrt(h*x + g)*(b*log(((f*x + e)^p*d)^q*c) + a)), x)
```

Mupad [A]
time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{1}{\sqrt{g+h\,x}\,\left(a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)\right)} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((g + h*x)^(1/2)*(a + b*log(c*(d*(e + f*x)^p)^q))),x)
[Out] int(1/((g + h*x)^(1/2)*(a + b*log(c*(d*(e + f*x)^p)^q))), x)
```

3.499 $\int \frac{1}{(g+hx)^{3/2}(a+b\log(c(d(e+fx)^p)^q))}\,dx$

Optimal. Leaf size=33

$$\text{Int}\left(\frac{1}{(g+hx)^{3/2}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)},x\right)$$

```
[Out] Unintegrable(1/(h*x+g)^(3/2)/(a+b*ln(c*(d*(f*x+e)^p)^q)),x)
```

Rubi [A]
time = 0.06, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int \frac{1}{(g+hx)^{3/2}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}\,dx$$

Verification is not applicable to the result.

```
[In] Int[1/((g + h*x)^(3/2)*(a + b*Log[c*(d*(e + f*x)^p)^q])),x]
[Out] Defer[Int][1/((g + h*x)^(3/2)*(a + b*Log[c*(d*(e + f*x)^p)^q])), x]
```

Rubi steps

$$\int \frac{1}{(g+hx)^{3/2}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}\,dx=\int \frac{1}{(g+hx)^{3/2}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}\,dx$$

Mathematica [A]
time = 1.00, size = 0, normalized size = 0.00

$$\int \frac{1}{(g+hx)^{3/2}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}\,dx$$

Verification is not applicable to the result.

```
[In] Integrate[1/((g + h*x)^(3/2)*(a + b*Log[c*(d*(e + f*x)^p)^q])),x]
[Out] Integrate[1/((g + h*x)^(3/2)*(a + b*Log[c*(d*(e + f*x)^p)^q])), x]
```

Maple [A]
time = 0.23, size = 0, normalized size = 0.00

$$\int \frac{1}{(hx+g)^{\frac{3}{2}}\left(a+b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(h*x+g)^(3/2)/(a+b*ln(c*(d*(f*x+e)^p)^q)),x)
```

```
[Out] int(1/(h*x+g)^(3/2)/(a+b*ln(c*(d*(f*x+e)^p)^q)),x)
```

Maxima [A]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)^(3/2)/(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="maxima
")
```

```
[Out] integrate(1/((h*x + g)^(3/2)*(b*log(((f*x + e)^p*d)^q*c) + a)), x)
```

Fricas [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)^(3/2)/(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="fricas
")
```

```
[Out] integral(sqrt(h*x + g)/(a*h^2*x^2 + 2*a*g*h*x + a*g^2 + (b*h^2*x^2 + 2*b*g*
h*x + b*g^2)*log(((f*x + e)^p*d)^q*c)), x)
```

Sympy [A]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(a + b\log\left(c\left(d\left(e + fx\right)^{p}\right)^{q}\right)\right)\left(g + hx\right)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)**(3/2)/(a+b*ln(c*(d*(f*x+e)**p)**q)),x)
```

```
[Out] Integral(1/((a + b*log(c*(d*(e + f*x)**p)**q))*(g + h*x)**(3/2)), x)
```

Giac [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)^(3/2)/(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="giac")
```

```
[Out] integrate(1/((h*x + g)^(3/2)*(b*log((((f*x + e)^p*d)^q*c) + a)), x)
```

Mupad [A]
time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{1}{{\left(g+h\,x\right)}^{3/2}\,\left(a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)\right)} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((g + h*x)^(3/2)*(a + b*log(c*(d*(e + f*x)^p)^q))),x)
[Out] int(1/((g + h*x)^(3/2)*(a + b*log(c*(d*(e + f*x)^p)^q))), x)
```

3.500 $\int \sqrt{g+hx}\,\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}\,dx$

Optimal. Leaf size=35

$$\mathrm{Int}\left(\sqrt{g+hx}\,\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)},x\right)$$

```
[Out] Unintegrable((h*x+g)^(1/2)*(a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2),x)
```

Rubi [A]
time = 0.20, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int \sqrt{g+hx}\,\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}\,dx$$

Verification is not applicable to the result.

```
[In] Int[Sqrt[g + h*x]*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]],x]
[Out] Defer[Int][Sqrt[g + h*x]*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]], x]
```

Rubi steps

$$\int \sqrt{g+hx}\,\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}\,dx = \int \sqrt{g+hx}\,\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}\,dx$$

Mathematica [A]
time = 0.75, size = 0, normalized size = 0.00

$$\int \sqrt{g+hx}\,\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}\,dx$$

Verification is not applicable to the result.

```
[In] Integrate[Sqrt[g + h*x]*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]],x]
[Out] Integrate[Sqrt[g + h*x]*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]], x]
```

Maple [A]
time = 0.19, size = 0, normalized size = 0.00

$$\int \sqrt{hx+g}\,\sqrt{a+b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x+g)^(1/2)*(a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2),x)
```

```
[Out] int((h*x+g)^(1/2)*(a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2),x)
```

Maxima [A]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^(1/2)*(a+b*log(c*(d*(f*x+e)^p)^q))^(1/2),x, algorithm="ma
xima")
```

```
[Out] integrate(sqrt(h*x + g)*sqrt(b*log(((f*x + e)^p*d)^q*c) + a), x)
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^(1/2)*(a+b*log(c*(d*(f*x+e)^p)^q))^(1/2),x, algorithm="fr
icas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: SystemError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)**(1/2)*(a+b*ln(c*(d*(f*x+e)**p)**q))**(1/2),x)
```

```
[Out] Exception raised: SystemError >> excessive stack use: stack is 5006 deep
```

Giac [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^(1/2)*(a+b*log(c*(d*(f*x+e)^p)^q))^(1/2),x, algorithm="gi
ac")
```

```
[Out] integrate(sqrt(h*x + g)*sqrt(b*log(((f*x + e)^p*d)^q*c) + a), x)
```

Mupad [A]
time = 0.00, size = -1, normalized size = -0.03

$$\int \sqrt{g+h\,x}\,\sqrt{a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g + h*x)^(1/2)*(a + b*log(c*(d*(e + f*x)^p)^q))^(1/2),x)
[Out] int((g + h*x)^(1/2)*(a + b*log(c*(d*(e + f*x)^p)^q))^(1/2), x)
```

3.501 $\int \frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{g+hx}}\,dx$

Optimal. Leaf size=35

$$\operatorname{Int}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{g+hx}},x\right)$$

```
[Out] Unintegrable((a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2)/(h*x+g)^(1/2),x)
```

Rubi [A]
time = 0.19, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int \frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{g+hx}}\,dx$$

Verification is not applicable to the result.

```
[In] Int[Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]/Sqrt[g + h*x],x]
[Out] Defer[Int][Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]/Sqrt[g + h*x], x]
```

Rubi steps

$$\int \frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{g+hx}}\,dx = \int \frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{g+hx}}\,dx$$

Mathematica [A]
time = 0.83, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{g+hx}}\,dx$$

Verification is not applicable to the result.

```
[In] Integrate[Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]/Sqrt[g + h*x],x]
[Out] Integrate[Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]/Sqrt[g + h*x], x]
```

Maple [A]
time = 0.20, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{a+b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)}}{\sqrt{hx+g}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2)/(h*x+g)^(1/2),x)
```

```
[Out] int((a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2)/(h*x+g)^(1/2),x)
```

Maxima [A]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^(1/2)/(h*x+g)^(1/2),x, algorithm="ma
xima")
```

```
[Out] integrate(sqrt(b*log(((f*x + e)^p*d)^q*c) + a)/sqrt(h*x + g), x)
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^(1/2)/(h*x+g)^(1/2),x, algorithm="fr
icas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [A]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{a+b\log\left(c\left(d\left(e+fx\right)^{p}\right)^{q}\right)}}{\sqrt{g+hx}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))**(1/2)/(h*x+g)**(1/2),x)
```

```
[Out] Integral(sqrt(a + b*log(c*(d*(e + f*x)**p)**q))/sqrt(g + h*x), x)
```

Giac [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^(1/2)/(h*x+g)^(1/2),x, algorithm="gi
ac")
```

```
[Out] integrate(sqrt(b*log(((f*x + e)^p*d)^q*c) + a)/sqrt(h*x + g), x)
```

Mupad [A]
time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{\sqrt{a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)}}{\sqrt{g+h\,x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d*(e + f*x)^p)^q))^(1/2)/(g + h*x)^(1/2),x)
```

```
[Out] int((a + b*log(c*(d*(e + f*x)^p)^q))^(1/2)/(g + h*x)^(1/2), x)
```

3.502 $\int \frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{(g+hx)^{3/2}}\,dx$

Optimal. Leaf size=35

$$\text{Int}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{(g+hx)^{3/2}},x\right)$$

```
[Out] Unintegrable((a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2)/(h*x+g)^(3/2),x)
```

Rubi [A]
time = 0.20, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int \frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{(g+hx)^{3/2}}\,dx$$

Verification is not applicable to the result.

```
[In] Int[Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]/(g + h*x)^(3/2),x]
[Out] Defer[Int][Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]/(g + h*x)^(3/2), x]
```

Rubi steps

$$\int \frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{(g+hx)^{3/2}}\,dx = \int \frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{(g+hx)^{3/2}}\,dx$$

Mathematica [A]
time = 0.84, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{(g+hx)^{3/2}}\,dx$$

Verification is not applicable to the result.

```
[In] Integrate[Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]/(g + h*x)^(3/2),x]
[Out] Integrate[Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]/(g + h*x)^(3/2), x]
```

Maple [A]
time = 0.20, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{a+b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)}}{\left(hx+g\right)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2)/(h*x+g)^(3/2),x)
```

```
[Out] int((a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2)/(h*x+g)^(3/2),x)
```

Maxima [A]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^(1/2)/(h*x+g)^(3/2),x, algorithm="ma
xima")
```

```
[Out] integrate(sqrt(b*log(((f*x + e)^p*d)^q*c) + a)/(h*x + g)^(3/2), x)
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^(1/2)/(h*x+g)^(3/2),x, algorithm="fr
icas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [A]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{a+b\log\left(c\left(d\left(e+fx\right)^{p}\right)^{q}\right)}}{\left(g+hx\right)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))**(1/2)/(h*x+g)**(3/2),x)
```

```
[Out] Integral(sqrt(a + b*log(c*(d*(e + f*x)**p)**q))/(g + h*x)**(3/2), x)
```

Giac [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^(1/2)/(h*x+g)^(3/2),x, algorithm="gi
ac")
[Out] integrate(sqrt(b*log(((f*x + e)^p*d)^q*c) + a)/(h*x + g)^(3/2), x)
```

Mupad [A]
time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{\sqrt{a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)}}{{\left(g+h\,x\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d*(e + f*x)^p)^q))^(1/2)/(g + h*x)^(3/2),x)
[Out] int((a + b*log(c*(d*(e + f*x)^p)^q))^(1/2)/(g + h*x)^(3/2), x)
```

3.503 $\int \frac{\sqrt{g+hx}}{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}\,dx$

Optimal. Leaf size=35

$$\text{Int}\left(\frac{\sqrt{g+hx}}{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}},x\right)$$

[Out] Unintegrable((h*x+g)^(1/2)/(a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2),x)

Rubi [A]
time = 0.07, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int \frac{\sqrt{g+hx}}{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}\,dx$$

Verification is not applicable to the result.

[In] Int[Sqrt[g + h*x]/Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]],x]

[Out] Defer[Int][Sqrt[g + h*x]/Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]], x]

Rubi steps

$$\int \frac{\sqrt{g+hx}}{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}\,dx = \int \frac{\sqrt{g+hx}}{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}\,dx$$

Mathematica [A]
time = 6.60, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{g+hx}}{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}\,dx$$

Verification is not applicable to the result.

[In] Integrate[Sqrt[g + h*x]/Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]],x]

[Out] Integrate[Sqrt[g + h*x]/Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]], x]

Maple [A]
time = 0.19, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{hx+g}}{\sqrt{a+b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x+g)^(1/2)/(a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2),x)
```

```
[Out] int((h*x+g)^(1/2)/(a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2),x)
```

Maxima [A]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^(1/2)/(a+b*log(c*(d*(f*x+e)^p)^q))^(1/2),x, algorithm="ma
xima")
```

```
[Out] integrate(sqrt(h*x + g)/sqrt(b*log(((f*x + e)^p*d)^q*c) + a), x)
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^(1/2)/(a+b*log(c*(d*(f*x+e)^p)^q))^(1/2),x, algorithm="fr
icas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [F(-1)] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)**(1/2)/(a+b*ln(c*(d*(f*x+e)**p)**q))**(1/2),x)
```

```
[Out] Timed out
```

Giac [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^(1/2)/(a+b*log(c*(d*(f*x+e)^p)^q))^(1/2),x, algorithm="gi
ac")
```

```
[Out] integrate(sqrt(h*x + g)/sqrt(b*log(((f*x + e)^p*d)^q*c) + a), x)
```

Mupad [A]
time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{\sqrt{g+h\,x}}{\sqrt{a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g + h*x)^(1/2)/(a + b*log(c*(d*(e + f*x)^p)^q))^(1/2),x)
```

```
[Out] int((g + h*x)^(1/2)/(a + b*log(c*(d*(e + f*x)^p)^q))^(1/2), x)
```

3.504 $\int \frac{1}{\sqrt{g+hx}\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}\,dx$

Optimal. Leaf size=35

$$\text{Int}\left(\frac{1}{\sqrt{g+hx}\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}},x\right)$$

```
[Out] Unintegrable(1/(h*x+g)^(1/2)/(a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2),x)
```

Rubi [A]
time = 0.07, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int \frac{1}{\sqrt{g+hx}\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}\,dx$$

Verification is not applicable to the result.

```
[In] Int[1/(Sqrt[g + h*x]*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]),x]
[Out] Defer[Int][1/(Sqrt[g + h*x]*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]), x]
```

Rubi steps

$$\int \frac{1}{\sqrt{g+hx}\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}\,dx=\int \frac{1}{\sqrt{g+hx}\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}\,dx$$

Mathematica [A]
time = 3.85, size = 0, normalized size = 0.00

$$\int \frac{1}{\sqrt{g+hx}\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}\,dx$$

Verification is not applicable to the result.

```
[In] Integrate[1/(Sqrt[g + h*x]*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]),x]
[Out] Integrate[1/(Sqrt[g + h*x]*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]), x]
```

Maple [A]
time = 0.20, size = 0, normalized size = 0.00

$$\int \frac{1}{\sqrt{hx+g}\sqrt{a+b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(h*x+g)^(1/2)/(a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2),x)
```

```
[Out] int(1/(h*x+g)^(1/2)/(a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2),x)
```

Maxima [A]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)^(1/2)/(a+b*log(c*(d*(f*x+e)^p)^q))^(1/2),x, algorithm="
maxima")
```

```
[Out] integrate(1/(sqrt(h*x + g)*sqrt(b*log(((f*x + e)^p*d)^q*c) + a)), x)
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)^(1/2)/(a+b*log(c*(d*(f*x+e)^p)^q))^(1/2),x, algorithm="
fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [A]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\sqrt{a + b\log\left(c\left(d\left(e + fx\right)^{p}\right)^{q}\right)}\sqrt{g + hx}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)**(1/2)/(a+b*ln(c*(d*(f*x+e)**p)**q))**(1/2),x)
```

```
[Out] Integral(1/(sqrt(a + b*log(c*(d*(e + f*x)**p)**q))*sqrt(g + h*x)), x)
```

Giac [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)^(1/2)/(a+b*log(c*(d*(f*x+e)^p)^q))^(1/2),x, algorithm="
giac")
```

```
[Out] integrate(1/(sqrt(h*x + g)*sqrt(b*log(((f*x + e)^p*d)^q*c) + a)), x)
```

Mupad [A]
time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{1}{\sqrt{g+h\,x}\,\sqrt{a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((g + h*x)^(1/2)*(a + b*log(c*(d*(e + f*x)^p)^q))^(1/2)),x)
```

```
[Out] int(1/((g + h*x)^(1/2)*(a + b*log(c*(d*(e + f*x)^p)^q))^(1/2)), x)
```

3.505 $\int \frac{1}{(g+hx)^{3/2}\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}\,dx$

Optimal. Leaf size=35

$$\text{Int}\left(\frac{1}{(g+hx)^{3/2}\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}},x\right)$$

```
[Out] Unintegrable(1/(h*x+g)^(3/2)/(a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2),x)
```

Rubi [A]
time = 0.07, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int \frac{1}{(g+hx)^{3/2}\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}\,dx$$

Verification is not applicable to the result.

```
[In] Int[1/((g + h*x)^(3/2)*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]),x]
[Out] Defer[Int][1/((g + h*x)^(3/2)*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]), x]
```

Rubi steps

$$\int \frac{1}{(g+hx)^{3/2}\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}\,dx=\int \frac{1}{(g+hx)^{3/2}\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}\,dx$$

Mathematica [A]
time = 0.68, size = 0, normalized size = 0.00

$$\int \frac{1}{(g+hx)^{3/2}\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}\,dx$$

Verification is not applicable to the result.

```
[In] Integrate[1/((g + h*x)^(3/2)*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]),x]
[Out] Integrate[1/((g + h*x)^(3/2)*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]), x]
```

Maple [A]
time = 0.23, size = 0, normalized size = 0.00

$$\int \frac{1}{(hx+g)^{\frac{3}{2}}\sqrt{a+b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(h*x+g)^(3/2)/(a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2),x)
```

```
[Out] int(1/(h*x+g)^(3/2)/(a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2),x)
```

Maxima [A]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)^(3/2)/(a+b*log(c*(d*(f*x+e)^p)^q))^(1/2),x, algorithm="
maxima")
```

```
[Out] integrate(1/((h*x + g)^(3/2)*sqrt(b*log(((f*x + e)^p*d)^q*c) + a)), x)
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)^(3/2)/(a+b*log(c*(d*(f*x+e)^p)^q))^(1/2),x, algorithm="
fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [A]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\sqrt{a + b \log \left(c \left(d \left(e + fx\right)^{p}\right)^{q}\right)} \left(g + hx\right)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)**(3/2)/(a+b*ln(c*(d*(f*x+e)**p)**q))**(1/2),x)
```

```
[Out] Integral(1/(sqrt(a + b*log(c*(d*(e + f*x)**p)**q))*(g + h*x)**(3/2)), x)
```

Giac [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)^(3/2)/(a+b*log(c*(d*(f*x+e)^p)^q))^(1/2),x, algorithm="
giac")
```

```
[Out] integrate(1/((h*x + g)^(3/2)*sqrt(b*log(((f*x + e)^p*d)^q*c) + a)), x)
```

Mupad [A]
time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{1}{(g+h\,x)^{3/2}\,\sqrt{a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((g + h*x)^(3/2)*(a + b*log(c*(d*(e + f*x)^p)^q))^(1/2)),x)
```

```
[Out] int(1/((g + h*x)^(3/2)*(a + b*log(c*(d*(e + f*x)^p)^q))^(1/2)), x)
```

3.506 $\int (g+hx)^m \left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)\,dx$

Optimal. Leaf size=99

$$\frac{bfpq(g+hx)^{2+m}\,{}_2F_1\left(1,2+m;3+m;\frac{f(g+hx)}{fg-eh}\right)}{h(fg-eh)(1+m)(2+m)}+\frac{(g+hx)^{1+m}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h(1+m)}$$

```
[Out] b*f*p*q*(h*x+g)^(2+m)*hypergeom([1, 2+m],[3+m],f*(h*x+g)/(-e*h+f*g))/h/(-e*
h+f*g)/(1+m)/(2+m)+(h*x+g)^(1+m)*(a+b*ln(c*(d*(f*x+e)^p)^q))/h/(1+m)
```

Rubi [A]

time = 0.07, antiderivative size = 99, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.115$, Rules used = {2442, 70, 2495}

$$\frac{(g+hx)^{m+1}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h(m+1)}+\frac{bfpq(g+hx)^{m+2}\,{}_2F_1\left(1,m+2;m+3;\frac{f(g+hx)}{fg-eh}\right)}{h(m+1)(m+2)(fg-eh)}$$

Antiderivative was successfully verified.

```
[In] Int[(g + h*x)^m*(a + b*Log[c*(d*(e + f*x)^p)^q]),x]
```

```
[Out] (b*f*p*q*(g + h*x)^(2 + m)*Hypergeometric2F1[1, 2 + m, 3 + m, (f*(g + h*x))
/(f*g - e*h)])/(h*(f*g - e*h)*(1 + m)*(2 + m)) + ((g + h*x)^(1 + m)*(a + b*
Log[c*(d*(e + f*x)^p)^q]))/(h*(1 + m))
```

Rule 70

```
Int[((a_) + (b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[(b
*c - a*d)^n*((a + b*x)^(m + 1)/(b^(n + 1)*(m + 1)))*Hypergeometric2F1[-n, m
 + 1, m + 2, (-d)*((a + b*x)/(b*c - a*d))], x] /; FreeQ[{a, b, c, d, m}, x]
 && NeQ[b*c - a*d, 0] &&  !IntegerQ[m] && IntegerQ[n]
```

Rule 2442

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[(f + g*x)^(q + 1)*((a + b*Log[c*(d + e*x)^n])/(
g*(q + 1))), x] - Dist[b*e*(n/(g*(q + 1))), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 2495

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
```

```
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int (g+hx)^m \left(a+b\log\left(c(d(e+fx)^p)^q\right)\right) dx = \text{Subst}\left(\int (g+hx)^m \left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right) dx, cd^q(e+fx\right.$$

$$= \frac{(g+hx)^{1+m}\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)}{h(1+m)} - \text{Subst}\left(\frac{(bfpq)\int \frac{(g}{}}{h(1-}\right.$$

$$= \frac{bfpq(g+hx)^{2+m}\,{}_2F_1\left(1,2+m;3+m;\frac{f(g+hx)}{fg-eh}\right)}{h(fg-eh)(1+m)(2+m)} + \frac{(g+hx)^{1+}}{}$$

Mathematica [A]
time = 0.16, size = 76, normalized size = 0.77

$$\frac{(g+hx)^{1+m}\left(a+am-bpq+bpq\,{}_2F_1\left(1,1+m;2+m;\frac{f(g+hx)}{fg-eh}\right)+b(1+m)\log\left(c(d(e+fx)^p)^q\right)\right)}{h(1+m)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(g + h*x)^m*(a + b*Log[c*(d*(e + f*x)^p)^q]),x]
[Out] ((g + h*x)^(1 + m)*(a + a*m - b*p*q + b*p*q*Hypergeometric2F1[1, 1 + m, 2 +
 m, (f*(g + h*x))/(f*g - e*h)] + b*(1 + m)*Log[c*(d*(e + f*x)^p)^q]))/(h*(1
 + m)^2)
```

Maple [F]
time = 0.23, size = 0, normalized size = 0.00

$$\int (hx+g)^m \left(a+b\ln\left(c(d(fx+e)^p)^q\right)\right) dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x+g)^m*(a+b*ln(c*(d*(f*x+e)^p)^q)),x)
[Out] int((h*x+g)^m*(a+b*ln(c*(d*(f*x+e)^p)^q)),x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^m*(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="maxima")
```

```
[Out] b*((h*x + g)*(h*x + g)^m*log(((f*x + e)^p)^q)/(h*(m + 1)) + integrate(-(f*g
*p*q + (f*h*p*q - f*h*(m + 1)*log(c) - (m*q + q)*f*h*log(d))*x - (h*(m + 1)
*log(c) + (m*q + q)*h*log(d))*e)*(h*x + g)^m/(f*h*(m + 1)*x + h*(m + 1)*e),
 x)) + (h*x + g)^(m + 1)*a/(h*(m + 1))
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^m*(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="fricas")
```

```
[Out] integral((h*x + g)^m*b*log(((f*x + e)^p*d)^q*c) + (h*x + g)^m*a, x)
```

Sympy [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: HeuristicGCDFailed

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)**m*(a+b*ln(c*(d*(f*x+e)**p)**q)),x)
```

```
[Out] Exception raised: HeuristicGCDFailed >> no luck
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^m*(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="giac")
```

```
[Out] integrate((b*log(((f*x + e)^p*d)^q*c) + a)*(h*x + g)^m, x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int (g+h\,x)^m\,\left(a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)\right) \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g + h*x)^m*(a + b*log(c*(d*(e + f*x)^p)^q)),x)
```

```
[Out] int((g + h*x)^m*(a + b*log(c*(d*(e + f*x)^p)^q)), x)
```

3.507 $\int \frac{(g+hx)^m}{a+b\log(c(d(e+fx)^p)^q)}\,dx$

Optimal. Leaf size=31

$$\text{Int}\left(\frac{(g+hx)^m}{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)},x\right)$$

```
[Out] Unintegrable((h*x+g)^m/(a+b*ln(c*(d*(f*x+e)^p)^q)),x)
```

Rubi [A]
time = 0.04, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int \frac{(g+hx)^m}{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}\,dx$$

Verification is not applicable to the result.

```
[In] Int[(g + h*x)^m/(a + b*Log[c*(d*(e + f*x)^p)^q]),x]
[Out] Defer[Int][(g + h*x)^m/(a + b*Log[c*(d*(e + f*x)^p)^q]), x]
```

Rubi steps

$$\int \frac{(g+hx)^m}{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}\,dx = \int \frac{(g+hx)^m}{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}\,dx$$

Mathematica [A]
time = 0.24, size = 0, normalized size = 0.00

$$\int \frac{(g+hx)^m}{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}\,dx$$

Verification is not applicable to the result.

```
[In] Integrate[(g + h*x)^m/(a + b*Log[c*(d*(e + f*x)^p)^q]),x]
[Out] Integrate[(g + h*x)^m/(a + b*Log[c*(d*(e + f*x)^p)^q]), x]
```

Maple [A]
time = 0.20, size = 0, normalized size = 0.00

$$\int \frac{(hx+g)^m}{a+b\ln\left(c\left(d\left(fx+e\right)^p\right)^q\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x+g)^m/(a+b*ln(c*(d*(f*x+e)^p)^q)),x)
[Out] int((h*x+g)^m/(a+b*ln(c*(d*(f*x+e)^p)^q)),x)
```

Maxima [A]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^m/(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="maxima")
[Out] integrate((h*x + g)^m/(b*log(((f*x + e)^p*d)^q*c) + a), x)
```

Fricas [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^m/(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="fricas")
[Out] integral((h*x + g)^m/(b*log(((f*x + e)^p*d)^q*c) + a), x)
```

Sympy [A]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(g+hx)^m}{a+b\log\left(c\left(d\left(e+fx\right)^p\right)^q\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)**m/(a+b*ln(c*(d*(f*x+e)**p)**q)),x)
[Out] Integral((g + h*x)**m/(a + b*log(c*(d*(e + f*x)**p)**q)), x)
```

Giac [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^m/(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="giac")
[Out] integrate((h*x + g)^m/(b*log(((f*x + e)^p*d)^q*c) + a), x)
```

Mupad [A]
time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{(g+h\,x)^m}{a+b\,\ln\left(c\,\left(d\,\left(e+f\,x\right)^p\right)^q\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g + h*x)^m/(a + b*log(c*(d*(e + f*x)^p)^q)),x)
[Out] int((g + h*x)^m/(a + b*log(c*(d*(e + f*x)^p)^q)), x)
```

3.508 $\int \frac{(g+hx)^m}{(a+b\log(c(d(e+fx)^p)^q))^2} dx$

Optimal. Leaf size=31

$$\text{Int}\left(\frac{(g+hx)^m}{(a+b\log\left(c\left(d(e+fx)^p\right)^q\right))^2},x\right)$$

```
[Out] Unintegrable((h*x+g)^m/(a+b*ln(c*(d*(f*x+e)^p)^q))^2,x)
```

Rubi [A]
time = 0.04, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int \frac{(g+hx)^m}{(a+b\log\left(c\left(d(e+fx)^p\right)^q\right))^2}\,dx$$

Verification is not applicable to the result.

```
[In] Int[(g + h*x)^m/(a + b*Log[c*(d*(e + f*x)^p)^q])^2,x]
```

```
[Out] Defer[Int][(g + h*x)^m/(a + b*Log[c*(d*(e + f*x)^p)^q])^2, x]
```

Rubi steps

$$\int \frac{(g+hx)^m}{(a+b\log\left(c\left(d(e+fx)^p\right)^q\right))^2}\,dx = \int \frac{(g+hx)^m}{(a+b\log\left(c\left(d(e+fx)^p\right)^q\right))^2}\,dx$$

Mathematica [A]
time = 1.49, size = 0, normalized size = 0.00

$$\int \frac{(g+hx)^m}{(a+b\log\left(c\left(d(e+fx)^p\right)^q\right))^2}\,dx$$

Verification is not applicable to the result.

```
[In] Integrate[(g + h*x)^m/(a + b*Log[c*(d*(e + f*x)^p)^q])^2,x]
```

```
[Out] Integrate[(g + h*x)^m/(a + b*Log[c*(d*(e + f*x)^p)^q])^2, x]
```

Maple [A]
time = 0.20, size = 0, normalized size = 0.00

$$\int \frac{(hx+g)^m}{(a+b\ln\left(c\left(d\left(fx+e\right)^p\right)^q\right))^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x+g)^m/(a+b*ln(c*(d*(f*x+e)^p)^q))^2,x)
```

```
[Out] int((h*x+g)^m/(a+b*ln(c*(d*(f*x+e)^p)^q))^2,x)
```

Maxima [A]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^m/(a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="maxima")
```

```
[Out] -(f*x + e)*(h*x + g)^m/(b^2*f*p*q*log(((f*x + e)^p)^q) + a*b*f*p*q + (f*p*q
^2*log(d) + f*p*q*log(c))*b^2) + integrate((f*h*(m + 1)*x + h*m*e + f*g)*(h
*x + g)^m/(a*b*f*g*p*q + (f*g*p*q^2*log(d) + f*g*p*q*log(c))*b^2 + (a*b*f*h
*p*q + (f*h*p*q^2*log(d) + f*h*p*q*log(c))*b^2)*x + (b^2*f*h*p*q*x + b^2*f*
g*p*q)*log(((f*x + e)^p)^q)), x)
```

Fricas [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^m/(a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="fricas")
```

```
[Out] integral((h*x + g)^m/(b^2*log(((f*x + e)^p*d)^q*c)^2 + 2*a*b*log(((f*x + e)
^p*d)^q*c) + a^2), x)
```

Sympy [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: HeuristicGCDFailed

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)**m/(a+b*ln(c*(d*(f*x+e)**p)**q))**2,x)
```

```
[Out] Exception raised: HeuristicGCDFailed >> no luck
```

Giac [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^m/(a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="giac")
```

```
[Out] integrate((h*x + g)^m/(b*log(((f*x + e)^p*d)^q*c) + a)^2, x)
```

Mupad [A]
time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{(g+h\,x)^m}{\left(a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g + h*x)^m/(a + b*log(c*(d*(e + f*x)^p)^q))^2,x)
```

```
[Out] int((g + h*x)^m/(a + b*log(c*(d*(e + f*x)^p)^q))^2, x)
```

3.509 $\int (g+hx)^m (a+b\log(c(d(e+fx)^p)^q))^{3/2} dx$

Optimal. Leaf size=33

$$\text{Int}\left((g+hx)^m (a+b\log(c(d(e+fx)^p)^q))^{3/2}, x\right)$$

```
[Out] Unintegrable((h*x+g)^m*(a+b*ln(c*(d*(f*x+e)^p)^q))^(3/2),x)
```

Rubi [A]
time = 0.07, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int (g+hx)^m (a+b\log(c(d(e+fx)^p)^q))^{3/2} dx$$

Verification is not applicable to the result.

```
[In] Int[(g + h*x)^m*(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2),x]
[Out] Defer[Int][(g + h*x)^m*(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2), x]
```

Rubi steps

$$\int (g+hx)^m (a+b\log(c(d(e+fx)^p)^q))^{3/2} dx = \int (g+hx)^m (a+b\log(c(d(e+fx)^p)^q))^{3/2} dx$$

Mathematica [A]
time = 26.65, size = 0, normalized size = 0.00

$$\int (g+hx)^m (a+b\log(c(d(e+fx)^p)^q))^{3/2} dx$$

Verification is not applicable to the result.

```
[In] Integrate[(g + h*x)^m*(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2),x]
[Out] Integrate[(g + h*x)^m*(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2), x]
```

Maple [A]
time = 0.18, size = 0, normalized size = 0.00

$$\int (hx+g)^m (a+b\ln(c(d(fx+e)^p)^q))^{\frac{3}{2}} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x+g)^m*(a+b*ln(c*(d*(f*x+e)^p)^q))^(3/2),x)
```

```
[Out] int((h*x+g)^m*(a+b*ln(c*(d*(f*x+e)^p)^q))^(3/2),x)
```

Maxima [**A**]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^m*(a+b*log(c*(d*(f*x+e)^p)^q))^(3/2),x, algorithm="maxima
")
```

```
[Out] integrate((b*log(((f*x + e)^p*d)^q*c) + a)^(3/2)*(h*x + g)^m, x)
```

Fricas [**A**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^m*(a+b*log(c*(d*(f*x+e)^p)^q))^(3/2),x, algorithm="fricas
")
```

```
[Out] integral(((h*x + g)^m*b*log(((f*x + e)^p*d)^q*c) + (h*x + g)^m*a)*sqrt(b*lo
g(((f*x + e)^p*d)^q*c) + a), x)
```

Sympy [**F(-2)**]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: SystemError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)**m*(a+b*ln(c*(d*(f*x+e)**p)**q))**(3/2),x)
```

```
[Out] Exception raised: SystemError >> excessive stack use: stack is 5007 deep
```

Giac [**A**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^m*(a+b*log(c*(d*(f*x+e)^p)^q))^(3/2),x, algorithm="giac")
```

```
[Out] integrate((b*log(((f*x + e)^p*d)^q*c) + a)^(3/2)*(h*x + g)^m, x)
```

Mupad [A]
time = 0.00, size = -1, normalized size = -0.03

$$\int (g+h\,x)^m\,\left(a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)\right)^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g + h*x)^m*(a + b*log(c*(d*(e + f*x)^p)^q))^(3/2),x)
[Out] int((g + h*x)^m*(a + b*log(c*(d*(e + f*x)^p)^q))^(3/2), x)
```

3.510 $\int (g+hx)^m \sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}\,dx$

Optimal. Leaf size=33

$$\text{Int}\left((g+hx)^m\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)},x\right)$$

```
[Out] Unintegrable((h*x+g)^m*(a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2),x)
```

Rubi [A]
time = 0.06, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int (g+hx)^m\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}\,dx$$

Verification is not applicable to the result.

```
[In] Int[(g + h*x)^m*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]],x]
[Out] Defer[Int][(g + h*x)^m*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]], x]
```

Rubi steps

$$\int (g+hx)^m\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}\,dx = \int (g+hx)^m\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}\,dx$$

Mathematica [A]
time = 0.06, size = 0, normalized size = 0.00

$$\int (g+hx)^m\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}\,dx$$

Verification is not applicable to the result.

```
[In] Integrate[(g + h*x)^m*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]],x]
[Out] Integrate[(g + h*x)^m*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]], x]
```

Maple [A]
time = 0.21, size = 0, normalized size = 0.00

$$\int (hx+g)^m\sqrt{a+b\ln\left(c\left(d\left(fx+e\right)^p\right)^q\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x+g)^m*(a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2),x)
```

```
[Out] int((h*x+g)^m*(a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2),x)
```

Maxima [A]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^m*(a+b*log(c*(d*(f*x+e)^p)^q))^(1/2),x, algorithm="maxima
")
```

```
[Out] integrate(sqrt(b*log(((f*x + e)^p*d)^q*c) + a)*(h*x + g)^m, x)
```

Fricas [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^m*(a+b*log(c*(d*(f*x+e)^p)^q))^(1/2),x, algorithm="fricas
")
```

```
[Out] integral(sqrt(b*log(((f*x + e)^p*d)^q*c) + a)*(h*x + g)^m, x)
```

Sympy [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: HeuristicGCDFailed

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)**m*(a+b*ln(c*(d*(f*x+e)**p)**q))**(1/2),x)
```

```
[Out] Exception raised: HeuristicGCDFailed >> no luck
```

Giac [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^m*(a+b*log(c*(d*(f*x+e)^p)^q))^(1/2),x, algorithm="giac")
```

```
[Out] integrate(sqrt(b*log(((f*x + e)^p*d)^q*c) + a)*(h*x + g)^m, x)
```

Mupad [A]
time = 0.00, size = -1, normalized size = -0.03

$$\int (g+h\,x)^m\,\sqrt{a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g + h*x)^m*(a + b*log(c*(d*(e + f*x)^p)^q))^(1/2),x)
[Out] int((g + h*x)^m*(a + b*log(c*(d*(e + f*x)^p)^q))^(1/2), x)
```

3.511 $\int \frac{(g+hx)^m}{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}\,dx$

Optimal. Leaf size=33

$$\operatorname{Int}\left(\frac{(g+hx)^m}{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}},x\right)$$

```
[Out] Unintegrable((h*x+g)^m/(a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2),x)
```

Rubi [A]
time = 0.06, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int \frac{(g+hx)^m}{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}\,dx$$

Verification is not applicable to the result.

```
[In] Int[(g + h*x)^m/Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]],x]
[Out] Defer[Int][(g + h*x)^m/Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]], x]
```

Rubi steps

$$\int \frac{(g+hx)^m}{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}\,dx = \int \frac{(g+hx)^m}{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}\,dx$$

Mathematica [A]
time = 16.91, size = 0, normalized size = 0.00

$$\int \frac{(g+hx)^m}{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}\,dx$$

Verification is not applicable to the result.

```
[In] Integrate[(g + h*x)^m/Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]],x]
[Out] Integrate[(g + h*x)^m/Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]], x]
```

Maple [A]
time = 0.21, size = 0, normalized size = 0.00

$$\int \frac{(hx+g)^m}{\sqrt{a+b\ln \left(c\left(d\left(fx+e\right)^p\right)^q\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x+g)^m/(a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2),x)
```

```
[Out] int((h*x+g)^m/(a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2),x)
```

Maxima [A]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^m/(a+b*log(c*(d*(f*x+e)^p)^q))^(1/2),x, algorithm="maxima
")
```

```
[Out] integrate((h*x + g)^m/sqrt(b*log(((f*x + e)^p*d)^q*c) + a), x)
```

Fricas [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^m/(a+b*log(c*(d*(f*x+e)^p)^q))^(1/2),x, algorithm="fricas
")
```

```
[Out] integral((h*x + g)^m/sqrt(b*log(((f*x + e)^p*d)^q*c) + a), x)
```

Sympy [A]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(g+hx)^m}{\sqrt{a+b\log \left(c\left(d\left(e+fx\right)^p\right)^q\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)**m/(a+b*ln(c*(d*(f*x+e)**p)**q))**(1/2),x)
```

```
[Out] Integral((g + h*x)**m/sqrt(a + b*log(c*(d*(e + f*x)**p)**q)), x)
```

Giac [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^m/(a+b*log(c*(d*(f*x+e)^p)^q))^(1/2),x, algorithm="giac")
[Out] integrate((h*x + g)^m/sqrt(b*log(((f*x + e)^p*d)^q*c) + a), x)
```

Mupad [A]
time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{(g+h\,x)^m}{\sqrt{a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g + h*x)^m/(a + b*log(c*(d*(e + f*x)^p)^q))^(1/2),x)
[Out] int((g + h*x)^m/(a + b*log(c*(d*(e + f*x)^p)^q))^(1/2), x)
```

3.512 $\int \frac{(g+hx)^m}{(a+b\log(c(d(e+fx)^p)^q))^{3/2}}\,dx$

Optimal. Leaf size=33

$$\text{Int}\left(\frac{(g+hx)^m}{(a+b\log(c(d(e+fx)^p)^q))^{3/2}},x\right)$$

[Out] Unintegrable((h*x+g)^m/(a+b*ln(c*(d*(f*x+e)^p)^q))^(3/2),x)

Rubi [A]
time = 0.07, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int \frac{(g+hx)^m}{(a+b\log(c(d(e+fx)^p)^q))^{3/2}}\,dx$$

Verification is not applicable to the result.

[In] Int[(g + h*x)^m/(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2),x]

[Out] Defer[Int][(g + h*x)^m/(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2), x]

Rubi steps

$$\int \frac{(g+hx)^m}{(a+b\log(c(d(e+fx)^p)^q))^{3/2}}\,dx = \int \frac{(g+hx)^m}{(a+b\log(c(d(e+fx)^p)^q))^{3/2}}\,dx$$

Mathematica [A]
time = 22.86, size = 0, normalized size = 0.00

$$\int \frac{(g+hx)^m}{(a+b\log(c(d(e+fx)^p)^q))^{3/2}}\,dx$$

Verification is not applicable to the result.

[In] Integrate[(g + h*x)^m/(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2),x]

[Out] Integrate[(g + h*x)^m/(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2), x]

Maple [A]
time = 0.23, size = 0, normalized size = 0.00

$$\int \frac{(hx+g)^m}{(a+b\ln(c(d(fx+e)^p)^q))^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x+g)^m/(a+b*ln(c*(d*(f*x+e)^p)^q))^(3/2),x)
```

```
[Out] int((h*x+g)^m/(a+b*ln(c*(d*(f*x+e)^p)^q))^(3/2),x)
```

Maxima [A]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^m/(a+b*log(c*(d*(f*x+e)^p)^q))^(3/2),x, algorithm="maxima
")
```

```
[Out] integrate((h*x + g)^m/(b*log(((f*x + e)^p*d)^q*c) + a)^(3/2), x)
```

Fricas [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^m/(a+b*log(c*(d*(f*x+e)^p)^q))^(3/2),x, algorithm="fricas
")
```

```
[Out] integral(sqrt(b*log(((f*x + e)^p*d)^q*c) + a)*(h*x + g)^m/(b^2*log(((f*x +
e)^p*d)^q*c)^2 + 2*a*b*log(((f*x + e)^p*d)^q*c) + a^2), x)
```

Sympy [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: HeuristicGCDFailed

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)**m/(a+b*ln(c*(d*(f*x+e)**p)**q))**(3/2),x)
```

```
[Out] Exception raised: HeuristicGCDFailed >> no luck
```

Giac [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^m/(a+b*log(c*(d*(f*x+e)^p)^q))^(3/2),x, algorithm="giac")
```

```
[Out] integrate((h*x + g)^m/(b*log(((f*x + e)^p*d)^q*c) + a)^(3/2), x)
```

Mupad [A]
time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{(g+h\,x)^m}{\left(a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g + h*x)^m/(a + b*log(c*(d*(e + f*x)^p)^q))^(3/2),x)
[Out] int((g + h*x)^m/(a + b*log(c*(d*(e + f*x)^p)^q))^(3/2), x)
```

3.513 $\int (g+hx)^m \left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)^n\,dx$

Optimal. Leaf size=31

$$\text{Int}\left((g+hx)^m\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)^n,x\right)$$

```
[Out] Unintegrable((h*x+g)^m*(a+b*ln(c*(d*(f*x+e)^p)^q))^n,x)
```

Rubi [A]
time = 0.04, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int (g+hx)^m\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)^n\,dx$$

Verification is not applicable to the result.

```
[In] Int[(g + h*x)^m*(a + b*Log[c*(d*(e + f*x)^p)^q])^n,x]
[Out] Defer[Int][(g + h*x)^m*(a + b*Log[c*(d*(e + f*x)^p)^q])^n, x]
```

Rubi steps

$$\int (g+hx)^m\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)^n\,dx=\int (g+hx)^m\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)^n\,dx$$

Mathematica [A]
time = 0.38, size = 0, normalized size = 0.00

$$\int (g+hx)^m\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)^n\,dx$$

Verification is not applicable to the result.

```
[In] Integrate[(g + h*x)^m*(a + b*Log[c*(d*(e + f*x)^p)^q])^n,x]
[Out] Integrate[(g + h*x)^m*(a + b*Log[c*(d*(e + f*x)^p)^q])^n, x]
```

Maple [A]
time = 0.35, size = 0, normalized size = 0.00

$$\int (hx+g)^m\left(a+b\ln\left(c(d(fx+e)^p)^q\right)\right)^n\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x+g)^m*(a+b*ln(c*(d*(f*x+e)^p)^q))^n,x)
[Out] int((h*x+g)^m*(a+b*ln(c*(d*(f*x+e)^p)^q))^n,x)
```

Maxima [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^m*(a+b*log(c*(d*(f*x+e)^p)^q))^n,x, algorithm="maxima")
[Out] Exception raised: RuntimeError >> ECL says: In function CAR, the value of t
he first argument is  0which is not of the expected type LIST
```

Fricas [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^m*(a+b*log(c*(d*(f*x+e)^p)^q))^n,x, algorithm="fricas")
[Out] integral((h*x + g)^m*(b*log(((f*x + e)^p*d)^q*c) + a)^n, x)
```

Sympy [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: HeuristicGCDFailed

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)**m*(a+b*ln(c*(d*(f*x+e)**p)**q))**n,x)
[Out] Exception raised: HeuristicGCDFailed >> no luck
```

Giac [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^m*(a+b*log(c*(d*(f*x+e)^p)^q))^n,x, algorithm="giac")
[Out] integrate((h*x + g)^m*(b*log(((f*x + e)^p*d)^q*c) + a)^n, x)
```

Mupad [A]
time = 0.00, size = -1, normalized size = -0.03

$$\int (g+h\,x)^m\,\left(a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)\right)^n\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g + h*x)^m*(a + b*log(c*(d*(e + f*x)^p)^q))^n,x)
[Out] int((g + h*x)^m*(a + b*log(c*(d*(e + f*x)^p)^q))^n, x)
```

3.514 $\int (g+hx)^2 \left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)^n\,dx$

Optimal. Leaf size=432

$$\frac{3^{-1-n}e^{-\frac{3a}{bpq}}h^2(e+fx)^3\left(c(d(e+fx)^p)^q\right)^{-\frac{3}{pq}}\Gamma\left(1+n,-\frac{3(a+b\log(c(d(e+fx)^p)^q))}{bpq}\right)\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)^n\left(-\right.}{f^3}$$

```
[Out] 3^(-1-n)*h^2*(f*x+e)^3*GAMMA(1+n,-3*(a+b*ln(c*(d*(f*x+e)^p)^q))/b/p/q)*(a+b
*ln(c*(d*(f*x+e)^p)^q))^n/exp(3*a/b/p/q)/f^3/((c*(d*(f*x+e)^p)^q)^(3/p/q))/
(((-a-b*ln(c*(d*(f*x+e)^p)^q))/b/p/q)^n)+h*(-e*h+f*g)*(f*x+e)^2*GAMMA(1+n,-
2*(a+b*ln(c*(d*(f*x+e)^p)^q))/b/p/q)*(a+b*ln(c*(d*(f*x+e)^p)^q))^n/(2^n)/ex
p(2*a/b/p/q)/f^3/((c*(d*(f*x+e)^p)^q)^(2/p/q))/(((-a-b*ln(c*(d*(f*x+e)^p)^q
))/b/p/q)^n)+(-e*h+f*g)^2*(f*x+e)*GAMMA(1+n,(-a-b*ln(c*(d*(f*x+e)^p)^q))/b/
p/q)*(a+b*ln(c*(d*(f*x+e)^p)^q))^n/exp(a/b/p/q)/f^3/((c*(d*(f*x+e)^p)^q)^(1
/p/q))/(((-a-b*ln(c*(d*(f*x+e)^p)^q))/b/p/q)^n)
```

Rubi [A]

time = 0.66, antiderivative size = 432, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 7, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}} = 0.250$, Rules used = {2448, 2436, 2337, 2212, 2437, 2347, 2495}

$$\frac{h2^{-n}(e+fx)^2e^{-\frac{2a}{bpq}}(fg-eh)\left(c(d(e+fx)^p)^q\right)^{-\frac{2}{pq}}\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)^n\left(-\frac{a+b\log(c(d(e+fx)^p)^q)}{bpq}\right)^{-n}\text{Gamma}\left(n+1,-\frac{2(a+b\log(c(d(e+fx)^p)^q))}{bpq}\right)}{f^3}+\frac{(e+fx)e^{-\frac{a}{bpq}}(fg-eh)^2\left(c(d(e+fx)^p)^q\right)^{-\frac{1}{pq}}\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)^n\left(-\frac{a+b\log(c(d(e+fx)^p)^q)}{bpq}\right)^{-n}\text{Gamma}\left(n+1,-\frac{a+b\log(c(d(e+fx)^p)^q)}{bpq}\right)}{f^3}+\frac{h^2 3^{-n-1}(e+fx)^3e^{-\frac{3a}{bpq}}\left(c(d(e+fx)^p)^q\right)^{-\frac{3}{pq}}\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)^n\left(-\frac{a+b\log(c(d(e+fx)^p)^q)}{bpq}\right)^{-n}\text{Gamma}\left(n+1,-\frac{3(a+b\log(c(d(e+fx)^p)^q))}{bpq}\right)}{f^3}$$

Antiderivative was successfully verified.

```
[In] Int[(g + h*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])^n,x]
```

```
[Out] (3^(-1 - n)*h^2*(e + f*x)^3*Gamma[1 + n, (-3*(a + b*Log[c*(d*(e + f*x)^p)^q
]))/(b*p*q)]*(a + b*Log[c*(d*(e + f*x)^p)^q])^n)/(E^((3*a)/(b*p*q))*f^3*(c*
(d*(e + f*x)^p)^q)^(3/(p*q))*(-((a + b*Log[c*(d*(e + f*x)^p)^q])/(b*p*q)))^
n) + (h*(f*g - e*h)*(e + f*x)^2*Gamma[1 + n, (-2*(a + b*Log[c*(d*(e + f*x)^
p)^q]))/(b*p*q)]*(a + b*Log[c*(d*(e + f*x)^p)^q])^n)/(2^n*E^((2*a)/(b*p*q))
*f^3*(c*(d*(e + f*x)^p)^q)^(2/(p*q))*(-((a + b*Log[c*(d*(e + f*x)^p)^q])/(b
*p*q)))^n) + ((f*g - e*h)^2*(e + f*x)*Gamma[1 + n, -((a + b*Log[c*(d*(e + f
*x)^p)^q])/(b*p*q))]*(a + b*Log[c*(d*(e + f*x)^p)^q])^n)/(E^(a/(b*p*q))*f^3
*(c*(d*(e + f*x)^p)^q)^(1/(p*q))*(-((a + b*Log[c*(d*(e + f*x)^p)^q])/(b*p*q
)))^n)
```

Rule 2212

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))*((c_.) + (d_.)*(x_))^(m_), x_Symbol]
:> Simp[(-F^(g*(e - c*(f/d))))*((c + d*x)^FracPart[m]/(d*((-f)*g*(Log[F]/d)
)^(IntPart[m] + 1)*((-f)*g*Log[F]*((c + d*x)/d))^FracPart[m]))*Gamma[m + 1,
 ((-f)*g*(Log[F]/d))*(c + d*x)], x] /; FreeQ[{F, c, d, e, f, g, m}, x] &&
!IntegerQ[m]
```

Rule 2337

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2347

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_)*((d_.)*(x_))^(m_.), x_Symbol
] :> Dist[(d*x)^(m + 1)/(d*n*(c*x^n)^((m + 1)/n)), Subst[Int[E^(((m + 1)/n)
*x)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b, c, d, m, n, p}, x]
```

Rule 2436

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2437

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[(f*(x/d))^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2448

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q*(a + b*Log[c*(d
 + e*x)^n])^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f -
 d*g, 0] && IGtQ[q, 0]
```

Rule 2495

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int (g+hx)^2 (a+b\log (c(d(e+fx)^p)^q))^n \,dx = \text{Subst}\left(\int (g+hx)^2 (a+b\log (cd^q(e+fx)^{pq}))^n \,dx, cd^q(e+\right.$$

$$= \text{Subst}\left(\int \left(\frac{(fg-eh)^2 (a+b\log (cd^q(e+fx)^{pq}))^n}{f^2} + \frac{2h(fg\right.\right.$$

$$= \text{Subst}\left(\frac{h^2 \int (e+fx)^2 (a+b\log (cd^q(e+fx)^{pq}))^n \,dx}{f^2}, cd^q(e\right.$$

$$= \text{Subst}\left(\frac{h^2\text{Subst}\left(\int x^2(a+b\log (cd^qx^{pq}))^n \,dx, x, e+fx\right)}{f^3}, cd^q\right.$$

$$= \text{Subst}\left(\frac{\left(h^2(e+fx)^3 (cd^q(e+fx)^{pq})^{-\frac{3}{pq}}\right) \text{Subst}\left(\int e^{\frac{3x}{pq}}(a+\right.}{f^3pq}\right.$$

$$= \frac{3^{-1-n}e^{-\frac{3a}{bpq}}h^2(e+fx)^3 (c(d(e+fx)^p)^q)^{-\frac{3}{pq}}\,\Gamma\left(1+n,-\frac{3(a+b}{}\right.}{}$$

Mathematica [A]
time = 0.66, size = 326, normalized size = 0.75

$$\frac{2^{-n}3^{-1-n}e^{-\frac{3a}{bpq}}(e+fx)\,(c(d(e+fx)^p)^q)^{-\frac{3}{pq}}\left(2^nh^2(e+fx)^2\Gamma\left(1+n,-\frac{3(a+b\log(c(d(e+fx)^p)^q))}{bpq}\right)+3^{1+n}e^{\frac{a}{bpq}}(fg-eh)\,(c(d(e+fx)^p)^q)^{\frac{1}{pq}}\left(h(e+fx)\Gamma\left(1+n,-\frac{2(a+b\log(c(d(e+fx)^p)^q))}{bpq}\right)+2^ne^{\frac{a}{bpq}}(fg-eh)\,(c(d(e+fx)^p)^q)^{\frac{1}{pq}}\,\Gamma\left(1+n,-\frac{a+b\log(c(d(e+fx)^p)^q)}{bpq}\right)\right)\right)(a+b\log(c(d(e+fx)^p)^q))^n\left(-\frac{a+b\log(c(d(e+fx)^p)^q)}{bpq}\right)^{-n}}{f^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(g + h*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])^n,x]
```

```
[Out] (3^(-1 - n)*(e + f*x)*(2^n*h^2*(e + f*x)^2*Gamma[1 + n, (-3*(a + b*Log[c*(d
*(e + f*x)^p)^q]))/(b*p*q)] + 3^(1 + n)*E^(a/(b*p*q))*(f*g - e*h)*(c*(d*(e
+ f*x)^p)^q)^(1/(p*q))*(h*(e + f*x)*Gamma[1 + n, (-2*(a + b*Log[c*(d*(e + f
*x)^p)^q]))/(b*p*q)] + 2^n*E^(a/(b*p*q))*(f*g - e*h)*(c*(d*(e + f*x)^p)^q)^
(1/(p*q))*Gamma[1 + n, -((a + b*Log[c*(d*(e + f*x)^p)^q])/(b*p*q))]))*(a +
b*Log[c*(d*(e + f*x)^p)^q])^n)/(2^n*E^((3*a)/(b*p*q))*f^3*(c*(d*(e + f*x)^p
)^q)^(3/(p*q))*(-((a + b*Log[c*(d*(e + f*x)^p)^q])/(b*p*q)))^n)
```

Maple [F]
time = 0.20, size = 0, normalized size = 0.00

$$\int (hx+g)^2 (a+b\ln (c(d(fx+e)^p)^q))^n \,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x+g)^2*(a+b*ln(c*(d*(f*x+e)^p)^q))^n,x)
```

```
[Out] int((h*x+g)^2*(a+b*ln(c*(d*(f*x+e)^p)^q))^n,x)
```

Maxima [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^2*(a+b*log(c*(d*(f*x+e)^p)^q))^n,x, algorithm="maxima")
[Out] Exception raised: RuntimeError >> ECL says: In function CAR, the value of t
he first argument is  0which is not of the expected type LIST
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^2*(a+b*log(c*(d*(f*x+e)^p)^q))^n,x, algorithm="fricas")
[Out] integral((h^2*x^2 + 2*g*h*x + g^2)*(b*log(((f*x + e)^p*d)^q*c) + a)^n, x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int (a + b\log (c(d(e + fx)^p)^q))^n (g + hx)^2 \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)**2*(a+b*ln(c*(d*(f*x+e)**p)**q))**n,x)
[Out] Integral((a + b*log(c*(d*(e + f*x)**p)**q))**n*(g + h*x)**2, x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^2*(a+b*log(c*(d*(f*x+e)^p)^q))^n,x, algorithm="giac")
[Out] integrate((h*x + g)^2*(b*log(((f*x + e)^p*d)^q*c) + a)^n, x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int {\left(g+h\,x\right)}^2\,{\left(a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)\right)}^n \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g + h*x)^2*(a + b*log(c*(d*(e + f*x)^p)^q))^n,x)
[Out] int((g + h*x)^2*(a + b*log(c*(d*(e + f*x)^p)^q))^n, x)
```

3.515 $\int (g+hx)\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)^n\,dx$

Optimal. Leaf size=281

$$\frac{2^{-1-n}e^{-\frac{2a}{bpq}}h(e+fx)^2\left(c(d(e+fx)^p)^q\right)^{-\frac{2}{pq}}\Gamma\left(1+n,-\frac{2(a+b\log(c(d(e+fx)^p)^q))}{bpq}\right)\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)^n\left(-\right.}{f^2}$$

[Out] 2^(-1-n)*h*(f*x+e)^2*GAMMA(1+n,-2*(a+b*ln(c*(d*(f*x+e)^p)^q))/b/p/q)*(a+b*ln(c*(d*(f*x+e)^p)^q))^n/exp(2*a/b/p/q)/f^2/((c*(d*(f*x+e)^p)^q)^(2/p/q))/(((-a-b*ln(c*(d*(f*x+e)^p)^q))/b/p/q)^n)+(-e*h+f*g)*(f*x+e)*GAMMA(1+n,(-a-b*ln(c*(d*(f*x+e)^p)^q))/b/p/q)*(a+b*ln(c*(d*(f*x+e)^p)^q))^n/exp(a/b/p/q)/f^2/((c*(d*(f*x+e)^p)^q)^(1/p/q))/(((-a-b*ln(c*(d*(f*x+e)^p)^q))/b/p/q)^n)

Rubi [A]
time = 0.36, antiderivative size = 281, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 7, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.269$, Rules used = {2448, 2436, 2337, 2212, 2437, 2347, 2495}

$$\frac{(e+fx)e^{-\frac{a}{bpq}}(fg-eh)\left(c(d(e+fx)^p)^q\right)^{-\frac{1}{pq}}\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)^n\left(-\frac{a+b\log(c(d(e+fx)^p)^q)}{bpq}\right)^{-n}\text{Gamma}\left(n+1,-\frac{a+b\log(c(d(e+fx)^p)^q)}{bpq}\right)}{f^2}+\frac{h2^{-n-1}(e+fx)^2e^{-\frac{2a}{bpq}}\left(c(d(e+fx)^p)^q\right)^{-\frac{2}{pq}}\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)^n\left(-\frac{a+b\log(c(d(e+fx)^p)^q)}{bpq}\right)^{-n}\text{Gamma}\left(n+1,-\frac{2(a+b\log(c(d(e+fx)^p)^q))}{bpq}\right)}{f^2}$$

Antiderivative was successfully verified.

[In] Int[(g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^n,x]

[Out] (2^(-1 - n)*h*(e + f*x)^2*Gamma[1 + n, (-2*(a + b*Log[c*(d*(e + f*x)^p)^q]))/(b*p*q)]*(a + b*Log[c*(d*(e + f*x)^p)^q])^n)/(E^((2*a)/(b*p*q))*f^2*(c*(d*(e + f*x)^p)^q)^(2/(p*q))*(-((a + b*Log[c*(d*(e + f*x)^p)^q])/(b*p*q)))^n) + ((f*g - e*h)*(e + f*x)*Gamma[1 + n, -((a + b*Log[c*(d*(e + f*x)^p)^q])/(b*p*q))]*(a + b*Log[c*(d*(e + f*x)^p)^q])^n)/(E^(a/(b*p*q))*f^2*(c*(d*(e + f*x)^p)^q)^(1/(p*q))*(-((a + b*Log[c*(d*(e + f*x)^p)^q])/(b*p*q)))^n)

Rule 2212

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))*((c_.) + (d_.)*(x_))^(m_), x_Symbol]
:> Simp[(-F^(g*(e - c*(f/d))))*((c + d*x)^FracPart[m]/(d*((-f)*g*(Log[F]/d)
)^(IntPart[m] + 1)*((-f)*g*Log[F]*((c + d*x)/d))^FracPart[m]))*Gamma[m + 1,
 ((-f)*g*(Log[F]/d))*(c + d*x)], x] /; FreeQ[{F, c, d, e, f, g, m}, x] &&
!IntegerQ[m]
```

Rule 2337

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2347

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_)*((d_.)*(x_))^(m_.), x_Symbol
] :> Dist[(d*x)^(m + 1)/(d*n*(c*x^n)^((m + 1)/n)), Subst[Int[E^(((m + 1)/n)
*x)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b, c, d, m, n, p}, x]
```

Rule 2436

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2437

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[(f*(x/d))^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2448

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q*(a + b*Log[c*(d
 + e*x)^n])^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f -
 d*g, 0] && IGtQ[q, 0]
```

Rule 2495

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\begin{aligned}\int (g+hx)\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)^n\,dx &= \text{Subst}\left(\int (g+hx)\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^n\,dx, cd^q(e+fx\right.\\ &= \text{Subst}\left(\int\left(\frac{(fg-eh)\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^n}{f}+\frac{h(e+f}{}\right.\right.\\ &= \text{Subst}\left(\frac{h\int (e+fx)\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^n\,dx}{f}, cd^q(e+f\right.\\ &= \text{Subst}\left(\frac{h\text{Subst}\left(\int x\left(a+b\log\left(cd^qx^{pq}\right)\right)^n\,dx, x, e+fx\right)}{f^2}, cd^q(e\right.\\ &= \text{Subst}\left(\frac{\left(h(e+fx)^2\left(cd^q(e+fx)^{pq}\right)^{-\frac{2}{pq}}\right)\text{Subst}\left(\int e^{\frac{2x}{pq}}(a+bx\right.}{f^2pq}\right.\\ &= \frac{2^{-1-n}e^{-\frac{2a}{bpq}}h(e+fx)^2\left(c(d(e+fx)^p)^q\right)^{-\frac{2}{pq}}\Gamma\left(1+n,-\frac{2(a+b\log}{}\right.}{}\end{aligned}$$

Mathematica [A]
time = 0.25, size = 227, normalized size = 0.81

$$\frac{2^{-1-n}e^{-\frac{2a}{bpq}}(e+fx)\left(c(d(e+fx)^p)^q\right)^{-\frac{2}{pq}}\left(h(e+fx)\Gamma\left(1+n,-\frac{2(a+b\log(c(d(e+fx)^p)^q))}{bpq}\right)+2^{1+n}e^{\frac{a}{bpq}}(fg-eh)\left(c(d(e+fx)^p)^q\right)^{\frac{1}{pq}}\Gamma\left(1+n,-\frac{a+b\log(c(d(e+fx)^p)^q)}{bpq}\right)\right)\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)^n\left(-\frac{a+b\log(c(d(e+fx)^p)^q)}{bpq}\right)^{-n}}{f^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^n,x]
```

```
[Out] (2^(-1 - n)*(e + f*x)*(h*(e + f*x)*Gamma[1 + n, (-2*(a + b*Log[c*(d*(e + f*
x)^p)^q]))/(b*p*q)] + 2^(1 + n)*E^(a/(b*p*q))*(f*g - e*h)*(c*(d*(e + f*x)^p
)^q)^(1/(p*q))*Gamma[1 + n, -((a + b*Log[c*(d*(e + f*x)^p)^q])/(b*p*q))])*(
a + b*Log[c*(d*(e + f*x)^p)^q])^n)/(E^((2*a)/(b*p*q))*f^2*(c*(d*(e + f*x)^p
)^q)^(2/(p*q))*(-((a + b*Log[c*(d*(e + f*x)^p)^q])/(b*p*q)))^n)
```

Maple [F]
time = 0.05, size = 0, normalized size = 0.00

$$\int (hx+g)\left(a+b\ln\left(c(d(fx+e)^p)^q\right)\right)^n\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x+g)*(a+b*ln(c*(d*(f*x+e)^p)^q))^n,x)
```

```
[Out] int((h*x+g)*(a+b*ln(c*(d*(f*x+e)^p)^q))^n,x)
```

Maxima [**F(-2)**]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)*(a+b*log(c*(d*(f*x+e)^p)^q))^n,x, algorithm="maxima")
[Out] Exception raised: RuntimeError >> ECL says: In function CAR, the value of t
he first argument is  0which is not of the expected type LIST
```

Fricas [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)*(a+b*log(c*(d*(f*x+e)^p)^q))^n,x, algorithm="fricas")
[Out] integral((h*x + g)*(b*log(((f*x + e)^p*d)^q*c) + a)^n, x)
```

Sympy [**F**]
time = 0.00, size = 0, normalized size = 0.00

$$\int (a + b \log (c(d(e + fx)^p)^q))^n (g + hx)\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)*(a+b*ln(c*(d*(f*x+e)**p)**q))**n,x)
[Out] Integral((a + b*log(c*(d*(e + f*x)**p)**q))**n*(g + h*x), x)
```

Giac [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)*(a+b*log(c*(d*(f*x+e)^p)^q))^n,x, algorithm="giac")
[Out] integrate((h*x + g)*(b*log(((f*x + e)^p*d)^q*c) + a)^n, x)
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.00

$$\int (g + h\,x)\,\left(a + b\,\ln\left(c\,{\left(d\,{\left(e + f\,x\right)}^p\right)}^q\right)\right)^n\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g + h*x)*(a + b*log(c*(d*(e + f*x)^p)^q))^n,x)
[Out] int((g + h*x)*(a + b*log(c*(d*(e + f*x)^p)^q))^n, x)
```

3.516 $\int (a+b\log(c(d(e+fx)^p)^q))^n\,dx$

Optimal. Leaf size=131

$$\frac{e^{-\frac{a}{bpq}}(e+fx)\left(c(d(e+fx)^p)^q\right)^{-\frac{1}{pq}}\Gamma\left(1+n,-\frac{a+b\log(c(d(e+fx)^p)^q)}{bpq}\right)(a+b\log(c(d(e+fx)^p)^q))^n\left(-\frac{a+b\log(c(d(e\right.}{f}$$

```
[Out] (f*x+e)*GAMMA(1+n,(-a-b*ln(c*(d*(f*x+e)^p)^q))/b/p/q)*(a+b*ln(c*(d*(f*x+e)^
p)^q))^n/exp(a/b/p/q)/f/((c*(d*(f*x+e)^p)^q)^(1/p/q))/(((-a-b*ln(c*(d*(f*x+
e)^p)^q))/b/p/q)^n)
```

Rubi [A]
time = 0.11, antiderivative size = 131, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.200$, Rules used = {2436, 2337, 2212, 2495}

$$\frac{(e+fx)e^{-\frac{a}{bpq}}\left(c(d(e+fx)^p)^q\right)^{-\frac{1}{pq}}(a+b\log(c(d(e+fx)^p)^q))^n\left(-\frac{a+b\log(c(d(e+fx)^p)^q)}{bpq}\right)^{-n}\text{Gamma}\left(n+1,-\frac{a+b\log(c(d(e+fx)^p)^q)}{bpq}\right)}{f}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])^n,x]
```

```
[Out] ((e + f*x)*Gamma[1 + n, -((a + b*Log[c*(d*(e + f*x)^p)^q])/(b*p*q))]*(a + b
*Log[c*(d*(e + f*x)^p)^q])^n)/(E^(a/(b*p*q))*f*(c*(d*(e + f*x)^p)^q)^(1/(p*
q))*(-((a + b*Log[c*(d*(e + f*x)^p)^q])/(b*p*q)))^n)
```

Rule 2212

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))*((c_.) + (d_.)*(x_))^(m_), x_Symbol]
:> Simp[(-F^(g*(e - c*(f/d))))*((c + d*x)^FracPart[m]/(d*((-f)*g*(Log[F]/d)
)^(IntPart[m] + 1)*((-f)*g*Log[F]*((c + d*x)/d))^FracPart[m]))*Gamma[m + 1,
 ((-f)*g*(Log[F]/d))*(c + d*x)], x] /; FreeQ[{F, c, d, e, f, g, m}, x] &&
!IntegerQ[m]
```

Rule 2337

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2436

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2495

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] && !IntegerQ[n] && !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int (a+b\log(c(d(e+fx)^p)^q))^n\,dx = \text{Subst}\left(\int (a+b\log(cd^q(e+fx)^{pq}))^n\,dx, cd^q(e+fx)^{pq}, c(d(e+fx)^p)^q\right.$$

$$= \text{Subst}\left(\frac{\text{Subst}\left(\int (a+b\log(cd^qx^{pq}))^n\,dx, x, e+fx\right)}{f}, cd^q(e+fx)^{pq}, c(d(\right.$$

$$= \text{Subst}\left(\frac{\left((e+fx)\left(cd^q(e+fx)^{pq}\right)^{-\frac{1}{pq}}\right)\text{Subst}\left(\int e^{\frac{x}{pq}}(a+bx)^n\,dx, x, \log\right.}{fpq}\right.$$

$$= \frac{e^{-\frac{a}{bpq}}(e+fx)\left(c(d(e+fx)^p)^q\right)^{-\frac{1}{pq}}\Gamma\left(1+n, -\frac{a+b\log(c(d(e+fx)^p)^q)}{bpq}\right)(a+b}{f}$$

Mathematica [A]
time = 0.10, size = 131, normalized size = 1.00

$$\frac{e^{-\frac{a}{bpq}}(e+fx)\left(c(d(e+fx)^p)^q\right)^{-\frac{1}{pq}}\Gamma\left(1+n,-\frac{a+b\log(c(d(e+fx)^p)^q)}{bpq}\right)(a+b\log(c(d(e+fx)^p)^q))^n\left(-\frac{a+b\log(c(d(e+fx)^p)^q)}{bpq}\right)^{-n}}{f}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])^n,x]
```

```
[Out] ((e + f*x)*Gamma[1 + n, -((a + b*Log[c*(d*(e + f*x)^p)^q])/(b*p*q))]*(a + b
*Log[c*(d*(e + f*x)^p)^q])^n)/(E^(a/(b*p*q))*f*(c*(d*(e + f*x)^p)^q)^(1/(p*
q))*(-((a + b*Log[c*(d*(e + f*x)^p)^q])/(b*p*q)))^n)
```

Maple [F]
time = 0.05, size = 0, normalized size = 0.00

$$\int (a+b\ln(c(d(fx+e)^p)^q))^n\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(d*(f*x+e)^p)^q))^n,x)
```

```
[Out] int((a+b*ln(c*(d*(f*x+e)^p)^q))^n,x)
```

Maxima [**F(-2)**]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^n,x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError >> ECL says: In function CAR, the value of t
he first argument is  0which is not of the expected type LIST
```

Fricas [**A**]
time = 0.10, size = 81, normalized size = 0.62

$$\frac{e^{\left(-\frac{bnpq\log\left(-\frac{1}{bpq}\right)+bq\log(d)+b\log(c)+a}{bpq}\right)}\Gamma\left(n+1,-\frac{bpq\log(fx+e)+bq\log(d)+b\log(c)+a}{bpq}\right)}{f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^n,x, algorithm="fricas")
```

```
[Out] e^(-(b*n*p*q*log(-1/(b*p*q)) + b*q*log(d) + b*log(c) + a)/(b*p*q))*gamma(n
+ 1, -(b*p*q*log(f*x + e) + b*q*log(d) + b*log(c) + a)/(b*p*q))/f
```

Sympy [**F**]
time = 0.00, size = 0, normalized size = 0.00

$$\int (a+b\log (c(d(e+fx)^p)^q))^n\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))**n,x)
```

```
[Out] Integral((a + b*log(c*(d*(e + f*x)**p)**q))**n, x)
```

Giac [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^n,x, algorithm="giac")
```

```
[Out] integrate((b*log(((f*x + e)^p*d)^q*c) + a)^n, x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int (a + b\ln (c\,(d\,(e + f\,x)^p)^q))^n\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d*(e + f*x)^p)^q))^n,x)
[Out] int((a + b*log(c*(d*(e + f*x)^p)^q))^n, x)
```

3.517 $\int \frac{(a+b\log(c(d(e+fx)^p)^q))^n}{g+hx}\,dx$

Optimal. Leaf size=31

$$\text{Int}\left(\frac{(a+b\log(c(d(e+fx)^p)^q))^n}{g+hx},x\right)$$

```
[Out] Unintegrable((a+b*ln(c*(d*(f*x+e)^p)^q))^n/(h*x+g),x)
```

Rubi [A]
time = 0.04, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{(a+b\log(c(d(e+fx)^p)^q))^n}{g+hx}\,dx$$

Verification is not applicable to the result.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])^n/(g + h*x),x]
[Out] Defer[Int][(a + b*Log[c*(d*(e + f*x)^p)^q])^n/(g + h*x), x]
```

Rubi steps

$$\int \frac{(a+b\log(c(d(e+fx)^p)^q))^n}{g+hx}\,dx=\int \frac{(a+b\log(c(d(e+fx)^p)^q))^n}{g+hx}\,dx$$

Mathematica [A]
time = 0.22, size = 0, normalized size = 0.00

$$\int \frac{(a+b\log(c(d(e+fx)^p)^q))^n}{g+hx}\,dx$$

Verification is not applicable to the result.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])^n/(g + h*x),x]
[Out] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])^n/(g + h*x), x]
```

Maple [A]
time = 0.22, size = 0, normalized size = 0.00

$$\int \frac{(a+b\ln(c(d(fx+e)^p)^q))^n}{hx+g}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(d*(f*x+e)^p)^q))^n/(h*x+g),x)
[Out] int((a+b*ln(c*(d*(f*x+e)^p)^q))^n/(h*x+g),x)
```

Maxima [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^n/(h*x+g),x, algorithm="maxima")
[Out] Exception raised: RuntimeError >> ECL says: In function CAR, the value of t
he first argument is  0which is not of the expected type LIST
```

Fricas [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^n/(h*x+g),x, algorithm="fricas")
[Out] integral((b*log(((f*x + e)^p*d)^q*c) + a)^n/(h*x + g), x)
```

Sympy [A]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(a + b \log{\left(c \left(d \left(e + f x\right)^{p}\right)^{q} \right)}\right)^{n}}{g + h x}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))**n/(h*x+g),x)
[Out] Integral((a + b*log(c*(d*(e + f*x)**p)**q))**n/(g + h*x), x)
```

Giac [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^n/(h*x+g),x, algorithm="giac")
[Out] integrate((b*log(((f*x + e)^p*d)^q*c) + a)^n/(h*x + g), x)
```

Mupad [A]
time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{\left(a+b\ln\left(c\left(d\left(e+f\,x\right)^p\right)^q\right)\right)^n}{g+h\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d*(e + f*x)^p)^q))^n/(g + h*x),x)
[Out] int((a + b*log(c*(d*(e + f*x)^p)^q))^n/(g + h*x), x)
```

3.518 $\int \frac{a+b\log(c(d(e+fx)^p)^q)}{g+hx^2}\,dx$

Optimal. Leaf size=249

$$\frac{(a+b\log(c(d(e+fx)^p)^q))\log\left(\frac{f\left(\sqrt{-g}-\sqrt{h}\,x\right)}{f\sqrt{-g}+e\sqrt{h}}\right)}{2\sqrt{-g}\,\sqrt{h}}-\frac{(a+b\log(c(d(e+fx)^p)^q))\log\left(\frac{f\left(\sqrt{-g}+\sqrt{h}\,x\right)}{f\sqrt{-g}-e\sqrt{h}}\right)}{2\sqrt{-g}\,\sqrt{h}}-$$

```
[Out] 1/2*(a+b*ln(c*(d*(f*x+e)^p)^q))*ln(f*((-g)^(1/2)-x*h^(1/2))/(f*(-g)^(1/2)+e
*h^(1/2)))/(-g)^(1/2)/h^(1/2)-1/2*(a+b*ln(c*(d*(f*x+e)^p)^q))*ln(f*((-g)^(1
/2)+x*h^(1/2))/(f*(-g)^(1/2)-e*h^(1/2)))/(-g)^(1/2)/h^(1/2)-1/2*b*p*q*polyl
og(2,-(f*x+e)*h^(1/2)/(f*(-g)^(1/2)-e*h^(1/2)))/(-g)^(1/2)/h^(1/2)+1/2*b*p*
q*polylog(2,(f*x+e)*h^(1/2)/(f*(-g)^(1/2)+e*h^(1/2)))/(-g)^(1/2)/h^(1/2)
```

Rubi [A]

time = 0.34, antiderivative size = 249, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 5, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}} = 0.179$, Rules used = {2456, 2441, 2440, 2438, 2495}

$$-\frac{bpq\text{PolyLog}\left(2,-\frac{\sqrt{h}\,(e+fx)}{f\sqrt{-g}-e\sqrt{h}}\right)}{2\sqrt{-g}\,\sqrt{h}}+\frac{bpq\text{PolyLog}\left(2,\frac{\sqrt{h}\,(e+fx)}{e\sqrt{h}+f\sqrt{-g}}\right)}{2\sqrt{-g}\,\sqrt{h}}+\frac{\log\left(\frac{f\left(\sqrt{-g}-\sqrt{h}\,x\right)}{e\sqrt{h}+f\sqrt{-g}}\right)(a+b\log(c(d(e+fx)^p)^q))}{2\sqrt{-g}\,\sqrt{h}}-\frac{\log\left(\frac{f\left(\sqrt{-g}+\sqrt{h}\,x\right)}{f\sqrt{-g}-e\sqrt{h}}\right)(a+b\log(c(d(e+fx)^p)^q))}{2\sqrt{-g}\,\sqrt{h}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])/(g + h*x^2),x]
```

```
[Out] ((a + b*Log[c*(d*(e + f*x)^p)^q])*Log[(f*(Sqrt[-g] - Sqrt[h]*x))/(f*Sqrt[-g
] + e*Sqrt[h])])/(2*Sqrt[-g]*Sqrt[h]) - ((a + b*Log[c*(d*(e + f*x)^p)^q])*L
og[(f*(Sqrt[-g] + Sqrt[h]*x))/(f*Sqrt[-g] - e*Sqrt[h])])/(2*Sqrt[-g]*Sqrt[h
]) - (b*p*q*PolyLog[2, -((Sqrt[h]*(e + f*x))/(f*Sqrt[-g] - e*Sqrt[h]))])/(2
*Sqrt[-g]*Sqrt[h]) + (b*p*q*PolyLog[2, (Sqrt[h]*(e + f*x))/(f*Sqrt[-g] + e*
Sqrt[h])])/(2*Sqrt[-g]*Sqrt[h])
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + c*e*(x/g)])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2441

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d + e*x
)^n])/g), x] - Dist[b*e*(n/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2456

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_)^(r_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a + b*Log[c*(d + e*x)
^n])^p, (f + g*x^r)^q, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, r}, x] && I
GtQ[p, 0] && IntegerQ[q] && (GtQ[q, 0] || (IntegerQ[r] && NeQ[r, 1]))
```

Rule 2495

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] && !IntegerQ[n] && !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{a+b\log\left(c(d(e+fx)^p)^q\right)}{g+hx^2}\,dx = \text{Subst}\left(\int \frac{a+b\log\left(cd^q(e+fx)^{pq}\right)}{g+hx^2}\,dx, cd^q(e+fx)^{pq}, c(d(e+fx)^p)^q\right)$$

$$= \text{Subst}\left(\int \left(\frac{\sqrt{-g}\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)}{2g\left(\sqrt{-g}-\sqrt{h}\,x\right)} + \frac{\sqrt{-g}\left(a+b\log\left(cd^q(e+\right.\right.}{2g\left(\sqrt{-g}+\sqrt{h}\,x\right.}\right.\right.$$

$$= -\text{Subst}\left(\frac{\int \frac{a+b\log(cd^q(e+fx)^{pq})}{\sqrt{-g}-\sqrt{h}\,x}\,dx}{2\sqrt{-g}}, cd^q(e+fx)^{pq}, c(d(e+fx)^p)^q\right) - \text{Subst}\left(\right.$$

$$= \frac{\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)\log\left(\frac{f\left(\sqrt{-g}-\sqrt{h}\,x\right)}{f\sqrt{-g}+e\sqrt{h}}\right)}{2\sqrt{-g}\,\sqrt{h}} - \frac{\left(a+b\log\left(c(d(e+\right.\right.}{}$$

$$= \frac{\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)\log\left(\frac{f\left(\sqrt{-g}-\sqrt{h}\,x\right)}{f\sqrt{-g}+e\sqrt{h}}\right)}{2\sqrt{-g}\,\sqrt{h}} - \frac{\left(a+b\log\left(c(d(e+\right.\right.}{}$$

$$= \frac{\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)\log\left(\frac{f\left(\sqrt{-g}-\sqrt{h}\,x\right)}{f\sqrt{-g}+e\sqrt{h}}\right)}{2\sqrt{-g}\,\sqrt{h}} - \frac{\left(a+b\log\left(c(d(e+\right.\right.}{}$$

Mathematica [A]
time = 0.11, size = 190, normalized size = 0.76

$$\frac{\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)\left(\log\left(\frac{f\left(\sqrt{-g}-\sqrt{h}\,x\right)}{f\sqrt{-g}+e\sqrt{h}}\right)-\log\left(\frac{f\left(\sqrt{-g}+\sqrt{h}\,x\right)}{f\sqrt{-g}-e\sqrt{h}}\right)\right)-bpq\text{Li}_2\left(-\frac{\sqrt{h}\,(e+fx)}{f\sqrt{-g}-e\sqrt{h}}\right)+bpq\text{Li}_2\left(\frac{\sqrt{h}\,(e+fx)}{f\sqrt{-g}+e\sqrt{h}}\right)}{2\sqrt{-g}\,\sqrt{h}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])/(g + h*x^2),x]
```

```
[Out] ((a + b*Log[c*(d*(e + f*x)^p)^q])*(Log[(f*(Sqrt[-g] - Sqrt[h]*x))/(f*Sqrt[-
g] + e*Sqrt[h])] - Log[(f*(Sqrt[-g] + Sqrt[h]*x))/(f*Sqrt[-g] - e*Sqrt[h])]
```

```
) - b*p*q*PolyLog[2, -((Sqrt[h]*(e + f*x))/(f*Sqrt[-g] - e*Sqrt[h]))] + b*p
*q*PolyLog[2, (Sqrt[h]*(e + f*x))/(f*Sqrt[-g] + e*Sqrt[h])])/(2*Sqrt[-g]*Sq
rt[h])
```

Maple [F]
time = 0.23, size = 0, normalized size = 0.00

$$\int \frac{a + b\ln \left(c {\left(d {\left(f x + e\right)}^{p}\right)}^{q}\right)}{h\,x^{2}+g}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(d*(f*x+e)^p)^q))/(h*x^2+g),x)
[Out] int((a+b*ln(c*(d*(f*x+e)^p)^q))/(h*x^2+g),x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x^2+g),x, algorithm="maxima")
[Out] b*integrate((q*log(d) + log(((f*x + e)^p)^q) + log(c))/(h*x^2 + g), x) + a*
arctan(h*x/sqrt(g*h))/sqrt(g*h)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x^2+g),x, algorithm="fricas")
[Out] integral((b*log(((f*x + e)^p*d)^q*c) + a)/(h*x^2 + g), x)
```

Sympy [F(-1)] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))/(h*x**2+g),x)
[Out] Timed out
```

Giac [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x^2+g),x, algorithm="giac")
[Out] integrate((b*log(((f*x + e)^p*d)^q*c) + a)/(h*x^2 + g), x)
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{a+b\ln\left(c\left(d\left(e+f\,x\right)^p\right)^q\right)}{h\,x^2+g}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d*(e + f*x)^p)^q))/(g + h*x^2),x)
[Out] int((a + b*log(c*(d*(e + f*x)^p)^q))/(g + h*x^2), x)
```

3.519 $\int \frac{a+b\log(c(d(e+fx)^p)^q)}{\sqrt{2+hx^2}}\,dx$

Optimal. Leaf size=335

$$\frac{bpq\sinh^{-1}\left(\frac{\sqrt{h}\,x}{\sqrt{2}}\right)^2}{2\sqrt{h}}-\frac{bpq\sinh^{-1}\left(\frac{\sqrt{h}\,x}{\sqrt{2}}\right)\log\left(1+\frac{\sqrt{2}\,e^{\sinh^{-1}\left(\frac{\sqrt{h}\,x}{\sqrt{2}}\right)}f}{e\sqrt{h}-\sqrt{2f^2+e^2h}}\right)}{\sqrt{h}}-\frac{bpq\sinh^{-1}\left(\frac{\sqrt{h}\,x}{\sqrt{2}}\right)\log\left(1+\right.}{\sqrt{h}}$$

```
[Out] 1/2*b*p*q*arcsinh(1/2*x*h^(1/2)*2^(1/2))^2/h^(1/2)+arcsinh(1/2*x*h^(1/2)*2^
(1/2))*(a+b*ln(c*(d*(f*x+e)^p)^q))/h^(1/2)-b*p*q*arcsinh(1/2*x*h^(1/2)*2^(1
/2))*ln(1+(1/2*x*h^(1/2)*2^(1/2)+1/2*(2*h*x^2+4)^(1/2))*f*2^(1/2)/(e*h^(1/2
)-(e^2*h+2*f^2)^(1/2)))/h^(1/2)-b*p*q*arcsinh(1/2*x*h^(1/2)*2^(1/2))*ln(1+(
1/2*x*h^(1/2)*2^(1/2)+1/2*(2*h*x^2+4)^(1/2))*f*2^(1/2)/(e*h^(1/2)+(e^2*h+2*
f^2)^(1/2)))/h^(1/2)-b*p*q*polylog(2,-(1/2*x*h^(1/2)*2^(1/2)+1/2*(2*h*x^2+4
)^(1/2))*f*2^(1/2)/(e*h^(1/2)-(e^2*h+2*f^2)^(1/2)))/h^(1/2)-b*p*q*polylog(2
,-(1/2*x*h^(1/2)*2^(1/2)+1/2*(2*h*x^2+4)^(1/2))*f*2^(1/2)/(e*h^(1/2)+(e^2*h
+2*f^2)^(1/2)))/h^(1/2)
```

Rubi [A]
time = 0.56, antiderivative size = 335, normalized size of antiderivative = 1.00, number of steps used = 11, number of rules used = 9, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}} = 0.300$, Rules used = {221, 2451, 12, 5827, 5680, 2221, 2317, 2438, 2495}

$$-\frac{bpq\,\text{PolyLog}\left(2,-\frac{\sqrt{2}\,fe^{\sinh^{-1}\left(\frac{\sqrt{h}\,x}{\sqrt{2}}\right)}}{e\sqrt{h}-\sqrt{e^2h+2f^2}}\right)}{\sqrt{h}}-\frac{bpq\,\text{PolyLog}\left(2,-\frac{\sqrt{2}\,fe^{\sinh^{-1}\left(\frac{\sqrt{h}\,x}{\sqrt{2}}\right)}}{\sqrt{e^2h+2f^2}+e\sqrt{h}}\right)}{\sqrt{h}}+\frac{\sinh^{-1}\left(\frac{\sqrt{h}\,x}{\sqrt{2}}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{\sqrt{h}}-\frac{bpq\sinh^{-1}\left(\frac{\sqrt{h}\,x}{\sqrt{2}}\right)\log\left(\frac{\sqrt{2}\,fe^{\sinh^{-1}\left(\frac{\sqrt{h}\,x}{\sqrt{2}}\right)}}{e\sqrt{h}-\sqrt{e^2h+2f^2}}+1\right)}{\sqrt{h}}-\frac{bpq\sinh^{-1}\left(\frac{\sqrt{h}\,x}{\sqrt{2}}\right)\log\left(\frac{\sqrt{2}\,fe^{\sinh^{-1}\left(\frac{\sqrt{h}\,x}{\sqrt{2}}\right)}}{\sqrt{e^2h+2f^2}+e\sqrt{h}}+1\right)}{\sqrt{h}}+\frac{bpq\sinh^{-1}\left(\frac{\sqrt{h}\,x}{\sqrt{2}}\right)^2}{2\sqrt{h}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])/Sqrt[2 + h*x^2],x]
```

```
[Out] (b*p*q*ArcSinh[(Sqrt[h]*x)/Sqrt[2]]^2)/(2*Sqrt[h]) - (b*p*q*ArcSinh[(Sqrt[h
]*x)/Sqrt[2]]*Log[1 + (Sqrt[2]*E^ArcSinh[(Sqrt[h]*x)/Sqrt[2]]*f)/(e*Sqrt[h]
 - Sqrt[2*f^2 + e^2*h])]])/Sqrt[h] - (b*p*q*ArcSinh[(Sqrt[h]*x)/Sqrt[2]]*Log
[1 + (Sqrt[2]*E^ArcSinh[(Sqrt[h]*x)/Sqrt[2]]*f)/(e*Sqrt[h] + Sqrt[2*f^2 + e
^2*h])]])/Sqrt[h] + (ArcSinh[(Sqrt[h]*x)/Sqrt[2]]*(a + b*Log[c*(d*(e + f*x)^
p)^q]))/Sqrt[h] - (b*p*q*PolyLog[2, -((Sqrt[2]*E^ArcSinh[(Sqrt[h]*x)/Sqrt[2
]]*f)/(e*Sqrt[h] - Sqrt[2*f^2 + e^2*h]))]])/Sqrt[h] - (b*p*q*PolyLog[2, -((S
qrt[2]*E^ArcSinh[(Sqrt[h]*x)/Sqrt[2]]*f)/(e*Sqrt[h] + Sqrt[2*f^2 + e^2*h]))
]])/Sqrt[h]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 221

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSinh[Rt[b, 2]*(x/Sqrt
[a])]/Rt[b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && PosQ[b]
```

Rule 2221

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m/(b*f*g*n*Log[F]))*Log[1 + b*((F^(g*(e + f*x)))^n/a)], x] - Di
st[d*(m/(b*f*g*n*Log[F])), Int[(c + d*x)^(m - 1)*Log[1 + b*((F^(g*(e + f*x)
))^n/a)], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2317

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2451

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/Sqrt[(f_) + (g_.)*
(x_)^2], x_Symbol] :> With[{u = IntHide[1/Sqrt[f + g*x^2], x]}, Simp[u*(a +
 b*Log[c*(d + e*x)^n]), x] - Dist[b*e*n, Int[SimplifyIntegrand[u/(d + e*x),
 x], x], x]] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && GtQ[f, 0]
```

Rule 2495

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rule 5680

```
Int[(Cosh[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin
h[(c_.) + (d_.)*(x_)]), x_Symbol] :> Simp[-(e + f*x)^(m + 1)/(b*f*(m + 1)),
 x] + (Int[(e + f*x)^m*(E^(c + d*x)/(a - Rt[a^2 + b^2, 2] + b*E^(c + d*x)))
, x] + Int[(e + f*x)^m*(E^(c + d*x)/(a + Rt[a^2 + b^2, 2] + b*E^(c + d*x)))
, x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0]
```

Rule 5827

```
Int[((a_.) + ArcSinh[(c_.)*(x_)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_Symbo
l] :> Subst[Int[(a + b*x)^n*(Cosh[x]/(c*d + e*Sinh[x])), x], x, ArcSinh[c*x
]] /; FreeQ[{a, b, c, d, e}, x] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{a+b\log\left(c(d(e+fx)^p)^q\right)}{\sqrt{2+hx^2}}\,dx = \text{Subst}\left(\int \frac{a+b\log\left(cd^q(e+fx)^{pq}\right)}{\sqrt{2+hx^2}}\,dx, cd^q(e+fx)^{pq}, c(d(e+fx)^p)^q\right)$$

$$= \frac{\sinh^{-1}\left(\frac{\sqrt{h}\,x}{\sqrt{2}}\right)\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)}{\sqrt{h}} - \text{Subst}\Bigg((bfpq)\int \frac{\sinh^{-1}\Big(}{\sqrt{h}\,(e}$$

$$= \frac{\sinh^{-1}\left(\frac{\sqrt{h}\,x}{\sqrt{2}}\right)\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)}{\sqrt{h}} - \text{Subst}\Bigg(\frac{(bfpq)\int \frac{\sinh^{-1}\Big(\frac{\sqrt{}}{\sqrt{}}}{e+fx}}{\sqrt{h}}$$

$$= \frac{\sinh^{-1}\left(\frac{\sqrt{h}\,x}{\sqrt{2}}\right)\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)}{\sqrt{h}} - \text{Subst}\Bigg(\frac{(bfpq)\text{Subst}\Big(\int}{}$$

$$= \frac{bpq\sinh^{-1}\left(\frac{\sqrt{h}\,x}{\sqrt{2}}\right)^2}{2\sqrt{h}} + \frac{\sinh^{-1}\left(\frac{\sqrt{h}\,x}{\sqrt{2}}\right)\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)}{\sqrt{h}} - \text{Su}$$

$$= \frac{bpq\sinh^{-1}\left(\frac{\sqrt{h}\,x}{\sqrt{2}}\right)^2}{2\sqrt{h}} - \frac{bpq\sinh^{-1}\left(\frac{\sqrt{h}\,x}{\sqrt{2}}\right)\log\Bigg(1+\frac{\sqrt{2}\,e^{\sinh^{-1}\left(\frac{\sqrt{h}\,x}{\sqrt{2}}\right)}f}{e\sqrt{h}-\sqrt{2f^2+e^2h}}}{\sqrt{h}}$$

$$= \frac{bpq\sinh^{-1}\left(\frac{\sqrt{h}\,x}{\sqrt{2}}\right)^2}{2\sqrt{h}} - \frac{bpq\sinh^{-1}\left(\frac{\sqrt{h}\,x}{\sqrt{2}}\right)\log\Bigg(1+\frac{\sqrt{2}\,e^{\sinh^{-1}\left(\frac{\sqrt{h}\,x}{\sqrt{2}}\right)}f}{e\sqrt{h}-\sqrt{2f^2+e^2h}}}{\sqrt{h}}$$

Mathematica [A]
time = 0.16, size = 284, normalized size = 0.85

$$\frac{\sinh^{-1}\left(\frac{\sqrt{h}\,x}{\sqrt{2}}\right)\left(2a+bpq\sinh^{-1}\left(\frac{\sqrt{h}\,x}{\sqrt{2}}\right)-2bpq\log\left(1+\frac{\sqrt{2}\,e^{\sinh^{-1}\left(\frac{\sqrt{h}\,x}{\sqrt{2}}\right)}f}{e\sqrt{h}-\sqrt{2f^2+e^2h}}\right)-2bpq\log\left(1+\frac{\sqrt{2}\,e^{\sinh^{-1}\left(\frac{\sqrt{h}\,x}{\sqrt{2}}\right)}f}{e\sqrt{h}+\sqrt{2f^2+e^2h}}\right)+2b\log\left(c(d(e+fx)^p)^q\right)\right)-2bpq\text{Li}_2\left(\frac{\sqrt{2}\,e^{\sinh^{-1}\left(\frac{\sqrt{h}\,x}{\sqrt{2}}\right)}f}{-e\sqrt{h}+\sqrt{2f^2+e^2h}}\right)-2bpq\text{Li}_2\left(-\frac{\sqrt{2}\,e^{\sinh^{-1}\left(\frac{\sqrt{h}\,x}{\sqrt{2}}\right)}f}{e\sqrt{h}+\sqrt{2f^2+e^2h}}\right)}{2\sqrt{h}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])/Sqrt[2 + h*x^2],x]
```

```
[Out] (ArcSinh[(Sqrt[h]*x)/Sqrt[2]]*(2*a + b*p*q*ArcSinh[(Sqrt[h]*x)/Sqrt[2]] - 2
*b*p*q*Log[1 + (Sqrt[2]*E^ArcSinh[(Sqrt[h]*x)/Sqrt[2]]*f)/(e*Sqrt[h] - Sqrt
[2*f^2 + e^2*h])] - 2*b*p*q*Log[1 + (Sqrt[2]*E^ArcSinh[(Sqrt[h]*x)/Sqrt[2]]
*f)/(e*Sqrt[h] + Sqrt[2*f^2 + e^2*h])] + 2*b*Log[c*(d*(e + f*x)^p)^q]) - 2*
b*p*q*PolyLog[2, (Sqrt[2]*E^ArcSinh[(Sqrt[h]*x)/Sqrt[2]]*f)/(-(e*Sqrt[h]) +
 Sqrt[2*f^2 + e^2*h])] - 2*b*p*q*PolyLog[2, -((Sqrt[2]*E^ArcSinh[(Sqrt[h]*x
)/Sqrt[2]]*f)/(e*Sqrt[h] + Sqrt[2*f^2 + e^2*h]))])/(2*Sqrt[h])
```

Maple [F]
time = 0.22, size = 0, normalized size = 0.00

$$\int \frac{a+b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)}{\sqrt{h\,x^{2}+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(d*(f*x+e)^p)^q))/(h*x^2+2)^(1/2),x)
```

```
[Out] int((a+b*ln(c*(d*(f*x+e)^p)^q))/(h*x^2+2)^(1/2),x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x^2+2)^(1/2),x, algorithm="maxima
")
```

```
[Out] b*integrate((q*log(d) + log(((f*x + e)^p)^q) + log(c))/sqrt(h*x^2 + 2), x)
+ a*arcsinh(1/2*sqrt(2)*sqrt(h)*x)/sqrt(h)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x^2+2)^(1/2),x, algorithm="fricas
")
```

```
[Out] integral((sqrt(h*x^2 + 2)*b*log(((f*x + e)^p*d)^q*c) + sqrt(h*x^2 + 2)*a)/(
h*x^2 + 2), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{a + b\log\left(c(d(e + fx)^p)^q\right)}{\sqrt{hx^2 + 2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))/(h*x**2+2)**(1/2),x)
```

```
[Out] Integral((a + b*log(c*(d*(e + f*x)**p)**q))/sqrt(h*x**2 + 2), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x^2+2)^(1/2),x, algorithm="giac")
```

```
[Out] integrate((b*log(((f*x + e)^p*d)^q*c) + a)/sqrt(h*x^2 + 2), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{a + b\,\ln\left(c\,{\left(d\,{\left(e + f\,x\right)}^p\right)}^q\right)}{\sqrt{h\,x^2 + 2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d*(e + f*x)^p)^q))/(h*x^2 + 2)^(1/2),x)
```

```
[Out] int((a + b*log(c*(d*(e + f*x)^p)^q))/(h*x^2 + 2)^(1/2), x)
```

3.520 $\int \frac{a+b\log(c(d(e+fx)^p)^q)}{\sqrt{g+hx^2}}\,dx$

Optimal. Leaf size=515

$$\frac{b\sqrt{g}\,pq\sqrt{1+\frac{hx^2}{g}}\,\sinh^{-1}\left(\frac{\sqrt{h}\,x}{\sqrt{g}}\right)^2}{2\sqrt{h}\,\sqrt{g+hx^2}}-\frac{b\sqrt{g}\,pq\sqrt{1+\frac{hx^2}{g}}\,\sinh^{-1}\left(\frac{\sqrt{h}\,x}{\sqrt{g}}\right)\log\left(1+\frac{e^{\sinh^{-1}\left(\frac{\sqrt{h}\,x}{\sqrt{g}}\right)}f\sqrt{g}}{e\sqrt{h}-\sqrt{f^2g+e^2h}}\right)}{\sqrt{h}\,\sqrt{g+hx^2}}$$

```
[Out] 1/2*b*p*q*arcsinh(x*h^(1/2)/g^(1/2))^2*g^(1/2)*(1+h*x^2/g)^(1/2)/h^(1/2)/(h
*x^2+g)^(1/2)+arcsinh(x*h^(1/2)/g^(1/2))*(a+b*ln(c*(d*(f*x+e)^p)^q))*g^(1/2
)*(1+h*x^2/g)^(1/2)/h^(1/2)/(h*x^2+g)^(1/2)-b*p*q*arcsinh(x*h^(1/2)/g^(1/2)
)*ln(1+(x*h^(1/2)/g^(1/2)+(1+h*x^2/g)^(1/2))*f*g^(1/2)/(e*h^(1/2)-(e^2*h+f^
2*g)^(1/2)))*g^(1/2)*(1+h*x^2/g)^(1/2)/h^(1/2)/(h*x^2+g)^(1/2)-b*p*q*arcsin
h(x*h^(1/2)/g^(1/2))*ln(1+(x*h^(1/2)/g^(1/2)+(1+h*x^2/g)^(1/2))*f*g^(1/2)/(
e*h^(1/2)+(e^2*h+f^2*g)^(1/2)))*g^(1/2)*(1+h*x^2/g)^(1/2)/h^(1/2)/(h*x^2+g)
^(1/2)-b*p*q*polylog(2,-(x*h^(1/2)/g^(1/2)+(1+h*x^2/g)^(1/2))*f*g^(1/2)/(e*
h^(1/2)-(e^2*h+f^2*g)^(1/2)))*g^(1/2)*(1+h*x^2/g)^(1/2)/h^(1/2)/(h*x^2+g)^(
1/2)-b*p*q*polylog(2,-(x*h^(1/2)/g^(1/2)+(1+h*x^2/g)^(1/2))*f*g^(1/2)/(e*h^
(1/2)+(e^2*h+f^2*g)^(1/2)))*g^(1/2)*(1+h*x^2/g)^(1/2)/h^(1/2)/(h*x^2+g)^(1/
2)
```

Rubi [A]
time = 0.89, antiderivative size = 515, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 10, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}} = 0.333$, Rules used = {2453, 221, 2451, 12, 5827, 5680, 2221, 2317, 2438, 2495}

$$-\frac{b\sqrt{g}\,pq\sqrt{\frac{hx^2}{g}+1}\,\text{PolyLog}\left(2,-\frac{f\sqrt{g}\,e^{\sinh^{-1}\left(\frac{\sqrt{h}\,x}{\sqrt{g}}\right)}}{e\sqrt{h}-\sqrt{e^2h+f^2g}}\right)}{\sqrt{h}\,\sqrt{g+hx^2}}-\frac{b\sqrt{g}\,pq\sqrt{\frac{hx^2}{g}+1}\,\text{PolyLog}\left(2,-\frac{f\sqrt{g}\,e^{\sinh^{-1}\left(\frac{\sqrt{h}\,x}{\sqrt{g}}\right)}}{\sqrt{e^2h+f^2g}+e\sqrt{h}}\right)}{\sqrt{h}\,\sqrt{g+hx^2}}+\frac{\sqrt{g}\,\sqrt{\frac{hx^2}{g}+1}\,\sinh^{-1}\left(\frac{\sqrt{h}\,x}{\sqrt{g}}\right)(a+b\log(c(d(e+fx)^p)^q))}{\sqrt{h}\,\sqrt{g+hx^2}}-\frac{b\sqrt{g}\,pq\sqrt{\frac{hx^2}{g}+1}\,\sinh^{-1}\left(\frac{\sqrt{h}\,x}{\sqrt{g}}\right)\log\left(\frac{f\sqrt{g}\,e^{\sinh^{-1}\left(\frac{\sqrt{h}\,x}{\sqrt{g}}\right)}}{e\sqrt{h}-\sqrt{e^2h+f^2g}}+1\right)}{\sqrt{h}\,\sqrt{g+hx^2}}-\frac{b\sqrt{g}\,pq\sqrt{\frac{hx^2}{g}+1}\,\sinh^{-1}\left(\frac{\sqrt{h}\,x}{\sqrt{g}}\right)\log\left(\frac{f\sqrt{g}\,e^{\sinh^{-1}\left(\frac{\sqrt{h}\,x}{\sqrt{g}}\right)}}{\sqrt{e^2h+f^2g}+e\sqrt{h}}+1\right)}{\sqrt{h}\,\sqrt{g+hx^2}}+\frac{b\sqrt{g}\,pq\sqrt{\frac{hx^2}{g}+1}\,\sinh^{-1}\left(\frac{\sqrt{h}\,x}{\sqrt{g}}\right)^2}{2\sqrt{h}\,\sqrt{g+hx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])/Sqrt[g + h*x^2],x]
```

```
[Out] (b*Sqrt[g]*p*q*Sqrt[1 + (h*x^2)/g]*ArcSinh[(Sqrt[h]*x)/Sqrt[g]]^2)/(2*Sqrt[
h]*Sqrt[g + h*x^2]) - (b*Sqrt[g]*p*q*Sqrt[1 + (h*x^2)/g]*ArcSinh[(Sqrt[h]*x
)/Sqrt[g]]*Log[1 + (E^ArcSinh[(Sqrt[h]*x)/Sqrt[g]]*f*Sqrt[g])/(e*Sqrt[h] -
Sqrt[f^2*g + e^2*h])])/(Sqrt[h]*Sqrt[g + h*x^2]) - (b*Sqrt[g]*p*q*Sqrt[1 +
(h*x^2)/g]*ArcSinh[(Sqrt[h]*x)/Sqrt[g]]*Log[1 + (E^ArcSinh[(Sqrt[h]*x)/Sqrt
[g]]*f*Sqrt[g])/(e*Sqrt[h] + Sqrt[f^2*g + e^2*h])])/(Sqrt[h]*Sqrt[g + h*x^2
]) + (Sqrt[g]*Sqrt[1 + (h*x^2)/g]*ArcSinh[(Sqrt[h]*x)/Sqrt[g]]*(a + b*Log[c
*(d*(e + f*x)^p)^q]))/(Sqrt[h]*Sqrt[g + h*x^2]) - (b*Sqrt[g]*p*q*Sqrt[1 + (
h*x^2)/g]*PolyLog[2, -((E^ArcSinh[(Sqrt[h]*x)/Sqrt[g]]*f*Sqrt[g])/(e*Sqrt[h
] - Sqrt[f^2*g + e^2*h]))])/(Sqrt[h]*Sqrt[g + h*x^2]) - (b*Sqrt[g]*p*q*Sqrt
[1 + (h*x^2)/g]*PolyLog[2, -((E^ArcSinh[(Sqrt[h]*x)/Sqrt[g]]*f*Sqrt[g])/(e*
Sqrt[h] + Sqrt[f^2*g + e^2*h]))])/(Sqrt[h]*Sqrt[g + h*x^2])
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 221

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSinh[Rt[b, 2]*(x/Sqrt
[a])]/Rt[b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && PosQ[b]
```

Rule 2221

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m/(b*f*g*n*Log[F]))*Log[1 + b*((F^(g*(e + f*x)))^n/a)], x] - Di
st[d*(m/(b*f*g*n*Log[F])), Int[(c + d*x)^(m - 1)*Log[1 + b*((F^(g*(e + f*x)
))^n/a)], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2317

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2451

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/Sqrt[(f_) + (g_.)*
(x_)^2], x_Symbol] :> With[{u = IntHide[1/Sqrt[f + g*x^2], x]}, Simp[u*(a +
 b*Log[c*(d + e*x)^n]), x] - Dist[b*e*n, Int[SimplifyIntegrand[u/(d + e*x),
 x], x], x]] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && GtQ[f, 0]
```

Rule 2453

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/Sqrt[(f_) + (g_.)*
(x_)^2], x_Symbol] :> Dist[Sqrt[1 + (g/f)*x^2]/Sqrt[f + g*x^2], Int[(a + b*
Log[c*(d + e*x)^n])/Sqrt[1 + (g/f)*x^2], x], x] /; FreeQ[{a, b, c, d, e, f,
 g, n}, x] &&  !GtQ[f, 0]
```

Rule 2495

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
```

```
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rule 5680

```
Int[(Cosh[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin
h[(c_.) + (d_.)*(x_)]), x_Symbol] :> Simp[-(e + f*x)^(m + 1)/(b*f*(m + 1)),
 x] + (Int[(e + f*x)^m*(E^(c + d*x)/(a - Rt[a^2 + b^2, 2] + b*E^(c + d*x)))
, x] + Int[(e + f*x)^m*(E^(c + d*x)/(a + Rt[a^2 + b^2, 2] + b*E^(c + d*x)))
, x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0]
```

Rule 5827

```
Int[((a_.) + ArcSinh[(c_.)*(x_)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_Symbo
l] :> Subst[Int[(a + b*x)^n*(Cosh[x]/(c*d + e*Sinh[x])), x], x, ArcSinh[c*x
]] /; FreeQ[{a, b, c, d, e}, x] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{a+b\log\left(c(d(e+fx)^p)^q\right)}{\sqrt{g+hx^2}}\,dx = \text{Subst}\left(\int \frac{a+b\log\left(cd^q(e+fx)^{pq}\right)}{\sqrt{g+hx^2}}\,dx, cd^q(e+fx)^{pq}, c(d(e+fx)^p)^q\right)$$

$$= \text{Subst}\left(\frac{\sqrt{1+\frac{hx^2}{g}}\int \frac{a+b\log(cd^q(e+fx)^{pq})}{\sqrt{1+\frac{hx^2}{g}}}\,dx}{\sqrt{g+hx^2}}, cd^q(e+fx)^{pq}, c(d(e+fx)^p)^q\right)$$

$$= \frac{\sqrt{g}\sqrt{1+\frac{hx^2}{g}}\sinh^{-1}\left(\frac{\sqrt{h}x}{\sqrt{g}}\right)\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)}{\sqrt{h}\sqrt{g+hx^2}} - \text{Subst}\Bigg(\Bigg(b$$

$$= \frac{\sqrt{g}\sqrt{1+\frac{hx^2}{g}}\sinh^{-1}\left(\frac{\sqrt{h}x}{\sqrt{g}}\right)\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)}{\sqrt{h}\sqrt{g+hx^2}} - \text{Subst}\Bigg(\Bigg(b$$

$$= \frac{\sqrt{g}\sqrt{1+\frac{hx^2}{g}}\sinh^{-1}\left(\frac{\sqrt{h}x}{\sqrt{g}}\right)\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)}{\sqrt{h}\sqrt{g+hx^2}} - \text{Subst}\Bigg(\Bigg(b$$

$$= \frac{b\sqrt{g}\,pq\sqrt{1+\frac{hx^2}{g}}\sinh^{-1}\left(\frac{\sqrt{h}x}{\sqrt{g}}\right)^2}{2\sqrt{h}\sqrt{g+hx^2}} + \frac{\sqrt{g}\sqrt{1+\frac{hx^2}{g}}\sinh^{-1}\left(\frac{\sqrt{h}x}{\sqrt{g}}\right)(}{\sqrt{h}\sqrt{g+h}}$$

$$= \frac{b\sqrt{g}\,pq\sqrt{1+\frac{hx^2}{g}}\sinh^{-1}\left(\frac{\sqrt{h}x}{\sqrt{g}}\right)^2}{2\sqrt{h}\sqrt{g+hx^2}} - \frac{b\sqrt{g}\,pq\sqrt{1+\frac{hx^2}{g}}\sinh^{-1}\left(\frac{\sqrt{h}x}{\sqrt{g}}\right.}{\sqrt{h}\sqrt{g}}$$

Mathematica [F]
time = 2.66, size = 0, normalized size = 0.00

$$\int \frac{a + b\log\left(c(d(e + fx)^p)^q\right)}{\sqrt{g + hx^2}}\,dx$$

Verification is not applicable to the result.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])/Sqrt[g + h*x^2],x]
[Out] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])/Sqrt[g + h*x^2], x]
```

Maple [F]
time = 0.21, size = 0, normalized size = 0.00

$$\int \frac{a + b\ln\left(c(d(fx + e)^p)^q\right)}{\sqrt{h\,x^2 + g}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(d*(f*x+e)^p)^q))/(h*x^2+g)^(1/2),x)
[Out] int((a+b*ln(c*(d*(f*x+e)^p)^q))/(h*x^2+g)^(1/2),x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x^2+g)^(1/2),x, algorithm="maxima
")
[Out] b*integrate((q*log(d) + log(((f*x + e)^p)^q) + log(c))/sqrt(h*x^2 + g), x)
+ a*arcsinh(h*x/sqrt(g*h))/sqrt(h)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x^2+g)^(1/2),x, algorithm="fricas
")
[Out] integral((sqrt(h*x^2 + g)*b*log(((f*x + e)^p*d)^q*c) + sqrt(h*x^2 + g)*a)/(
h*x^2 + g), x)
```

Sympy [**F**]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{a+b\log\left(c(d(e+fx)^p)^q\right)}{\sqrt{g+hx^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))/(h*x**2+g)**(1/2),x)
```

```
[Out] Integral((a + b*log(c*(d*(e + f*x)**p)**q))/sqrt(g + h*x**2), x)
```

Giac [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x^2+g)^(1/2),x, algorithm="giac")
```

```
[Out] integrate((b*log(((f*x + e)^p*d)^q*c) + a)/sqrt(h*x^2 + g), x)
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)}{\sqrt{h\,x^2+g}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d*(e + f*x)^p)^q))/(g + h*x^2)^(1/2),x)
```

```
[Out] int((a + b*log(c*(d*(e + f*x)^p)^q))/(g + h*x^2)^(1/2), x)
```

3.521 $\int \frac{a+b\log(c(d(e+fx)^p)^q)}{\sqrt{2-hx}\,\sqrt{2+hx}}\,dx$

Optimal. Leaf size=287

$$\frac{ibpq\sin^{-1}\left(\frac{hx}{2}\right)^2}{2h}-\frac{bpq\sin^{-1}\left(\frac{hx}{2}\right)\log\left(1+\frac{2e^{i\sin^{-1}\left(\frac{hx}{2}\right)}f}{ieh-\sqrt{4f^2-e^2h^2}}\right)}{h}-\frac{bpq\sin^{-1}\left(\frac{hx}{2}\right)\log\left(1+\frac{2e^{i\sin^{-1}\left(\frac{hx}{2}\right)}f}{ieh+\sqrt{4f^2-e^2h^2}}\right)}{h}$$

```
[Out] 1/2*I*b*p*q*arcsin(1/2*h*x)^2/h+arcsin(1/2*h*x)*(a+b*ln(c*(d*(f*x+e)^p)^q))
/h-b*p*q*arcsin(1/2*h*x)*ln(1+2*(1/2*I*h*x+1/2*(-h^2*x^2+4)^(1/2))*f/(I*e*h
-(-e^2*h^2+4*f^2)^(1/2)))/h-b*p*q*arcsin(1/2*h*x)*ln(1+2*(1/2*I*h*x+1/2*(-h
^2*x^2+4)^(1/2))*f/(I*e*h+(-e^2*h^2+4*f^2)^(1/2)))/h+I*b*p*q*polylog(2,-2*(
1/2*I*h*x+1/2*(-h^2*x^2+4)^(1/2))*f/(I*e*h-(-e^2*h^2+4*f^2)^(1/2)))/h+I*b*p
*q*polylog(2,-2*(1/2*I*h*x+1/2*(-h^2*x^2+4)^(1/2))*f/(I*e*h+(-e^2*h^2+4*f^2
)^(1/2)))/h
```

Rubi [A]

time = 0.68, antiderivative size = 287, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 8, integrand size = 38, $\frac{\text{number of rules}}{\text{integrand size}} = 0.210$, Rules used = {222, 2452, 4825, 4617, 2221, 2317, 2438, 2495}

$$\frac{ibpq\text{PolyLog}\left(2,-\frac{2fe^{i\text{ArcSin}\left(\frac{hx}{2}\right)}}{-\sqrt{4f^2-e^2h^2}+ieh}\right)}{h}+\frac{ibpq\text{PolyLog}\left(2,-\frac{2fe^{i\text{ArcSin}\left(\frac{hx}{2}\right)}}{\sqrt{4f^2-e^2h^2}+ieh}\right)}{h}+\frac{\text{ArcSin}\left(\frac{hx}{2}\right)\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)}{h}-\frac{bpq\text{ArcSin}\left(\frac{hx}{2}\right)\log\left(1+\frac{2fe^{i\text{ArcSin}\left(\frac{hx}{2}\right)}}{-\sqrt{4f^2-e^2h^2}+ieh}\right)}{h}-\frac{bpq\text{ArcSin}\left(\frac{hx}{2}\right)\log\left(1+\frac{2fe^{i\text{ArcSin}\left(\frac{hx}{2}\right)}}{\sqrt{4f^2-e^2h^2}+ieh}\right)}{h}+\frac{ibpq\text{ArcSin}\left(\frac{hx}{2}\right)^2}{2h}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])/(Sqrt[2 - h*x]*Sqrt[2 + h*x]),x]
```

```
[Out] ((I/2)*b*p*q*ArcSin[(h*x)/2]^2)/h - (b*p*q*ArcSin[(h*x)/2]*Log[1 + (2*E^(I*
ArcSin[(h*x)/2])*f)/(I*e*h - Sqrt[4*f^2 - e^2*h^2])])/h - (b*p*q*ArcSin[(h*
x)/2]*Log[1 + (2*E^(I*ArcSin[(h*x)/2])*f)/(I*e*h + Sqrt[4*f^2 - e^2*h^2])])
/h + (ArcSin[(h*x)/2]*(a + b*Log[c*(d*(e + f*x)^p)^q]))/h + (I*b*p*q*PolyLo
g[2, (-2*E^(I*ArcSin[(h*x)/2])*f)/(I*e*h - Sqrt[4*f^2 - e^2*h^2])])/h + (I*
b*p*q*PolyLog[2, (-2*E^(I*ArcSin[(h*x)/2])*f)/(I*e*h + Sqrt[4*f^2 - e^2*h^2
])])/h
```

Rule 222

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[Rt[-b, 2]*(x/Sqrt
[a])]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 2221

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m/(b*f*g*n*Log[F]))*Log[1 + b*((F^(g*(e + f*x)))^n/a)], x] - Di
st[d*(m/(b*f*g*n*Log[F])), Int[(c + d*x)^(m - 1)*Log[1 + b*((F^(g*(e + f*x)
```

```
))^n/a)], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2317

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2452

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/(Sqrt[(f1_) + (g1_
.)*(x_)]*Sqrt[(f2_) + (g2_.)*(x_)]), x_Symbol] :> With[{u = IntHide[1/Sqrt[
f1*f2 + g1*g2*x^2], x]}, Simp[u*(a + b*Log[c*(d + e*x)^n]), x] - Dist[b*e*n
, Int[SimplifyIntegrand[u/(d + e*x), x], x], x]] /; FreeQ[{a, b, c, d, e, f
1, g1, f2, g2, n}, x] && EqQ[f2*g1 + f1*g2, 0] && GtQ[f1, 0] && GtQ[f2, 0]
```

Rule 2495

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rule 4617

```
Int[(Cos[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin[
(c_.) + (d_.)*(x_)]), x_Symbol] :> Simp[(-I)*((e + f*x)^(m + 1)/(b*f*(m + 1
))), x] + (Dist[I, Int[(e + f*x)^m*(E^(I*(c + d*x))/(I*a - Rt[-a^2 + b^2, 2
] + b*E^(I*(c + d*x)))), x], x] + Dist[I, Int[(e + f*x)^m*(E^(I*(c + d*x))/
(I*a + Rt[-a^2 + b^2, 2] + b*E^(I*(c + d*x)))), x], x]) /; FreeQ[{a, b, c,
d, e, f}, x] && IGtQ[m, 0] && NegQ[a^2 - b^2]
```

Rule 4825

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)), x_Symbol]
 :> Subst[Int[(a + b*x)^n*(Cos[x]/(c*d + e*Sin[x])), x], x, ArcSin[c*x]] /;
 FreeQ[{a, b, c, d, e}, x] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{a+b\log\left(c(d(e+fx)^p)^q\right)}{\sqrt{2-hx}\sqrt{2+hx}}\,dx = \text{Subst}\left(\int \frac{a+b\log\left(cd^q(e+fx)^{pq}\right)}{\sqrt{2-hx}\sqrt{2+hx}}\,dx, cd^q(e+fx)^{pq}, c(d(e+fx)^p)^q\right)$$

$$= \frac{\sin^{-1}\left(\frac{hx}{2}\right)\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)}{h} - \text{Subst}\left((bfpq)\int \frac{\sin^{-1}\left(\frac{hx}{2}\right)}{eh+fhx}\,dx\right.$$

$$= \frac{\sin^{-1}\left(\frac{hx}{2}\right)\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)}{h} - \text{Subst}\left((bfpq)\text{Subst}\left(\int \frac{x\,\text{c}}{\frac{eh^2}{2}+\ldots}\right.\right.$$

$$= \frac{ibpq\sin^{-1}\left(\frac{hx}{2}\right)^2}{2h} + \frac{\sin^{-1}\left(\frac{hx}{2}\right)\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)}{h} - \text{Subst}\left((ibf\right.$$

$$= \frac{ibpq\sin^{-1}\left(\frac{hx}{2}\right)^2}{2h} - \frac{bpq\sin^{-1}\left(\frac{hx}{2}\right)\log\left(1+\frac{2e^{i\sin^{-1}\left(\frac{hx}{2}\right)}f}{ieh-\sqrt{4f^2-e^2h^2}}\right)}{h} - \frac{bpq\sin}{}$$

$$= \frac{ibpq\sin^{-1}\left(\frac{hx}{2}\right)^2}{2h} - \frac{bpq\sin^{-1}\left(\frac{hx}{2}\right)\log\left(1+\frac{2e^{i\sin^{-1}\left(\frac{hx}{2}\right)}f}{ieh-\sqrt{4f^2-e^2h^2}}\right)}{h} - \frac{bpq\sin}{}$$

$$= \frac{ibpq\sin^{-1}\left(\frac{hx}{2}\right)^2}{2h} - \frac{bpq\sin^{-1}\left(\frac{hx}{2}\right)\log\left(1+\frac{2e^{i\sin^{-1}\left(\frac{hx}{2}\right)}f}{ieh-\sqrt{4f^2-e^2h^2}}\right)}{h} - \frac{bpq\sin}{}$$

Mathematica [A]
time = 0.02, size = 316, normalized size = 1.10

$$\frac{a\sin^{-1}\left(\frac{hx}{2}\right)}{h} + \frac{ibpq\sin^{-1}\left(\frac{hx}{2}\right)^2}{2h} - \frac{bpq\sin^{-1}\left(\frac{hx}{2}\right)\log\left(1+\frac{e^{i\sin^{-1}\left(\frac{hx}{2}\right)}fh}{\frac{1}{2}ieh^2-\frac{1}{2}h\sqrt{4f^2-e^2h^2}}\right)}{h} - \frac{bpq\sin^{-1}\left(\frac{hx}{2}\right)\log\left(1+\frac{e^{i\sin^{-1}\left(\frac{hx}{2}\right)}fh}{\frac{1}{2}ieh^2+\frac{1}{2}h\sqrt{4f^2-e^2h^2}}\right)}{h} + \frac{b\sin^{-1}\left(\frac{hx}{2}\right)\log\left(c(d(e+fx)^p)^q\right)}{h} + \frac{ibpq\text{Li}_2\left(\frac{2ie^{i\sin^{-1}\left(\frac{hx}{2}\right)}f}{eh-i\sqrt{4f^2-e^2h^2}}\right)}{h} + \frac{ibpq\text{Li}_2\left(\frac{2ie^{i\sin^{-1}\left(\frac{hx}{2}\right)}f}{eh+i\sqrt{4f^2-e^2h^2}}\right)}{h}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])/(Sqrt[2 - h*x]*Sqrt[2 + h*x]),x]
```

```
[Out] (a*ArcSin[(h*x)/2])/h + ((I/2)*b*p*q*ArcSin[(h*x)/2]^2)/h - (b*p*q*ArcSin[(
h*x)/2]*Log[1 + (E^(I*ArcSin[(h*x)/2])*f*h)/((I/2)*e*h^2 - (h*Sqrt[4*f^2 -
e^2*h^2])/2)])/h - (b*p*q*ArcSin[(h*x)/2]*Log[1 + (E^(I*ArcSin[(h*x)/2])*f*
h)/((I/2)*e*h^2 + (h*Sqrt[4*f^2 - e^2*h^2])/2)])/h + (b*ArcSin[(h*x)/2]*Log
[c*(d*(e + f*x)^p)^q])/h + (I*b*p*q*PolyLog[2, ((2*I)*E^(I*ArcSin[(h*x)/2])
```

```
*f)/(e*h - I*Sqrt[4*f^2 - e^2*h^2])])/h + (I*b*p*q*PolyLog[2, ((2*I)*E^(I*A
rcSin[(h*x)/2])*f)/(e*h + I*Sqrt[4*f^2 - e^2*h^2])])/h
```

Maple [F]
time = 0.34, size = 0, normalized size = 0.00

$$\int \frac{a+b\ln \left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)}{\sqrt{-hx+2}\,\sqrt{hx+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(d*(f*x+e)^p)^q))/(-h*x+2)^(1/2)/(h*x+2)^(1/2),x)
```

```
[Out] int((a+b*ln(c*(d*(f*x+e)^p)^q))/(-h*x+2)^(1/2)/(h*x+2)^(1/2),x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(-h*x+2)^(1/2)/(h*x+2)^(1/2),x, algo
rithm="maxima")
```

```
[Out] b*integrate((q*log(d) + log(((f*x + e)^p)^q) + log(c))/(sqrt(h*x + 2)*sqrt(
-h*x + 2)), x) + a*arcsin(1/2*h*x)/h
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(-h*x+2)^(1/2)/(h*x+2)^(1/2),x, algo
rithm="fricas")
```

```
[Out] integral(-(sqrt(h*x + 2)*sqrt(-h*x + 2)*b*log(((f*x + e)^p*d)^q*c) + sqrt(h
*x + 2)*sqrt(-h*x + 2)*a)/(h^2*x^2 - 4), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{a+b\log \left(c\left(d\left(e+fx\right)^{p}\right)^{q}\right)}{\sqrt{-hx+2}\,\sqrt{hx+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))/(-h*x+2)**(1/2)/(h*x+2)**(1/2),x)
```

```
[Out] Integral((a + b*log(c*(d*(e + f*x)**p)**q))/(sqrt(-h*x + 2)*sqrt(h*x + 2)),
 x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(-h*x+2)^(1/2)/(h*x+2)^(1/2),x, algo
rithm="giac")
```

```
[Out] integrate((b*log(((f*x + e)^p*d)^q*c) + a)/(sqrt(h*x + 2)*sqrt(-h*x + 2)),
x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)}{\sqrt{2-h\,x}\,\sqrt{h\,x+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d*(e + f*x)^p)^q))/((2 - h*x)^(1/2)*(h*x + 2)^(1/2)),x)
```

```
[Out] int((a + b*log(c*(d*(e + f*x)^p)^q))/((2 - h*x)^(1/2)*(h*x + 2)^(1/2)), x)
```

3.522 $\int \frac{a+b\log(c(d(e+fx)^p)^q)}{\sqrt{g-hx}\sqrt{g+hx}}\,dx$

Optimal. Leaf size=519

$$\frac{ibgpq\sqrt{1-\frac{h^2x^2}{g^2}}\ \sin^{-1}\left(\frac{hx}{g}\right)^2}{2h\sqrt{g-hx}\ \sqrt{g+hx}}-\frac{bgpq\sqrt{1-\frac{h^2x^2}{g^2}}\ \sin^{-1}\left(\frac{hx}{g}\right)\log\left(1+\frac{e^{i\sin^{-1}\left(\frac{hx}{g}\right)}fg}{ieh-\sqrt{f^2g^2-e^2h^2}}\right)}{h\sqrt{g-hx}\ \sqrt{g+hx}}-\frac{bgpq\sqrt{1-\frac{h^2x^2}{g^2}}}{}$$

```
[Out] 1/2*I*b*g*p*q*arcsin(h*x/g)^2*(1-h^2*x^2/g^2)^(1/2)/h/(-h*x+g)^(1/2)/(h*x+g
)^(1/2)+g*arcsin(h*x/g)*(a+b*ln(c*(d*(f*x+e)^p)^q))*(1-h^2*x^2/g^2)^(1/2)/h
/(-h*x+g)^(1/2)/(h*x+g)^(1/2)-b*g*p*q*arcsin(h*x/g)*ln(1+(I*h*x/g+(1-h^2*x^
2/g^2)^(1/2))*f*g/(I*e*h-(-e^2*h^2+f^2*g^2)^(1/2)))*(1-h^2*x^2/g^2)^(1/2)/h
/(-h*x+g)^(1/2)/(h*x+g)^(1/2)-b*g*p*q*arcsin(h*x/g)*ln(1+(I*h*x/g+(1-h^2*x^
2/g^2)^(1/2))*f*g/(I*e*h+(-e^2*h^2+f^2*g^2)^(1/2)))*(1-h^2*x^2/g^2)^(1/2)/h
/(-h*x+g)^(1/2)/(h*x+g)^(1/2)+I*b*g*p*q*polylog(2,-(I*h*x/g+(1-h^2*x^2/g^2)
^(1/2))*f*g/(I*e*h-(-e^2*h^2+f^2*g^2)^(1/2)))*(1-h^2*x^2/g^2)^(1/2)/h/(-h*x
+g)^(1/2)/(h*x+g)^(1/2)+I*b*g*p*q*polylog(2,-(I*h*x/g+(1-h^2*x^2/g^2)^(1/2)
)*f*g/(I*e*h+(-e^2*h^2+f^2*g^2)^(1/2)))*(1-h^2*x^2/g^2)^(1/2)/h/(-h*x+g)^(1
/2)/(h*x+g)^(1/2)
```

Rubi [A]
time = 0.93, antiderivative size = 519, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 10, integrand size = 38, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.263, Rules used = {2454, 222, 2451, 12, 4825, 4617, 2221, 2317, 2438, 2495}

$$\frac{ibgpq\sqrt{1-\frac{h^2x^2}{g^2}}\ \text{PolyLog}\left(2,-\frac{fge^{i\text{ArcSin}\left(\frac{hx}{g}\right)}}{-\sqrt{f^2g^2-e^2h^2}+ieh}\right)}{h\sqrt{g-hx}\ \sqrt{g+hx}}+\frac{ibgpq\sqrt{1-\frac{h^2x^2}{g^2}}\ \text{PolyLog}\left(2,-\frac{fge^{i\text{ArcSin}\left(\frac{hx}{g}\right)}}{\sqrt{f^2g^2-e^2h^2}+ieh}\right)}{h\sqrt{g-hx}\ \sqrt{g+hx}}+\frac{g\sqrt{1-\frac{h^2x^2}{g^2}}\ \text{ArcSin}\left(\frac{hx}{g}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h\sqrt{g-hx}\ \sqrt{g+hx}}-\frac{bgpq\sqrt{1-\frac{h^2x^2}{g^2}}\ \text{ArcSin}\left(\frac{hx}{g}\right)\log\left(1+\frac{fge^{i\text{ArcSin}\left(\frac{hx}{g}\right)}}{-\sqrt{f^2g^2-e^2h^2}+ieh}\right)}{h\sqrt{g-hx}\ \sqrt{g+hx}}-\frac{bgpq\sqrt{1-\frac{h^2x^2}{g^2}}\ \text{ArcSin}\left(\frac{hx}{g}\right)\log\left(1+\frac{fge^{i\text{ArcSin}\left(\frac{hx}{g}\right)}}{\sqrt{f^2g^2-e^2h^2}+ieh}\right)}{h\sqrt{g-hx}\ \sqrt{g+hx}}+\frac{ibgpq\sqrt{1-\frac{h^2x^2}{g^2}}\ \text{ArcSin}\left(\frac{hx}{g}\right)^2}{2h\sqrt{g-hx}\ \sqrt{g+hx}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])/(Sqrt[g - h*x]*Sqrt[g + h*x]),x]
```

```
[Out] ((I/2)*b*g*p*q*Sqrt[1 - (h^2*x^2)/g^2]*ArcSin[(h*x)/g]^2)/(h*Sqrt[g - h*x]*
Sqrt[g + h*x]) - (b*g*p*q*Sqrt[1 - (h^2*x^2)/g^2]*ArcSin[(h*x)/g]*Log[1 + (
E^(I*ArcSin[(h*x)/g])*f*g)/(I*e*h - Sqrt[f^2*g^2 - e^2*h^2])])/(h*Sqrt[g -
h*x]*Sqrt[g + h*x]) - (b*g*p*q*Sqrt[1 - (h^2*x^2)/g^2]*ArcSin[(h*x)/g]*Log[
1 + (E^(I*ArcSin[(h*x)/g])*f*g)/(I*e*h + Sqrt[f^2*g^2 - e^2*h^2])])/(h*Sqrt
[g - h*x]*Sqrt[g + h*x]) + (g*Sqrt[1 - (h^2*x^2)/g^2]*ArcSin[(h*x)/g]*(a +
b*Log[c*(d*(e + f*x)^p)^q]))/(h*Sqrt[g - h*x]*Sqrt[g + h*x]) + (I*b*g*p*q*S
qrt[1 - (h^2*x^2)/g^2]*PolyLog[2, -((E^(I*ArcSin[(h*x)/g])*f*g)/(I*e*h - Sq
rt[f^2*g^2 - e^2*h^2]))])/(h*Sqrt[g - h*x]*Sqrt[g + h*x]) + (I*b*g*p*q*Sqrt
[1 - (h^2*x^2)/g^2]*PolyLog[2, -((E^(I*ArcSin[(h*x)/g])*f*g)/(I*e*h + Sqrt[
f^2*g^2 - e^2*h^2]))])/(h*Sqrt[g - h*x]*Sqrt[g + h*x])
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 222

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[Rt[-b, 2]*(x/Sqrt
[a])]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 2221

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m/(b*f*g*n*Log[F]))*Log[1 + b*((F^(g*(e + f*x)))^n/a)], x] - Di
st[d*(m/(b*f*g*n*Log[F])), Int[(c + d*x)^(m - 1)*Log[1 + b*((F^(g*(e + f*x)
))^n/a)], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2317

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2451

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/Sqrt[(f_) + (g_.)*
(x_)^2], x_Symbol] :> With[{u = IntHide[1/Sqrt[f + g*x^2], x]}, Simp[u*(a +
 b*Log[c*(d + e*x)^n]), x] - Dist[b*e*n, Int[SimplifyIntegrand[u/(d + e*x),
 x], x], x]] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && GtQ[f, 0]
```

Rule 2454

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/(Sqrt[(f1_) + (g1_
.)*(x_)]*Sqrt[(f2_) + (g2_.)*(x_)]), x_Symbol] :> Dist[Sqrt[1 + g1*(g2/(f1*
f2))*x^2]/(Sqrt[f1 + g1*x]*Sqrt[f2 + g2*x]), Int[(a + b*Log[c*(d + e*x)^n])
/Sqrt[1 + g1*(g2/(f1*f2))*x^2], x], x] /; FreeQ[{a, b, c, d, e, f1, g1, f2,
 g2, n}, x] && EqQ[f2*g1 + f1*g2, 0]
```

Rule 2495

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
```

```
c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rule 4617

```
Int[(Cos[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin[
(c_.) + (d_.)*(x_)]), x_Symbol] :> Simp[(-I)*((e + f*x)^(m + 1)/(b*f*(m + 1
))), x] + (Dist[I, Int[(e + f*x)^m*(E^(I*(c + d*x))/(I*a - Rt[-a^2 + b^2, 2
] + b*E^(I*(c + d*x)))), x], x] + Dist[I, Int[(e + f*x)^m*(E^(I*(c + d*x))/
(I*a + Rt[-a^2 + b^2, 2] + b*E^(I*(c + d*x)))), x], x]) /; FreeQ[{a, b, c,
d, e, f}, x] && IGtQ[m, 0] && NegQ[a^2 - b^2]
```

Rule 4825

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)), x_Symbol]
 :> Subst[Int[(a + b*x)^n*(Cos[x]/(c*d + e*Sin[x])), x], x, ArcSin[c*x]] /;
 FreeQ[{a, b, c, d, e}, x] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{a+b\log \left(c(d(e+fx)^p)^q\right)}{\sqrt{g-hx}\,\sqrt{g+hx}}\,dx = \text{Subst}\left(\int \frac{a+b\log \left(cd^q(e+fx)^{pq}\right)}{\sqrt{g-hx}\,\sqrt{g+hx}}\,dx, cd^q(e+fx)^{pq}, c(d(e+fx)^p)^q\right)$$

$$= \text{Subst}\left(\frac{\sqrt{1-\frac{h^2x^2}{g^2}}\int \frac{a+b\log(cd^q(e+fx)^{pq})}{\sqrt{1-\frac{h^2x^2}{g^2}}}\,dx}{\sqrt{g-hx}\,\sqrt{g+hx}}, cd^q(e+fx)^{pq}, c(d(e+fx)^p)^{\cdots}\right.$$

$$= \frac{g\sqrt{1-\frac{h^2x^2}{g^2}}\,\sin^{-1}\left(\frac{hx}{g}\right)\left(a+b\log \left(c(d(e+fx)^p)^q\right)\right)}{h\sqrt{g-hx}\,\sqrt{g+hx}} - \text{Subst}\left(\frac{\left(bfpq\sqrt{\cdots}\right.}{\cdots}\right.$$

$$= \frac{g\sqrt{1-\frac{h^2x^2}{g^2}}\,\sin^{-1}\left(\frac{hx}{g}\right)\left(a+b\log \left(c(d(e+fx)^p)^q\right)\right)}{h\sqrt{g-hx}\,\sqrt{g+hx}} - \text{Subst}\left(\frac{\left(bfgpq\cdots\right.}{\cdots}\right.$$

$$= \frac{g\sqrt{1-\frac{h^2x^2}{g^2}}\,\sin^{-1}\left(\frac{hx}{g}\right)\left(a+b\log \left(c(d(e+fx)^p)^q\right)\right)}{h\sqrt{g-hx}\,\sqrt{g+hx}} - \text{Subst}\left(\frac{\left(bfgpq\cdots\right.}{\cdots}\right.$$

$$= \frac{ibgpq\sqrt{1-\frac{h^2x^2}{g^2}}\,\sin^{-1}\left(\frac{hx}{g}\right)^2}{2h\sqrt{g-hx}\,\sqrt{g+hx}} + \frac{g\sqrt{1-\frac{h^2x^2}{g^2}}\,\sin^{-1}\left(\frac{hx}{g}\right)\left(a+b\log(c(\cdots\right.}{h\sqrt{g-hx}\,\sqrt{g+hx}}$$

$$= \frac{ibgpq\sqrt{1-\frac{h^2x^2}{g^2}}\,\sin^{-1}\left(\frac{hx}{g}\right)^2}{2h\sqrt{g-hx}\,\sqrt{g+hx}} - \frac{bgpq\sqrt{1-\frac{h^2x^2}{g^2}}\,\sin^{-1}\left(\frac{hx}{g}\right)\log\left(1+\cdots\right.}{h\sqrt{g-hx}\,\sqrt{g+h\cdots}}$$

$$= \frac{ibgpq\sqrt{1-\frac{h^2x^2}{g^2}}\,\sin^{-1}\left(\frac{hx}{g}\right)^2}{2h\sqrt{g-hx}\,\sqrt{g+hx}} - \frac{bgpq\sqrt{1-\frac{h^2x^2}{g^2}}\,\sin^{-1}\left(\frac{hx}{g}\right)\log\left(1+\cdots\right.}{h\sqrt{g-hx}\,\sqrt{g+h\cdots}}$$

Mathematica [B] Both result and optimal contain complex but leaf count is larger than twice the leaf count of optimal. 1083 vs. 2(519) = 1038.
time = 3.13, size = 1083, normalized size = 2.09

$$\frac{\tan^{-1}\left(\frac{hx}{\sqrt{g-hx}\sqrt{g+hx}}\right)\left(a-bpq\log(e+fx)+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h}-\frac{ibpq\sqrt{g-hx}\sqrt{\frac{g+hx}{g-hx}}\left(2\log(e+fx)\log\left(i-\sqrt{\frac{g+hx}{g-hx}}\right)+\log^2\left(i-\sqrt{\frac{g+hx}{g-hx}}\right)+2\log\left(i-\sqrt{\frac{g+hx}{g-hx}}\right)\log\left(\frac{1}{2}\left(1-i\sqrt{\frac{g+hx}{g-hx}}\right)\right)-2\log(e+fx)\log\left(i+\sqrt{\frac{g+hx}{g-hx}}\right)-2\log\left(\frac{1}{2}\left(1+i\sqrt{\frac{g+hx}{g-hx}}\right)\right)\log\left(i+\sqrt{\frac{g+hx}{g-hx}}\right)-\log^2\left(i+\sqrt{\frac{g+hx}{g-hx}}\right)-2\log\left(i-\sqrt{\frac{g+hx}{g-hx}}\right)\log\left(\frac{\sqrt{fg-eh}-\sqrt{fg+eh}\sqrt{\frac{g+hx}{g-hx}}}{\sqrt{fg-eh}-i\sqrt{fg+eh}}\right)+2\log\left(i+\sqrt{\frac{g+hx}{g-hx}}\right)\log\left(\frac{\sqrt{fg-eh}-\sqrt{fg+eh}\sqrt{\frac{g+hx}{g-hx}}}{\sqrt{fg-eh}+i\sqrt{fg+eh}}\right)+2\log\left(i+\sqrt{\frac{g+hx}{g-hx}}\right)\log\left(\frac{\sqrt{fg-eh}+\sqrt{fg+eh}\sqrt{\frac{g+hx}{g-hx}}}{\sqrt{fg-eh}-i\sqrt{fg+eh}}\right)-2\log\left(i-\sqrt{\frac{g+hx}{g-hx}}\right)\log\left(\frac{\sqrt{fg-eh}+\sqrt{fg+eh}\sqrt{\frac{g+hx}{g-hx}}}{\sqrt{fg-eh}+i\sqrt{fg+eh}}\right)-2\text{Li}_2\left(\frac{1}{2}-\frac{1}{2}i\sqrt{\frac{g+hx}{g-hx}}\right)+2\text{Li}_2\left(\frac{1}{2}+\frac{1}{2}i\sqrt{\frac{g+hx}{g-hx}}\right)+2\text{Li}_2\left(\frac{\sqrt{fg+eh}\left(1-i\sqrt{\frac{g+hx}{g-hx}}\right)}{i\sqrt{fg-eh}+\sqrt{fg+eh}}\right)-2\text{Li}_2\left(\frac{\sqrt{fg+eh}\left(1+i\sqrt{\frac{g+hx}{g-hx}}\right)}{-i\sqrt{fg-eh}+\sqrt{fg+eh}}\right)-2\text{Li}_2\left(\frac{\sqrt{fg+eh}\left(1+i\sqrt{\frac{g+hx}{g-hx}}\right)}{i\sqrt{fg-eh}+\sqrt{fg+eh}}\right)+2\text{Li}_2\left(\frac{\sqrt{fg+eh}\left(i+\sqrt{\frac{g+hx}{g-hx}}\right)}{\sqrt{fg-eh}+i\sqrt{fg+eh}}\right)\right)}{2h\sqrt{g+hx}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])/(Sqrt[g - h*x]*Sqrt[g + h*x]),x]
```

```
[Out] (ArcTan[(h*x)/(Sqrt[g - h*x]*Sqrt[g + h*x])]*(a - b*p*q*Log[e + f*x] + b*Lo
g[c*(d*(e + f*x)^p)^q]))/h - ((I/2)*b*p*q*Sqrt[g - h*x]*Sqrt[(g + h*x)/(g -
 h*x)]*(2*Log[e + f*x]*Log[I - Sqrt[(g + h*x)/(g - h*x)]] + Log[I - Sqrt[(g
 + h*x)/(g - h*x)]]^2 + 2*Log[I - Sqrt[(g + h*x)/(g - h*x)]]*Log[(1 - I*Sqr
t[(g + h*x)/(g - h*x)])/2] - 2*Log[e + f*x]*Log[I + Sqrt[(g + h*x)/(g - h*x
)]] - 2*Log[(1 + I*Sqrt[(g + h*x)/(g - h*x)])/2]*Log[I + Sqrt[(g + h*x)/(g
- h*x)]] - Log[I + Sqrt[(g + h*x)/(g - h*x)]]^2 - 2*Log[I - Sqrt[(g + h*x)/
(g - h*x)]]*Log[(Sqrt[f*g - e*h] - Sqrt[f*g + e*h]*Sqrt[(g + h*x)/(g - h*x)
])/(Sqrt[f*g - e*h] - I*Sqrt[f*g + e*h])] + 2*Log[I + Sqrt[(g + h*x)/(g - h
*x)]]*Log[(Sqrt[f*g - e*h] - Sqrt[f*g + e*h]*Sqrt[(g + h*x)/(g - h*x)])/(Sq
rt[f*g - e*h] + I*Sqrt[f*g + e*h])] + 2*Log[I + Sqrt[(g + h*x)/(g - h*x)]]*
Log[(Sqrt[f*g - e*h] + Sqrt[f*g + e*h]*Sqrt[(g + h*x)/(g - h*x)])/(Sqrt[f*g
 - e*h] - I*Sqrt[f*g + e*h])] - 2*Log[I - Sqrt[(g + h*x)/(g - h*x)]]*Log[(S
qrt[f*g - e*h] + Sqrt[f*g + e*h]*Sqrt[(g + h*x)/(g - h*x)])/(Sqrt[f*g - e*h
] + I*Sqrt[f*g + e*h])] - 2*PolyLog[2, 1/2 - (I/2)*Sqrt[(g + h*x)/(g - h*x)
]] + 2*PolyLog[2, 1/2 + (I/2)*Sqrt[(g + h*x)/(g - h*x)]] + 2*PolyLog[2, (Sq
rt[f*g + e*h]*(1 - I*Sqrt[(g + h*x)/(g - h*x)]))/(I*Sqrt[f*g - e*h] + Sqrt[
f*g + e*h])] - 2*PolyLog[2, (Sqrt[f*g + e*h]*(1 + I*Sqrt[(g + h*x)/(g - h*x
)]))/((-I)*Sqrt[f*g - e*h] + Sqrt[f*g + e*h])] - 2*PolyLog[2, (Sqrt[f*g + e
*h]*(1 + I*Sqrt[(g + h*x)/(g - h*x)]))/(I*Sqrt[f*g - e*h] + Sqrt[f*g + e*h]
)] + 2*PolyLog[2, (Sqrt[f*g + e*h]*(I + Sqrt[(g + h*x)/(g - h*x)]))/(Sqrt[f
*g - e*h] + I*Sqrt[f*g + e*h])]))/(h*Sqrt[g + h*x])
```

Maple [F]
time = 0.32, size = 0, normalized size = 0.00

$$\int \frac{a+b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)}{\sqrt{-hx+g}\,\sqrt{hx+g}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(d*(f*x+e)^p)^q))/(-h*x+g)^(1/2)/(h*x+g)^(1/2),x)
```

```
[Out] int((a+b*ln(c*(d*(f*x+e)^p)^q))/(-h*x+g)^(1/2)/(h*x+g)^(1/2),x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(-h*x+g)^(1/2)/(h*x+g)^(1/2),x, algo
rithm="maxima")
```

```
[Out] b*integrate((q*log(d) + log(((f*x + e)^p)^q) + log(c))/(sqrt(h*x + g)*sqrt(
-h*x + g)), x) + a*arcsin(h*x/g)/h
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(-h*x+g)^(1/2)/(h*x+g)^(1/2),x, algo
rithm="fricas")
```

```
[Out] integral(-(sqrt(h*x + g)*sqrt(-h*x + g)*b*log(((f*x + e)^p*d)^q*c) + sqrt(h
*x + g)*sqrt(-h*x + g)*a)/(h^2*x^2 - g^2), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{a+b\log\left(c\left(d(e+fx)^{p}\right)^{q}\right)}{\sqrt{g-hx}\,\sqrt{g+hx}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))/(-h*x+g)**(1/2)/(h*x+g)**(1/2),x)
```

```
[Out] Integral((a + b*log(c*(d*(e + f*x)**p)**q))/(sqrt(g - h*x)*sqrt(g + h*x)),
x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(-h*x+g)^(1/2)/(h*x+g)^(1/2),x, algo
rithm="giac")
```

```
[Out] integrate((b*log(((f*x + e)^p*d)^q*c) + a)/(sqrt(h*x + g)*sqrt(-h*x + g)),
x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^{p}\right)}^{q}\right)}{\sqrt{g+h\,x}\,\sqrt{g-h\,x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d*(e + f*x)^p)^q))/((g + h*x)^(1/2)*(g - h*x)^(1/2)),x)
[Out] int((a + b*log(c*(d*(e + f*x)^p)^q))/((g + h*x)^(1/2)*(g - h*x)^(1/2)), x)
```

3.523 $\int \frac{(i+jx)^3(a+b\log(c(d(e+fx)^p)^q))}{g+hx}\,dx$

Optimal. Leaf size=427

$$\frac{aj(hi-gj)^2x}{h^3}-\frac{bj(fi-ej)^2pqx}{3f^2h}-\frac{bj(fi-ej)(hi-gj)pqx}{2fh^2}-\frac{bj(hi-gj)^2pqx}{h^3}-\frac{b(fi-ej)pq(i+jx)^2}{6fh}-\frac{b(hi$$

```
[Out] a*j*(-g*j+h*i)^2*x/h^3-1/3*b*j*(-e*j+f*i)^2*p*q*x/f^2/h-1/2*b*j*(-e*j+f*i)*
(-g*j+h*i)*p*q*x/f/h^2-b*j*(-g*j+h*i)^2*p*q*x/h^3-1/6*b*(-e*j+f*i)*p*q*(j*x
+i)^2/f/h-1/4*b*(-g*j+h*i)*p*q*(j*x+i)^2/h^2-1/9*b*p*q*(j*x+i)^3/h-1/3*b*(-
e*j+f*i)^3*p*q*ln(f*x+e)/f^3/h-1/2*b*(-e*j+f*i)^2*(-g*j+h*i)*p*q*ln(f*x+e)/
f^2/h^2+b*j*(-g*j+h*i)^2*(f*x+e)*ln(c*(d*(f*x+e)^p)^q)/f/h^3+1/2*(-g*j+h*i)
*(j*x+i)^2*(a+b*ln(c*(d*(f*x+e)^p)^q))/h^2+1/3*(j*x+i)^3*(a+b*ln(c*(d*(f*x+
e)^p)^q))/h+(-g*j+h*i)^3*(a+b*ln(c*(d*(f*x+e)^p)^q))*ln(f*(h*x+g)/(-e*h+f*g
))/h^4+b*(-g*j+h*i)^3*p*q*polylog(2,-h*(f*x+e)/(-e*h+f*g))/h^4
```

Rubi [A]
time = 0.55, antiderivative size = 427, normalized size of antiderivative = 1.00, number of steps used = 15, number of rules used = 9, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.273$, Rules used = {2465, 2436, 2332, 2441, 2440, 2438, 2442, 45, 2495}

$$\frac{bpq(hi-gj)^3\text{PolyLog}\left(2,-\frac{h(e+fx)}{fg-eh}\right)}{h^4}+\frac{(hi-gj)^3\log\left(\frac{f(g+hx)}{fg-eh}\right)\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)}{h^4}+\frac{(i+jx)^2(hi-gj)\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)}{2h^2}+\frac{(i+jx)^3\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)}{3h}+\frac{ajx(hi-gj)^2}{h^3}+\frac{bj(e+fx)(hi-gj)^2\log\left(c(d(e+fx)^p)^q\right)}{fh^3}-\frac{bpq(fi-ej)^3\log(e+fx)}{3f^3h}-\frac{bpq(fi-ej)^2\log(e+fx)(hi-gj)}{2f^2h^2}-\frac{bjpqx(fi-ej)^2}{3f^2h}-\frac{bjpqx(fi-ej)(hi-gj)}{2fh^2}-\frac{bpq(i+jx)^2(fi-ej)}{6fh}-\frac{bjpqx(hi-gj)^2}{h^3}-\frac{bpq(i+jx)^2(hi-gj)}{4h^2}-\frac{bpq(i+jx)^3}{9h}$$

Antiderivative was successfully verified.

```
[In] Int[((i + j*x)^3*(a + b*Log[c*(d*(e + f*x)^p)^q]))/(g + h*x),x]
```

```
[Out] (a*j*(h*i - g*j)^2*x)/h^3 - (b*j*(f*i - e*j)^2*p*q*x)/(3*f^2*h) - (b*j*(f*i
 - e*j)*(h*i - g*j)*p*q*x)/(2*f*h^2) - (b*j*(h*i - g*j)^2*p*q*x)/h^3 - (b*(
f*i - e*j)*p*q*(i + j*x)^2)/(6*f*h) - (b*(h*i - g*j)*p*q*(i + j*x)^2)/(4*h^
2) - (b*p*q*(i + j*x)^3)/(9*h) - (b*(f*i - e*j)^3*p*q*Log[e + f*x])/(3*f^3*
h) - (b*(f*i - e*j)^2*(h*i - g*j)*p*q*Log[e + f*x])/(2*f^2*h^2) + (b*j*(h*i
 - g*j)^2*(e + f*x)*Log[c*(d*(e + f*x)^p)^q])/(f*h^3) + ((h*i - g*j)*(i + j
*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q]))/(2*h^2) + ((i + j*x)^3*(a + b*Log[c
*(d*(e + f*x)^p)^q]))/(3*h) + ((h*i - g*j)^3*(a + b*Log[c*(d*(e + f*x)^p)^q
])*Log[(f*(g + h*x))/(f*g - e*h)])/h^4 + (b*(h*i - g*j)^3*p*q*PolyLog[2, -(
(h*(e + f*x))/(f*g - e*h))])/h^4
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2332

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2436

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + c*e*(x/g)])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2441

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d + e*x
)^n])/g), x] - Dist[b*e*(n/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2442

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[(f + g*x)^(q + 1)*((a + b*Log[c*(d + e*x)^n])/(
g*(q + 1))), x] - Dist[b*e*(n/(g*(q + 1))), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 2465

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2495

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
```

```
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{(523+jx)^3\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)}{g+hx}\,dx = \text{Subst}\left(\int \frac{(523+jx)^3\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)}{g+hx}\,dx, cd^q(e\right.$$

$$= \text{Subst}\left(\int \left(\frac{j(523h-gj)^2\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)}{h^3}+\frac{(5\right.\right.$$

$$= \text{Subst}\left(\frac{j\int(523+jx)^2\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)dx}{h}, cd^q(e\right.$$

$$= \frac{aj(523h-gj)^2x}{h^3}+\frac{(523h-gj)(523+jx)^2\left(a+b\log\left(c(d\right.\right.}{2h^2}$$

$$= \frac{aj(523h-gj)^2x}{h^3}+\frac{(523h-gj)(523+jx)^2\left(a+b\log\left(c(d\right.\right.}{2h^2}$$

$$= \frac{aj(523h-gj)^2x}{h^3}-\frac{bj(523f-ej)^2pqx}{3f^2h}-\frac{bj(523f-ej)(5}{2fh}$$

Mathematica [A]
time = 0.55, size = 451, normalized size = 1.06

$$\frac{fhj\left(6af^2x(6g^2j^2-3ghj(6i+jx)+h^2(18i^2+9ijx+2j^2x^2))-bpq(12e^2h^2j^2x+6ef(6g^2j^2+3ghj(-6i+jx)+h^2(18i^2-9ijx-j^2x^2))+f^2x(36g^2j^2-9ghj(12i+jx)+h^2(108i^2+27ijx+4j^2x^2)))\right)+36af^3(hi-gj)^3\log(g+hx)+6bf^3\log\left(c(d(e+fx)^p)^q\right)\left(hjx(6g^2j^2-3ghj(6i+jx)+h^2(18i^2+9ijx+2j^2x^2))+6(hi-gj)^3\log(g+hx)\right)+6bpq\log(e+fx)\left(ehj(2e^2h^2j^2+3efhj(-3hi+gj)+6f^2(3h^2i^2-3ghij+g^2j^2))-6f^3(hi-gj)^3\log(g+hx)+6f^3(hi-gj)^3\log\left(\frac{f(g+hx)}{fg-eh}\right)\right)+36bf^3(hi-gj)^3pq\text{Li}_2\left(\frac{h(e+fx)}{-fg+eh}\right)}{36f^3h^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[((i + j*x)^3*(a + b*Log[c*(d*(e + f*x)^p)^q]))/(g + h*x),x]
```

```
[Out] (f*h*j*(6*a*f^2*x*(6*g^2*j^2 - 3*g*h*j*(6*i + j*x) + h^2*(18*i^2 + 9*i*j*x
+ 2*j^2*x^2)) - b*p*q*(12*e^2*h^2*j^2*x + 6*e*f*(6*g^2*j^2 + 3*g*h*j*(-6*i
+ j*x) + h^2*(18*i^2 - 9*i*j*x - j^2*x^2)) + f^2*x*(36*g^2*j^2 - 9*g*h*j*(1
2*i + j*x) + h^2*(108*i^2 + 27*i*j*x + 4*j^2*x^2)))) + 36*a*f^3*(h*i - g*j)
^3*Log[g + h*x] + 6*b*f^3*Log[c*(d*(e + f*x)^p)^q]*(h*j*x*(6*g^2*j^2 - 3*g*
h*j*(6*i + j*x) + h^2*(18*i^2 + 9*i*j*x + 2*j^2*x^2)) + 6*(h*i - g*j)^3*Log
[g + h*x]) + 6*b*p*q*Log[e + f*x]*(e*h*j*(2*e^2*h^2*j^2 + 3*e*f*h*j*(-3*h*i
 + g*j) + 6*f^2*(3*h^2*i^2 - 3*g*h*i*j + g^2*j^2)) - 6*f^3*(h*i - g*j)^3*Lo
```

```
g[g + h*x] + 6*f^3*(h*i - g*j)^3*Log[(f*(g + h*x))/(f*g - e*h)]) + 36*b*f^3
*(h*i - g*j)^3*p*q*PolyLog[2, (h*(e + f*x))/(-(f*g) + e*h)])/(36*f^3*h^4)
```

Maple [F]
time = 0.34, size = 0, normalized size = 0.00

$$\int \frac{(jx+i)^3 (a+b\ln(c(d(fx+e)^p)^q))}{hx+g}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((j*x+i)^3*(a+b*ln(c*(d*(f*x+e)^p)^q))/(h*x+g),x)
[Out] int((j*x+i)^3*(a+b*ln(c*(d*(f*x+e)^p)^q))/(h*x+g),x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((j*x+i)^3*(a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g),x, algorithm="maxi
ma")
[Out] -1/6*a*j^3*(6*g^3*log(h*x + g)/h^4 - (2*h^2*x^3 - 3*g*h*x^2 + 6*g^2*x)/h^3)
 + 3/2*I*a*j^2*(2*g^2*log(h*x + g)/h^3 + (h*x^2 - 2*g*x)/h^2) - 3*a*j*(x/h
- g*log(h*x + g)/h^2) - I*a*log(h*x + g)/h + integrate(((j^3*q*log(d) + j^3
*log(c))*b*x^3 - 3*(-I*j^2*q*log(d) - I*j^2*log(c))*b*x^2 - 3*(j*q*log(d) +
 j*log(c))*b*x + (-I*q*log(d) - I*log(c))*b + (b*j^3*x^3 + 3*I*b*j^2*x^2 -
3*b*j*x - I*b)*log(((f*x + e)^p)^q))/(h*x + g), x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((j*x+i)^3*(a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g),x, algorithm="fric
as")
[Out] integral((a*j^3*x^3 + 3*I*a*j^2*x^2 - 3*a*j*x + (b*j^3*p*q*x^3 + 3*I*b*j^2*
p*q*x^2 - 3*b*j*p*q*x - I*b*p*q)*log(f*x + e) + (b*j^3*x^3 + 3*I*b*j^2*x^2
- 3*b*j*x - I*b)*log(c) + (b*j^3*q*x^3 + 3*I*b*j^2*q*x^2 - 3*b*j*q*x - I*b*
q)*log(d) - I*a)/(h*x + g), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a+b\log(c(d(e+fx)^p)^q))(i+jx)^3}{g+hx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((j*x+i)**3*(a+b*ln(c*(d*(f*x+e)**p)**q))/(h*x+g),x)
[Out] Integral((a + b*log(c*(d*(e + f*x)**p)**q))*(i + j*x)**3/(g + h*x), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((j*x+i)^3*(a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g),x, algorithm="giac
")
[Out] integrate((j*x + I)^3*(b*log(((f*x + e)^p*d)^q*c) + a)/(h*x + g), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(i+j\,x)^3\,(a+b\,\ln\left(c\,(d\,(e+f\,x)^p)^q\right))}{g+h\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((i + j*x)^3*(a + b*log(c*(d*(e + f*x)^p)^q)))/(g + h*x),x)
[Out] int(((i + j*x)^3*(a + b*log(c*(d*(e + f*x)^p)^q)))/(g + h*x), x)
```

3.524 $\int \frac{(i+jx)^2(a+b\log(c(d(e+fx)^p)^q))}{g+hx}\,dx$

Optimal. Leaf size=258

$$\frac{aj(hi-gj)x}{h^2}-\frac{bj(fi-ej)pqx}{2fh}-\frac{bj(hi-gj)pqx}{h^2}-\frac{bpq(i+jx)^2}{4h}-\frac{b(fi-ej)^2pq\log(e+fx)}{2f^2h}+\frac{bj(hi-gj)(e+$$

```
[Out] a*j*(-g*j+h*i)*x/h^2-1/2*b*j*(-e*j+f*i)*p*q*x/f/h-b*j*(-g*j+h*i)*p*q*x/h^2-
1/4*b*p*q*(j*x+i)^2/h-1/2*b*(-e*j+f*i)^2*p*q*ln(f*x+e)/f^2/h+b*j*(-g*j+h*i)
*(f*x+e)*ln(c*(d*(f*x+e)^p)^q)/f/h^2+1/2*(j*x+i)^2*(a+b*ln(c*(d*(f*x+e)^p)^
q))/h+(-g*j+h*i)^2*(a+b*ln(c*(d*(f*x+e)^p)^q))*ln(f*(h*x+g)/(-e*h+f*g))/h^3
+b*(-g*j+h*i)^2*p*q*polylog(2,-h*(f*x+e)/(-e*h+f*g))/h^3
```

Rubi [A]
time = 0.37, antiderivative size = 258, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 9, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.273$, Rules used = {2465, 2436, 2332, 2441, 2440, 2438, 2442, 45, 2495}

$$\frac{bpq(hi-gj)^2\text{PolyLog}\left(2,-\frac{h(e+fx)}{fg-eh}\right)}{h^3}+\frac{(hi-gj)^2\log\left(\frac{f(g+hx)}{fg-eh}\right)\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)}{h^3}+\frac{(i+jx)^2\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)}{2h}+\frac{ajx(hi-gj)}{h^2}+\frac{bj(e+fx)(hi-gj)\log\left(c(d(e+fx)^p)^q\right)}{fh^2}-\frac{bpq(fi-ej)^2\log(e+fx)}{2f^2h}-\frac{bjpqx(fi-ej)}{2fh}-\frac{bjpqx(hi-gj)}{h^2}-\frac{bpq(i+jx)^2}{4h}$$

Antiderivative was successfully verified.

```
[In] Int[((i + j*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q]))/(g + h*x),x]
```

```
[Out] (a*j*(h*i - g*j)*x)/h^2 - (b*j*(f*i - e*j)*p*q*x)/(2*f*h) - (b*j*(h*i - g*j
)*p*q*x)/h^2 - (b*p*q*(i + j*x)^2)/(4*h) - (b*(f*i - e*j)^2*p*q*Log[e + f*x
])/(2*f^2*h) + (b*j*(h*i - g*j)*(e + f*x)*Log[c*(d*(e + f*x)^p)^q])/(f*h^2)
 + ((i + j*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q]))/(2*h) + ((h*i - g*j)^2*(a
 + b*Log[c*(d*(e + f*x)^p)^q])*Log[(f*(g + h*x))/(f*g - e*h)])/h^3 + (b*(h*
i - g*j)^2*p*q*PolyLog[2, -((h*(e + f*x))/(f*g - e*h))])/h^3
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2332

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2436

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
```

```
, b, c, d, e, n, p}, x]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + c*e*(x/g)])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2441

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d + e*x
)^n])/g), x] - Dist[b*e*(n/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2442

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[(f + g*x)^(q + 1)*((a + b*Log[c*(d + e*x)^n])/(
g*(q + 1))), x] - Dist[b*e*(n/(g*(q + 1))), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 2465

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2495

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{(524+jx)^2 \left(a+b\log \left(c(d(e+fx)^p)^q\right)\right)}{g+hx}\,dx = \text{Subst}\left(\int \frac{(524+jx)^2 \left(a+b\log \left(cd^q(e+fx)^{pq}\right)\right)}{g+hx}\,dx, cd^q(e+\right.$$

$$= \text{Subst}\left(\int \left(\frac{j(524h-gj)\left(a+b\log \left(cd^q(e+fx)^{pq}\right)\right)}{h^2} + \frac{(524\right.\right.$$

$$= \text{Subst}\left(\frac{j\int (524+jx)\left(a+b\log \left(cd^q(e+fx)^{pq}\right)\right)\,dx}{h}, cd^q(e+\right.$$

$$= \frac{aj(524h-gj)x}{h^2} + \frac{(524+jx)^2 \left(a+b\log \left(c(d(e+fx)^p)^q\right)\right)}{2h}$$

$$= \frac{aj(524h-gj)x}{h^2} + \frac{(524+jx)^2 \left(a+b\log \left(c(d(e+fx)^p)^q\right)\right)}{2h}$$

$$= \frac{aj(524h-gj)x}{h^2} - \frac{bj(524f-ej)pqx}{2fh} - \frac{bj(524h-gj)pqx}{h^2}$$

Mathematica [A]
time = 0.27, size = 270, normalized size = 1.05

$$\frac{f\left(hj(2afx(4hi-2gj+hjx)+bpq(-fx(8hi-4gj+hjx)+e(-8hi+4gj+2hjx)))+4af(hi-gj)^2\log(g+hx)+2bf\log\left(c(d(e+fx)^p)^q\right)(hjx(4hi-2gj+hjx)+2(hi-gj)^2\log(g+hx))\right)-2bpq\log(e+fx)\left(ehj(-4fhi+2fgj+ehj)+2f^2(hi-gj)^2\log(g+hx)-2f^2(hi-gj)^2\log\left(\frac{f(g+hx)}{fg-eh}\right)\right)+4bf^2(hi-gj)^2pq\text{Li}_2\left(\frac{h(e+fx)}{-fg+eh}\right)}{4f^2h^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[((i + j*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q]))/(g + h*x),x]
```

```
[Out] (f*(h*j*(2*a*f*x*(4*h*i - 2*g*j + h*j*x) + b*p*q*(-(f*x*(8*h*i - 4*g*j + h*
j*x)) + e*(-8*h*i + 4*g*j + 2*h*j*x))) + 4*a*f*(h*i - g*j)^2*Log[g + h*x] +
 2*b*f*Log[c*(d*(e + f*x)^p)^q]*(h*j*x*(4*h*i - 2*g*j + h*j*x) + 2*(h*i - g
*j)^2*Log[g + h*x])) - 2*b*p*q*Log[e + f*x]*(e*h*j*(-4*f*h*i + 2*f*g*j + e*
h*j) + 2*f^2*(h*i - g*j)^2*Log[g + h*x] - 2*f^2*(h*i - g*j)^2*Log[(f*(g + h
*x))/(f*g - e*h)]) + 4*b*f^2*(h*i - g*j)^2*p*q*PolyLog[2, (h*(e + f*x))/(-(
f*g) + e*h)])/(4*f^2*h^3)
```

Maple [F]
time = 0.37, size = 0, normalized size = 0.00

$$\int \frac{(jx+i)^2 \left(a+b\ln \left(c(d(fx+e)^p)^q\right)\right)}{hx+g}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((j*x+i)^2*(a+b*ln(c*(d*(f*x+e)^p)^q))/(h*x+g),x)
```

```
[Out] int((j*x+i)^2*(a+b*ln(c*(d*(f*x+e)^p)^q))/(h*x+g),x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((j*x+i)^2*(a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g),x, algorithm="maxi
ma")
```

```
[Out] 1/2*a*j^2*(2*g^2*log(h*x + g)/h^3 + (h*x^2 - 2*g*x)/h^2) + 2*I*a*j*(x/h - g
*log(h*x + g)/h^2) - a*log(h*x + g)/h + integrate(((j^2*q*log(d) + j^2*log(
c))*b*x^2 - 2*(-I*j*q*log(d) - I*j*log(c))*b*x - (q*log(d) + log(c))*b + (b
*j^2*x^2 + 2*I*b*j*x - b)*log(((f*x + e)^p)^q))/(h*x + g), x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((j*x+i)^2*(a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g),x, algorithm="fric
as")
```

```
[Out] integral((a*j^2*x^2 + 2*I*a*j*x + (b*j^2*p*q*x^2 + 2*I*b*j*p*q*x - b*p*q)*l
og(f*x + e) + (b*j^2*x^2 + 2*I*b*j*x - b)*log(c) + (b*j^2*q*x^2 + 2*I*b*j*q
*x - b*q)*log(d) - a)/(h*x + g), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(a + b\log\left(c\left(d\left(e + fx\right)^{p}\right)^{q}\right)\right)\left(i + jx\right)^{2}}{g + hx}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((j*x+i)**2*(a+b*ln(c*(d*(f*x+e)**p)**q))/(h*x+g),x)
```

```
[Out] Integral((a + b*log(c*(d*(e + f*x)**p)**q))*(i + j*x)**2/(g + h*x), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((j*x+i)^2*(a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g),x, algorithm="giac
")
```

```
[Out] integrate((j*x + I)^2*(b*log(((f*x + e)^p*d)^q*c) + a)/(h*x + g), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(i+j\,x)^2\,(a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right))}{g+h\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((i + j*x)^2*(a + b*log(c*(d*(e + f*x)^p)^q)))/(g + h*x),x)
```

```
[Out] int(((i + j*x)^2*(a + b*log(c*(d*(e + f*x)^p)^q)))/(g + h*x), x)
```

3.525 $\int \frac{(i+jx)(a+b\log(c(d(e+fx)^p)^q))}{g+hx}\,dx$

Optimal. Leaf size=129

$$\frac{ajx}{h}-\frac{bjpqx}{h}+\frac{bj(e+fx)\log\left(c(d(e+fx)^p)^q\right)}{fh}+\frac{(hi-gj)\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)\log\left(\frac{f(g+hx)}{fg-eh}\right)}{h^2}+\frac{b(hi-}{}$$

```
[Out] a*j*x/h-b*j*p*q*x/h+b*j*(f*x+e)*ln(c*(d*(f*x+e)^p)^q)/f/h+(-g*j+h*i)*(a+b*l
n(c*(d*(f*x+e)^p)^q))*ln(f*(h*x+g)/(-e*h+f*g))/h^2+b*(-g*j+h*i)*p*q*polylog
(2,-h*(f*x+e)/(-e*h+f*g))/h^2
```

Rubi [A]
time = 0.22, antiderivative size = 129, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 7, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.226$, Rules used = {2465, 2436, 2332, 2441, 2440, 2438, 2495}

$$\frac{bpq(hi-gj)\text{PolyLog}\left(2,-\frac{h(e+fx)}{fg-eh}\right)}{h^2}+\frac{(hi-gj)\log\left(\frac{f(g+hx)}{fg-eh}\right)\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)}{h^2}+\frac{ajx}{h}+\frac{bj(e+fx)\log\left(c(d(e+fx)^p)^q\right)}{fh}-\frac{bjpqx}{h}$$

Antiderivative was successfully verified.

```
[In] Int[((i + j*x)*(a + b*Log[c*(d*(e + f*x)^p)^q]))/(g + h*x),x]
```

```
[Out] (a*j*x)/h - (b*j*p*q*x)/h + (b*j*(e + f*x)*Log[c*(d*(e + f*x)^p)^q])/(f*h)
+ ((h*i - g*j)*(a + b*Log[c*(d*(e + f*x)^p)^q])*Log[(f*(g + h*x))/(f*g - e*
h)])/h^2 + (b*(h*i - g*j)*p*q*PolyLog[2, -((h*(e + f*x))/(f*g - e*h))])/h^2
```

Rule 2332

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2436

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + c*e*(x/g)])/x, x], x, f + g*x
```

```
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2441

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d + e*x
)^n])/g), x] - Dist[b*e*(n/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2465

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2495

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{(525+jx)\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)}{g+hx}\,dx = \text{Subst}\Bigg(\int \frac{(525+jx)\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)}{g+hx}\,dx, cd^q(e+$$

$$= \text{Subst}\Bigg(\int \left(\frac{j(a+b\log\left(cd^q(e+fx)^{pq}\right))}{h} + \frac{(525h-gj)\left(a+\right.}{h(}\right.$$

$$= \text{Subst}\Bigg(\frac{j\int \left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)\,dx}{h}, cd^q(e+fx)^{pq}, c(d$$

$$= \frac{ajx}{h} + \frac{(525h-gj)\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)\log\left(\frac{f(g+hx)}{fg-eh}\right)}{h^2}$$

$$= \frac{ajx}{h} + \frac{(525h-gj)\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)\log\left(\frac{f(g+hx)}{fg-eh}\right)}{h^2}$$

$$= \frac{ajx}{h} - \frac{bjpqx}{h} + \frac{bj(e+fx)\log\left(c(d(e+fx)^p)^q\right)}{fh} + \frac{(525h-}{}$$

Mathematica [A]
time = 0.08, size = 120, normalized size = 0.93

$$\frac{ahjx - bhjpqx + \frac{bhj(e+fx)\log(c(d(e+fx)^p)^q)}{f} + (hi-gj)\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)\log\left(\frac{f(g+hx)}{fg-eh}\right) + b(hi-gj)pq\text{Li}_2\left(\frac{h(e+fx)}{-fg+eh}\right)}{h^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((i + j*x)*(a + b*Log[c*(d*(e + f*x)^p)^q]))/(g + h*x),x]
```

```
[Out] (a*h*j*x - b*h*j*p*q*x + (b*h*j*(e + f*x)*Log[c*(d*(e + f*x)^p)^q])/f + (h*
i - g*j)*(a + b*Log[c*(d*(e + f*x)^p)^q])*Log[(f*(g + h*x))/(f*g - e*h)] +
b*(h*i - g*j)*p*q*PolyLog[2, (h*(e + f*x))/(-(f*g) + e*h)])/h^2
```

Maple [F]
time = 0.19, size = 0, normalized size = 0.00

$$\int \frac{(jx+i)\left(a+b\ln\left(c(d(fx+e)^p)^q\right)\right)}{hx+g}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((j*x+i)*(a+b*ln(c*(d*(f*x+e)^p)^q))/(h*x+g),x)
```

```
[Out] int((j*x+i)*(a+b*ln(c*(d*(f*x+e)^p)^q))/(h*x+g),x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((j*x+i)*(a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g),x, algorithm="maxima
")
```

```
[Out] a*j*(x/h - g*log(h*x + g)/h^2) + I*a*log(h*x + g)/h + integrate(((j*q*log(d
) + j*log(c))*b*x + (I*q*log(d) + I*log(c))*b + (b*j*x + I*b)*log(((f*x + e
)^p)^q))/(h*x + g), x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((j*x+i)*(a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g),x, algorithm="fricas
")
```

```
[Out] integral((a*j*x + (b*j*p*q*x + I*b*p*q)*log(f*x + e) + (b*j*x + I*b)*log(c)
 + (b*j*q*x + I*b*q)*log(d) + I*a)/(h*x + g), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a + b\log(c(d(e + fx)^p)^q))(i + jx)}{g + hx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((j*x+i)*(a+b*ln(c*(d*(f*x+e)**p)**q))/(h*x+g),x)
```

```
[Out] Integral((a + b*log(c*(d*(e + f*x)**p)**q))*(i + j*x)/(g + h*x), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((j*x+i)*(a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g),x, algorithm="giac")
```

```
[Out] integrate((j*x + I)*(b*log(((f*x + e)^p*d)^q*c) + a)/(h*x + g), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(i+j\,x)\,\left(a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)\right)}{g+h\,x} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((i + j*x)*(a + b*log(c*(d*(e + f*x)^p)^q)))/(g + h*x),x)
[Out] int(((i + j*x)*(a + b*log(c*(d*(e + f*x)^p)^q)))/(g + h*x), x)
```

3.526 $\int \frac{a+b\log(c(d(e+fx)^p)^q)}{g+hx}\,dx$

Optimal. Leaf size=68

$$\frac{\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)\log\left(\frac{f(g+hx)}{fg-eh}\right)}{h}+\frac{bpq\text{Li}_2\left(-\frac{h(e+fx)}{fg-eh}\right)}{h}$$

```
[Out] (a+b*ln(c*(d*(f*x+e)^p)^q))*ln(f*(h*x+g)/(-e*h+f*g))/h+b*p*q*polylog(2,-h*(
f*x+e)/(-e*h+f*g))/h
```

Rubi [A]
time = 0.08, antiderivative size = 68, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.154, Rules used = {2441, 2440, 2438, 2495}

$$\frac{bpq\text{PolyLog}\left(2,-\frac{h(e+fx)}{fg-eh}\right)}{h}+\frac{\log\left(\frac{f(g+hx)}{fg-eh}\right)\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)}{h}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])/(g + h*x),x]
```

```
[Out] ((a + b*Log[c*(d*(e + f*x)^p)^q])*Log[(f*(g + h*x))/(f*g - e*h)])/h + (b*p*
q*PolyLog[2, -((h*(e + f*x))/(f*g - e*h))])/h
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + c*e*(x/g)])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2441

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d + e*x
)^n])/g), x] - Dist[b*e*(n/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2495

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] && !IntegerQ[n] && !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{a+b\log\left(c(d(e+fx)^p)^q\right)}{g+hx}\,dx = \text{Subst}\left(\int \frac{a+b\log\left(cd^q(e+fx)^{pq}\right)}{g+hx}\,dx, cd^q(e+fx)^{pq}, c(d(e+fx)^p)^q\right)$$

$$= \frac{\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)\log\left(\frac{f(g+hx)}{fg-eh}\right)}{h} - \text{Subst}\left(\frac{(bfpq)\int \frac{\log\left(\frac{f(g+hx)}{fg-eh}\right)}{e+fx}}{h}\right.$$

$$= \frac{\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)\log\left(\frac{f(g+hx)}{fg-eh}\right)}{h} - \text{Subst}\left(\frac{(bpq)\text{Subst}\left(\int \frac{\log(1+}{}\right.}{}\right.$$

$$= \frac{\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)\log\left(\frac{f(g+hx)}{fg-eh}\right)}{h} + \frac{bpq\text{Li}_2\left(-\frac{h(e+fx)}{fg-eh}\right)}{h}$$

Mathematica [**A**]
time = 0.01, size = 67, normalized size = 0.99

$$\frac{\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)\log\left(\frac{f(g+hx)}{fg-eh}\right)}{h} + \frac{bpq\text{Li}_2\left(\frac{h(e+fx)}{-fg+eh}\right)}{h}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])/(g + h*x),x]
```

```
[Out] ((a + b*Log[c*(d*(e + f*x)^p)^q])*Log[(f*(g + h*x))/(f*g - e*h)])/h + (b*p*
q*PolyLog[2, (h*(e + f*x))/(-(f*g) + e*h)])/h
```

Maple [**F**]
time = 0.03, size = 0, normalized size = 0.00

$$\int \frac{a+b\ln\left(c(d(fx+e)^p)^q\right)}{hx+g}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(d*(f*x+e)^p)^q))/(h*x+g),x)
```

```
[Out] int((a+b*ln(c*(d*(f*x+e)^p)^q))/(h*x+g),x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g),x, algorithm="maxima")
[Out] b*integrate((q*log(d) + log(((f*x + e)^p)^q) + log(c))/(h*x + g), x) + a*lo
g(h*x + g)/h
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g),x, algorithm="fricas")
[Out] integral((b*log(((f*x + e)^p*d)^q*c) + a)/(h*x + g), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{a + b \log \left(c \left(d \left(e + f x\right)^{p}\right)^{q}\right)}{g + h x}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))/(h*x+g),x)
[Out] Integral((a + b*log(c*(d*(e + f*x)**p)**q))/(g + h*x), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g),x, algorithm="giac")
[Out] integrate((b*log(((f*x + e)^p*d)^q*c) + a)/(h*x + g), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)}{g+h\,x} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d*(e + f*x)^p)^q))/(g + h*x),x)
[Out] int((a + b*log(c*(d*(e + f*x)^p)^q))/(g + h*x), x)
```

3.527 $\int \frac{a+b\log(c(d(e+fx)^p)^q)}{(g+hx)(i+jx)}\,dx$

Optimal. Leaf size=165

$$\frac{(a+b\log(c(d(e+fx)^p)^q))\log\left(\frac{f(g+hx)}{fg-eh}\right)}{hi-gj}-\frac{(a+b\log(c(d(e+fx)^p)^q))\log\left(\frac{f(i+jx)}{fi-ej}\right)}{hi-gj}+\frac{bpq\text{Li}_2\left(-\frac{h(e+fx)}{fg-eh}\right)}{hi-gj}-\text{-}$$

```
[Out] (a+b*ln(c*(d*(f*x+e)^p)^q))*ln(f*(h*x+g)/(-e*h+f*g))/(-g*j+h*i)-(a+b*ln(c*(
d*(f*x+e)^p)^q))*ln(f*(j*x+i)/(-e*j+f*i))/(-g*j+h*i)+b*p*q*polylog(2,-h*(f*
x+e)/(-e*h+f*g))/(-g*j+h*i)-b*p*q*polylog(2,-j*(f*x+e)/(-e*j+f*i))/(-g*j+h*
i)
```

Rubi [A]
time = 0.31, antiderivative size = 165, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 5, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.152, Rules used = {2465, 2441, 2440, 2438, 2495}

$$\frac{bpq\text{PolyLog}\left(2,-\frac{h(e+fx)}{fg-eh}\right)}{hi-gj}-\frac{bpq\text{PolyLog}\left(2,-\frac{j(e+fx)}{fi-ej}\right)}{hi-gj}+\frac{\log\left(\frac{f(g+hx)}{fg-eh}\right)(a+b\log(c(d(e+fx)^p)^q))}{hi-gj}-\frac{\log\left(\frac{f(i+jx)}{fi-ej}\right)(a+b\log(c(d(e+fx)^p)^q))}{hi-gj}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])/((g + h*x)*(i + j*x)),x]
```

```
[Out] ((a + b*Log[c*(d*(e + f*x)^p)^q])*Log[(f*(g + h*x))/(f*g - e*h)])/(h*i - g*
j) - ((a + b*Log[c*(d*(e + f*x)^p)^q])*Log[(f*(i + j*x))/(f*i - e*j)])/(h*i
 - g*j) + (b*p*q*PolyLog[2, -((h*(e + f*x))/(f*g - e*h))])/(h*i - g*j) - (b
*p*q*PolyLog[2, -((j*(e + f*x))/(f*i - e*j))])/(h*i - g*j)
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + c*e*(x/g)])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2441

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d + e*x
)^n])/g), x] - Dist[b*e*(n/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
```

```
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2465

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2495

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{a+b\log\left(c(d(e+fx)^p)^q\right)}{(g+hx)(527+jx)}\,dx = \text{Subst}\left(\int \frac{a+b\log\left(cd^q(e+fx)^{pq}\right)}{(g+hx)(527+jx)}\,dx, cd^q(e+fx)^{pq}, c(d(e+fx)^p)^q\right)$$

$$= \text{Subst}\left(\int \left(\frac{h(a+b\log\left(cd^q(e+fx)^{pq}\right))}{(527h-gj)(g+hx)} - \frac{j(a+b\log\left(cd^q(e+fx)^{pq}\right))}{(527h-gj)(527+jx)}\right) d\right.$$

$$= \text{Subst}\left(\frac{h\int \frac{a+b\log(cd^q(e+fx)^{pq})}{g+hx}\,dx}{527h-gj}, cd^q(e+fx)^{pq}, c(d(e+fx)^p)^q\right) - \text{Subst}\left(\right.$$

$$= \frac{(a+b\log\left(c(d(e+fx)^p)^q\right))\log\left(\frac{f(g+hx)}{fg-eh}\right)}{527h-gj} - \frac{(a+b\log\left(c(d(e+fx)^p)^q\right))\,\text{lo}}{527h-gj}$$

$$= \frac{(a+b\log\left(c(d(e+fx)^p)^q\right))\log\left(\frac{f(g+hx)}{fg-eh}\right)}{527h-gj} - \frac{(a+b\log\left(c(d(e+fx)^p)^q\right))\,\text{lo}}{527h-gj}$$

$$= \frac{(a+b\log\left(c(d(e+fx)^p)^q\right))\log\left(\frac{f(g+hx)}{fg-eh}\right)}{527h-gj} - \frac{(a+b\log\left(c(d(e+fx)^p)^q\right))\,\text{lo}}{527h-gj}$$

Mathematica [A]
time = 0.05, size = 117, normalized size = 0.71

$$\frac{(a+b\log\left(c(d(e+fx)^p)^q\right))\left(\log\left(\frac{f(g+hx)}{fg-eh}\right)-\log\left(\frac{f(i+jx)}{fi-ej}\right)\right)+bpq\text{Li}_2\left(\frac{h(e+fx)}{-fg+eh}\right)-bpq\text{Li}_2\left(\frac{j(e+fx)}{-fi+ej}\right)}{hi-gj}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])/((g + h*x)*(i + j*x)),x]
```

```
[Out] ((a + b*Log[c*(d*(e + f*x)^p)^q])*(Log[(f*(g + h*x))/(f*g - e*h)] - Log[(f*
(i + j*x))/(f*i - e*j)]) + b*p*q*PolyLog[2, (h*(e + f*x))/(-(f*g) + e*h)] -
 b*p*q*PolyLog[2, (j*(e + f*x))/(-(f*i) + e*j)])/(h*i - g*j)
```

Maple [F]
time = 0.40, size = 0, normalized size = 0.00

$$\int \frac{a+b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)}{\left(hx+g\right)\left(jx+i\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(d*(f*x+e)^p)^q))/(h*x+g)/(j*x+i),x)
```

```
[Out] int((a+b*ln(c*(d*(f*x+e)^p)^q))/(h*x+g)/(j*x+i),x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g)/(j*x+i),x, algorithm="maxima
")
```

```
[Out] -a*(log(h*x + g)/(g*j - I*h) - log(j*x + I)/(g*j - I*h)) + b*integrate((q*l
og(d) + log(((f*x + e)^p)^q) + log(c))/(h*j*x^2 + (g*j + I*h)*x + I*g), x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g)/(j*x+i),x, algorithm="fricas
")
```

```
[Out] integral((b*p*q*log(f*x + e) + b*q*log(d) + b*log(c) + a)/(h*j*x^2 + (g*j +
 I*h)*x + I*g), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{a+b\log\left(c\left(d\left(e+fx\right)^{p}\right)^{q}\right)}{\left(g+hx\right)\left(i+jx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))/(h*x+g)/(j*x+i),x)
[Out] Integral((a + b*log(c*(d*(e + f*x)**p)**q))/((g + h*x)*(i + j*x)), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g)/(j*x+i),x, algorithm="giac")
[Out] integrate((b*log(((f*x + e)^p*d)^q*c) + a)/((h*x + g)*(j*x + I)), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)}{\left(g+h\,x\right)\,\left(i+j\,x\right)} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d*(e + f*x)^p)^q))/((g + h*x)*(i + j*x)),x)
[Out] int((a + b*log(c*(d*(e + f*x)^p)^q))/((g + h*x)*(i + j*x)), x)
```

3.528 $\int \frac{a+b\log(c(d(e+fx)^p)^q)}{(g+hx)(i+jx)^2}\,dx$

Optimal. Leaf size=268

$$-\frac{bfpq\log(e+fx)}{(fi-ej)(hi-gj)}+\frac{a+b\log\left(c(d(e+fx)^p)^q\right)}{(hi-gj)(i+jx)}+\frac{h(a+b\log\left(c(d(e+fx)^p)^q\right))\log\left(\frac{f(g+hx)}{fg-eh}\right)}{(hi-gj)^2}+\frac{bfpq\log(i-}{(fi-ej)(hi}$$

```
[Out] -b*f*p*q*ln(f*x+e)/(-e*j+f*i)/(-g*j+h*i)+(a+b*ln(c*(d*(f*x+e)^p)^q))/(-g*j+
h*i)/(j*x+i)+h*(a+b*ln(c*(d*(f*x+e)^p)^q))*ln(f*(h*x+g)/(-e*h+f*g))/(-g*j+h
*i)^2+b*f*p*q*ln(j*x+i)/(-e*j+f*i)/(-g*j+h*i)-h*(a+b*ln(c*(d*(f*x+e)^p)^q))
*ln(f*(j*x+i)/(-e*j+f*i))/(-g*j+h*i)^2+b*h*p*q*polylog(2,-h*(f*x+e)/(-e*h+f
*g))/(-g*j+h*i)^2-b*h*p*q*polylog(2,-j*(f*x+e)/(-e*j+f*i))/(-g*j+h*i)^2
```

Rubi [A]

time = 0.40, antiderivative size = 268, normalized size of antiderivative = 1.00, number of steps used = 13, number of rules used = 8, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.242$, Rules used = {2465, 2441, 2440, 2438, 2442, 36, 31, 2495}

$$\frac{bhpq\text{PolyLog}\left(2,-\frac{h(e+fx)}{fg-eh}\right)}{(hi-gj)^2}-\frac{bhpq\text{PolyLog}\left(2,-\frac{j(e+fx)}{fi-ej}\right)}{(hi-gj)^2}+\frac{a+b\log\left(c(d(e+fx)^p)^q\right)}{(i+jx)(hi-gj)}+\frac{h\log\left(\frac{f(g+hx)}{fg-eh}\right)\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)}{(hi-gj)^2}-\frac{h\log\left(\frac{f(i+jx)}{fi-ej}\right)\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)}{(hi-gj)^2}-\frac{bfpq\log(e+fx)}{(fi-ej)(hi-gj)}+\frac{bfpq\log(i+jx)}{(fi-ej)(hi-gj)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])/((g + h*x)*(i + j*x)^2),x]
```

```
[Out] -((b*f*p*q*Log[e + f*x])/((f*i - e*j)*(h*i - g*j))) + (a + b*Log[c*(d*(e +
f*x)^p)^q])/((h*i - g*j)*(i + j*x)) + (h*(a + b*Log[c*(d*(e + f*x)^p)^q])*L
og[(f*(g + h*x))/(f*g - e*h)])/(h*i - g*j)^2 + (b*f*p*q*Log[i + j*x])/((f*i
 - e*j)*(h*i - g*j)) - (h*(a + b*Log[c*(d*(e + f*x)^p)^q])*Log[(f*(i + j*x)
)/(f*i - e*j)])/(h*i - g*j)^2 + (b*h*p*q*PolyLog[2, -((h*(e + f*x))/(f*g -
e*h))])/(h*i - g*j)^2 - (b*h*p*q*PolyLog[2, -((j*(e + f*x))/(f*i - e*j))])/
(h*i - g*j)^2
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 36

```
Int[1/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))), x_Symbol] :> Dist[b/(b*c
 - a*d), Int[1/(a + b*x), x], x] - Dist[d/(b*c - a*d), Int[1/(c + d*x), x],
 x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + c*e*(x/g)])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2441

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d + e*x
)^n])/g), x] - Dist[b*e*(n/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2442

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[(f + g*x)^(q + 1)*((a + b*Log[c*(d + e*x)^n])/(
g*(q + 1))), x] - Dist[b*e*(n/(g*(q + 1))), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 2465

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2495

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{a+b\log\left(c(d(e+fx)^p)^q\right)}{(g+hx)(528+jx)^2}\,dx = \text{Subst}\left(\int \frac{a+b\log\left(cd^q(e+fx)^{pq}\right)}{(g+hx)(528+jx)^2}\,dx, cd^q(e+fx)^{pq}, c(d(e+fx)^p)^q\right)$$

$$= \text{Subst}\left(\int \left(\frac{h^2\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)}{(528h-gj)^2(g+hx)} - \frac{j\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)}{(528h-gj)(528+jx)^2}\right.\right.$$

$$= \text{Subst}\left(\frac{h^2\int \frac{a+b\log\left(cd^q(e+fx)^{pq}\right)}{g+hx}\,dx}{(528h-gj)^2}, cd^q(e+fx)^{pq}, c(d(e+fx)^p)^q\right) - \text{Subs}$$

$$= \frac{a+b\log\left(c(d(e+fx)^p)^q\right)}{(528h-gj)(528+jx)} + \frac{h\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)\log\left(\frac{f(g+hx)}{fg-eh}\right)}{(528h-gj)^2}$$

$$= \frac{a+b\log\left(c(d(e+fx)^p)^q\right)}{(528h-gj)(528+jx)} + \frac{h\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)\log\left(\frac{f(g+hx)}{fg-eh}\right)}{(528h-gj)^2}$$

$$= -\frac{bfpq\log(e+fx)}{(528f-ej)(528h-gj)} + \frac{a+b\log\left(c(d(e+fx)^p)^q\right)}{(528h-gj)(528+jx)} + \frac{h(a+b\log(c(}{}$$

Mathematica [A]
time = 0.21, size = 527, normalized size = 1.97

$$\frac{a(fi-ej)(hi-gj)-b(fi-ej)(hi-gj)pq\log(e+fx)+bej(-hi+gj)pq\log(e+fx)+bfj(-hi+gj)pqx\log(e+fx)+b(fi-ej)(hi-gj)\log\left(c(d(e+fx)^p)^q\right)+ah(fi-ej)(i+jx)\log(g+hx)-bh(fi-ej)pq(i+jx)\log(e+fx)\log(g+hx)+bh(fi-ej)(i+jx)\log\left(c(d(e+fx)^p)^q\right)\log(g+hx)+bh(fi-ej)pq(i+jx)\log(e+fx)\log\left(\frac{f(g+hx)}{fg-eh}\right)+bfi(hi-gj)pq\log(i+jx)+bfj(hi-gj)pqx\log(i+jx)-ah(fi-ej)(i+jx)\log(i+jx)+bh(fi-ej)pq(i+jx)\log(e+fx)\log(i+jx)-bh(fi-ej)(i+jx)\log\left(c(d(e+fx)^p)^q\right)\log(i+jx)-bh(fi-ej)pq(i+jx)\log(e+fx)\log\left(\frac{f(i+jx)}{fi-ej}\right)+bh(fi-ej)pq(i+jx)\text{Li}_2\left(\frac{h(e+fx)}{-fg+eh}\right)-bh(fi-ej)pq(i+jx)\text{Li}_2\left(\frac{j(e+fx)}{-fi+ej}\right)}{(fi-ej)(hi-gj)^2(i+jx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])/((g + h*x)*(i + j*x)^2),x]
```

```
[Out] (a*(f*i - e*j)*(h*i - g*j) - b*(f*i - e*j)*(h*i - g*j)*p*q*Log[e + f*x] + b
*e*j*(-(h*i) + g*j)*p*q*Log[e + f*x] + b*f*j*(-(h*i) + g*j)*p*q*x*Log[e + f
*x] + b*(f*i - e*j)*(h*i - g*j)*Log[c*(d*(e + f*x)^p)^q] + a*h*(f*i - e*j)*
(i + j*x)*Log[g + h*x] - b*h*(f*i - e*j)*p*q*(i + j*x)*Log[e + f*x]*Log[g +
 h*x] + b*h*(f*i - e*j)*(i + j*x)*Log[c*(d*(e + f*x)^p)^q]*Log[g + h*x] + b
*h*(f*i - e*j)*p*q*(i + j*x)*Log[e + f*x]*Log[(f*(g + h*x))/(f*g - e*h)] +
b*f*i*(h*i - g*j)*p*q*Log[i + j*x] + b*f*j*(h*i - g*j)*p*q*x*Log[i + j*x] -
 a*h*(f*i - e*j)*(i + j*x)*Log[i + j*x] + b*h*(f*i - e*j)*p*q*(i + j*x)*Log
[e + f*x]*Log[i + j*x] - b*h*(f*i - e*j)*(i + j*x)*Log[c*(d*(e + f*x)^p)^q]
*Log[i + j*x] - b*h*(f*i - e*j)*p*q*(i + j*x)*Log[e + f*x]*Log[(f*(i + j*x)
)/(f*i - e*j)] + b*h*(f*i - e*j)*p*q*(i + j*x)*PolyLog[2, (h*(e + f*x))/(-(
f*g) + e*h)] - b*h*(f*i - e*j)*p*q*(i + j*x)*PolyLog[2, (j*(e + f*x))/(-(f*
i) + e*j)])/((f*i - e*j)*(h*i - g*j)^2*(i + j*x))
```

Maple [F]
time = 0.33, size = 0, normalized size = 0.00

$$\int \frac{a+b\ln\left(c\left(d(fx+e)^{p}\right)^{q}\right)}{(hx+g)\,(jx+i)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(d*(f*x+e)^p)^q))/(h*x+g)/(j*x+i)^2,x)
```

```
[Out] int((a+b*ln(c*(d*(f*x+e)^p)^q))/(h*x+g)/(j*x+i)^2,x)
```

Maxima [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g)/(j*x+i)^2,x, algorithm="maxi
ma")
```

```
[Out] Exception raised: RuntimeError >> ECL says: THROW: The catch RAT-ERR is und
efined.
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g)/(j*x+i)^2,x, algorithm="fric
as")
```

```
[Out] integral((b*p*q*log(f*x + e) + b*q*log(d) + b*log(c) + a)/(h*j^2*x^3 + (g*j
^2 + 2*I*h*j)*x^2 + (2*I*g*j - h)*x - g), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{a+b\log\left(c\left(d(e+fx)^{p}\right)^{q}\right)}{(g+hx)\,(i+jx)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))/(h*x+g)/(j*x+i)**2,x)
```

```
[Out] Integral((a + b*log(c*(d*(e + f*x)**p)**q))/((g + h*x)*(i + j*x)**2), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g)/(j*x+i)^2,x, algorithm="giac
")
[Out] integrate((b*log(((f*x + e)^p*d)^q*c) + a)/((h*x + g)*(j*x + I)^2), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{a+b\ln\left(c\left(d\left(e+f\,x\right)^p\right)^q\right)}{\left(g+h\,x\right)\,{\left(i+j\,x\right)}^2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d*(e + f*x)^p)^q))/((g + h*x)*(i + j*x)^2),x)
[Out] int((a + b*log(c*(d*(e + f*x)^p)^q))/((g + h*x)*(i + j*x)^2), x)
```

3.529 $\int \frac{a+b\log(c(d(e+fx)^p)^q)}{(g+hx)(i+jx)^3}\,dx$

Optimal. Leaf size=425

$$-\frac{bfpq}{2(fi-ej)(hi-gj)(i+jx)}-\frac{bfhpq\log(e+fx)}{(fi-ej)(hi-gj)^2}-\frac{bf^2pq\log(e+fx)}{2(fi-ej)^2(hi-gj)}+\frac{a+b\log\left(c(d(e+fx)^p)^q\right)}{2(hi-gj)(i+jx)^2}+\frac{h(a$$

```
[Out] -1/2*b*f*p*q/(-e*j+f*i)/(-g*j+h*i)/(j*x+i)-b*f*h*p*q*ln(f*x+e)/(-e*j+f*i)/(
-g*j+h*i)^2-1/2*b*f^2*p*q*ln(f*x+e)/(-e*j+f*i)^2/(-g*j+h*i)+1/2*(a+b*ln(c*(
d*(f*x+e)^p)^q))/(-g*j+h*i)/(j*x+i)^2+h*(a+b*ln(c*(d*(f*x+e)^p)^q))/(-g*j+h
*i)^2/(j*x+i)+h^2*(a+b*ln(c*(d*(f*x+e)^p)^q))*ln(f*(h*x+g)/(-e*h+f*g))/(-g*
j+h*i)^3+b*f*h*p*q*ln(j*x+i)/(-e*j+f*i)/(-g*j+h*i)^2+1/2*b*f^2*p*q*ln(j*x+i
)/(-e*j+f*i)^2/(-g*j+h*i)-h^2*(a+b*ln(c*(d*(f*x+e)^p)^q))*ln(f*(j*x+i)/(-e*
j+f*i))/(-g*j+h*i)^3+b*h^2*p*q*polylog(2,-h*(f*x+e)/(-e*h+f*g))/(-g*j+h*i)^
3-b*h^2*p*q*polylog(2,-j*(f*x+e)/(-e*j+f*i))/(-g*j+h*i)^3
```

Rubi [A]

time = 0.56, antiderivative size = 425, normalized size of antiderivative = 1.00, number of steps used = 16, number of rules used = 9, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.273$, Rules used = {2465, 2441, 2440, 2438, 2442, 46, 36, 31, 2495}

$$\frac{bh^2pq\text{PolyLog}\left(2,-\frac{h(e+fx)}{fg-eh}\right)}{(hi-gj)^3}-\frac{bh^2pq\text{PolyLog}\left(2,-\frac{j(e+fx)}{fi-ej}\right)}{(hi-gj)^3}+\frac{h^2\log\left(\frac{f(g+hx)}{fg-eh}\right)\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)}{(hi-gj)^3}-\frac{h^2\log\left(\frac{f(i+jx)}{fi-ej}\right)\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)}{(hi-gj)^3}+\frac{h\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)}{(i+jx)(hi-gj)^2}+\frac{a+b\log\left(c(d(e+fx)^p)^q\right)}{2(i+jx)^2(hi-gj)}-\frac{bf^2pq\log(e+fx)}{2(fi-ej)^2(hi-gj)}+\frac{bf^2pq\log(i+jx)}{2(fi-ej)^2(hi-gj)}-\frac{bfpq}{2(i+jx)(fi-ej)(hi-gj)}-\frac{bfhpq\log(e+fx)}{(fi-ej)(hi-gj)^2}+\frac{bfhpq\log(i+jx)}{(fi-ej)(hi-gj)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])/((g + h*x)*(i + j*x)^3),x]
```

```
[Out] -1/2*(b*f*p*q)/((f*i - e*j)*(h*i - g*j)*(i + j*x)) - (b*f*h*p*q*Log[e + f*x
])/((f*i - e*j)*(h*i - g*j)^2) - (b*f^2*p*q*Log[e + f*x])/(2*(f*i - e*j)^2*
(h*i - g*j)) + (a + b*Log[c*(d*(e + f*x)^p)^q])/(2*(h*i - g*j)*(i + j*x)^2)
 + (h*(a + b*Log[c*(d*(e + f*x)^p)^q]))/((h*i - g*j)^2*(i + j*x)) + (h^2*(a
 + b*Log[c*(d*(e + f*x)^p)^q])*Log[(f*(g + h*x))/(f*g - e*h)])/(h*i - g*j)^
3 + (b*f*h*p*q*Log[i + j*x])/((f*i - e*j)*(h*i - g*j)^2) + (b*f^2*p*q*Log[i
 + j*x])/(2*(f*i - e*j)^2*(h*i - g*j)) - (h^2*(a + b*Log[c*(d*(e + f*x)^p)^
q])*Log[(f*(i + j*x))/(f*i - e*j)])/(h*i - g*j)^3 + (b*h^2*p*q*PolyLog[2, -
((h*(e + f*x))/(f*g - e*h))])/(h*i - g*j)^3 - (b*h^2*p*q*PolyLog[2, -((j*(e
 + f*x))/(f*i - e*j))])/(h*i - g*j)^3
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 36

```
Int[1/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))), x_Symbol] :> Dist[b/(b*c
 - a*d), Int[1/(a + b*x), x], x] - Dist[d/(b*c - a*d), Int[1/(c + d*x), x],
```

```
x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0]
```

Rule 46

```
Int[((a_) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[E
xpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m +
 n + 2, 0])
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + c*e*(x/g)])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2441

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d + e*x
)^n])/g), x] - Dist[b*e*(n/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2442

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[(f + g*x)^(q + 1)*((a + b*Log[c*(d + e*x)^n])/(
g*(q + 1))), x] - Dist[b*e*(n/(g*(q + 1))), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 2465

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2495

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
```

```
c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\begin{aligned}
\int \frac{a+b\log\left(c(d(e+fx)^p)^q\right)}{(g+hx)(529+jx)^3}\,dx &= \text{Subst}\left(\int \frac{a+b\log\left(cd^q(e+fx)^{pq}\right)}{(g+hx)(529+jx)^3}\,dx, cd^q(e+fx)^{pq}, c(d(e+fx)^p)^q\right)\\
&= \text{Subst}\left(\int \left(\frac{h^3(a+b\log\left(cd^q(e+fx)^{pq}\right))}{(529h-gj)^3(g+hx)} - \frac{j(a+b\log\left(cd^q(e+fx)^{pq}\right))}{(529h-gj)(529+jx)^3} -\right.\right.\\
&= \text{Subst}\left(\frac{h^3\int \frac{a+b\log(cd^q(e+fx)^{pq})}{g+hx}\,dx}{(529h-gj)^3}, cd^q(e+fx)^{pq}, c(d(e+fx)^p)^q\right) - \text{Subst}\\
&= \frac{a+b\log\left(c(d(e+fx)^p)^q\right)}{2(529h-gj)(529+jx)^2} + \frac{h(a+b\log\left(c(d(e+fx)^p)^q\right))}{(529h-gj)^2(529+jx)} + \frac{h^2(a+b\log\left(\right.}{}\\
&= \frac{a+b\log\left(c(d(e+fx)^p)^q\right)}{2(529h-gj)(529+jx)^2} + \frac{h(a+b\log\left(c(d(e+fx)^p)^q\right))}{(529h-gj)^2(529+jx)} + \frac{h^2(a+b\log\left(\right.}{}\\
&= -\frac{bfpq}{2(529f-ej)(529h-gj)(529+jx)} - \frac{bfhpq\log(e+fx)}{(529f-ej)(529h-gj)^2} - \frac{}{2(52}
\end{aligned}$$

Mathematica [A]
time = 0.53, size = 434, normalized size = 1.02

$$\frac{\frac{(hi-gj)^2(a-bpq\log(e+fx)+b\log(c(d(e+fx)^p)^q))}{(i+jx)^2}+\frac{2h(hi-gj)(a-bpq\log(e+fx)+b\log(c(d(e+fx)^p)^q))}{i+jx}+2h^2(a-bpq\log(e+fx)+b\log\left(c(d(e+fx)^p)^q\right))\log(g+hx)-2h^2(a-bpq\log(e+fx)+b\log\left(c(d(e+fx)^p)^q\right))\log(i+jx)+bpq\left(\frac{2h(hi-gj)(-j(e+fx)\log(e+fx)+f(i+jx)\log(i+jx))}{(fi-ej)(i+jx)}+\frac{(hi-gj)^2(j(e+fx)(ej-f(2i+jx))\log(e+fx)+f(i+jx)(-fi+ej+f(i+jx)\log(i+jx)))}{(fi-ej)^2(i+jx)^2}+2h^2\left(\log(e+fx)\log\left(\frac{f(g+hx)}{fg-eh}\right)+\text{Li}_2\left(\frac{h(e+fx)}{-fg+eh}\right)\right)-2h^2\left(\log(e+fx)\log\left(\frac{f(i+jx)}{fi-ej}\right)+\text{Li}_2\left(\frac{j(e+fx)}{-fi+ej}\right)\right)\right)}{2(hi-gj)^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])/((g + h*x)*(i + j*x)^3),x]
```

```
[Out] (((h*i - g*j)^2*(a - b*p*q*Log[e + f*x] + b*Log[c*(d*(e + f*x)^p)^q]))/(i +
 j*x)^2 + (2*h*(h*i - g*j)*(a - b*p*q*Log[e + f*x] + b*Log[c*(d*(e + f*x)^p
)^q]))/(i + j*x) + 2*h^2*(a - b*p*q*Log[e + f*x] + b*Log[c*(d*(e + f*x)^p)^
q])*Log[g + h*x] - 2*h^2*(a - b*p*q*Log[e + f*x] + b*Log[c*(d*(e + f*x)^p)^
q])*Log[i + j*x] + b*p*q*((2*h*(h*i - g*j)*(-(j*(e + f*x)*Log[e + f*x]) + f
*(i + j*x)*Log[i + j*x]))/((f*i - e*j)*(i + j*x)) + ((h*i - g*j)^2*(j*(e +
f*x)*(e*j - f*(2*i + j*x))*Log[e + f*x] + f*(i + j*x)*(-(f*i) + e*j + f*(i
+ j*x)*Log[i + j*x])))/((f*i - e*j)^2*(i + j*x)^2) + 2*h^2*(Log[e + f*x]*Lo
g[(f*(g + h*x))/(f*g - e*h)] + PolyLog[2, (h*(e + f*x))/(-(f*g) + e*h)]) -
```

```
2*h^2*(Log[e + f*x]*Log[(f*(i + j*x))/(f*i - e*j)] + PolyLog[2, (j*(e + f*x
))/(-(f*i) + e*j)])))/(2*(h*i - g*j)^3)
```

Maple [F]
time = 0.35, size = 0, normalized size = 0.00

$$\int \frac{a+b\ln \left(c(d(fx+e)^{p})^{q}\right)}{(hx+g)\left(jx+i\right)^{3}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(d*(f*x+e)^p)^q))/(h*x+g)/(j*x+i)^3,x)
```

```
[Out] int((a+b*ln(c*(d*(f*x+e)^p)^q))/(h*x+g)/(j*x+i)^3,x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g)/(j*x+i)^3,x, algorithm="maxi
ma")
```

```
[Out] integrate((b*log(((f*x + e)^p*d)^q*c) + a)/((h*x + g)*(j*x + I)^3), x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g)/(j*x+i)^3,x, algorithm="fric
as")
```

```
[Out] integral((b*p*q*log(f*x + e) + b*q*log(d) + b*log(c) + a)/(h*j^3*x^4 + (g*j
^3 + 3*I*h*j^2)*x^3 - 3*(-I*g*j^2 + h*j)*x^2 - (3*g*j + I*h)*x - I*g), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{a+b\log \left(c(d(e+fx)^{p})^{q}\right)}{(g+hx)\left(i+jx\right)^{3}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))/(h*x+g)/(j*x+i)**3,x)
```

```
[Out] Integral((a + b*log(c*(d*(e + f*x)**p)**q))/((g + h*x)*(i + j*x)**3), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g)/(j*x+i)^3,x, algorithm="giac
")
[Out] integrate((b*log(((f*x + e)^p*d)^q*c) + a)/((h*x + g)*(j*x + I)^3), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)}{\left(g+h\,x\right)\,{\left(i+j\,x\right)}^3} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d*(e + f*x)^p)^q))/((g + h*x)*(i + j*x)^3),x)
[Out] int((a + b*log(c*(d*(e + f*x)^p)^q))/((g + h*x)*(i + j*x)^3), x)
```

3.530 $\int \frac{(i+jx)^2(a+b\log(c(d(e+fx)^p)^q))^2}{g+hx}\,dx$

Optimal. Leaf size=519

$$-\frac{2abj(fi-ej)pqx}{fh}-\frac{2abj(hi-gj)pqx}{h^2}+\frac{2b^2j(fi-ej)p^2q^2x}{fh}+\frac{2b^2j(hi-gj)p^2q^2x}{h^2}+\frac{b^2j^2p^2q^2(e+fx)^2}{4f^2h}-2b^2$$

```
[Out] -2*a*b*j*(-e*j+f*i)*p*q*x/f/h-2*a*b*j*(-g*j+h*i)*p*q*x/h^2+2*b^2*j*(-e*j+f*
i)*p^2*q^2*x/f/h+2*b^2*j*(-g*j+h*i)*p^2*q^2*x/h^2+1/4*b^2*j^2*p^2*q^2*(f*x+
e)^2/f^2/h-2*b^2*j*(-e*j+f*i)*p*q*(f*x+e)*ln(c*(d*(f*x+e)^p)^q)/f^2/h-2*b^2
*j*(-g*j+h*i)*p*q*(f*x+e)*ln(c*(d*(f*x+e)^p)^q)/f/h^2-1/2*b*j^2*p*q*(f*x+e)
^2*(a+b*ln(c*(d*(f*x+e)^p)^q))/f^2/h+j*(-e*j+f*i)*(f*x+e)*(a+b*ln(c*(d*(f*x
+e)^p)^q))^2/f^2/h+j*(-g*j+h*i)*(f*x+e)*(a+b*ln(c*(d*(f*x+e)^p)^q))^2/f/h^2
+1/2*j^2*(f*x+e)^2*(a+b*ln(c*(d*(f*x+e)^p)^q))^2/f^2/h+(-g*j+h*i)^2*(a+b*ln
(c*(d*(f*x+e)^p)^q))^2*ln(f*(h*x+g)/(-e*h+f*g))/h^3+2*b*(-g*j+h*i)^2*p*q*(a
+b*ln(c*(d*(f*x+e)^p)^q))*polylog(2,-h*(f*x+e)/(-e*h+f*g))/h^3-2*b^2*(-g*j+
h*i)^2*p^2*q^2*polylog(3,-h*(f*x+e)/(-e*h+f*g))/h^3
```

Rubi [A]

time = 0.89, antiderivative size = 519, normalized size of antiderivative = 1.00, number of steps used = 20, number of rules used = 13, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.371$, Rules used = {2465, 2436, 2333, 2332, 2443, 2481, 2421, 6724, 2448, 2437, 2342, 2341, 2495}

$$\frac{2bpq(hi-gj)^2\text{PolyLog}\left(2,-\frac{h(e+fx)}{fg-eh}\right)(a+b\log(c(d(e+fx)^p)^q))}{h^3}-\frac{2b^2p^2q^2(hi-gj)^2\text{PolyLog}\left(3,-\frac{h(e+fx)}{fg-eh}\right)}{h^3}+\frac{j(e+fx)(fi-ej)(a+b\log(c(d(e+fx)^p)^q))^2}{f^2h}-\frac{bj^2pq(e+fx)^2(a+b\log(c(d(e+fx)^p)^q))}{2f^2h}+\frac{j^2(e+fx)^2(a+b\log(c(d(e+fx)^p)^q))^2}{2f^2h}+\frac{(hi-gj)^2\log\left(\frac{f(g+hx)}{fg-eh}\right)(a+b\log(c(d(e+fx)^p)^q))^2}{h^3}+\frac{j(e+fx)(hi-gj)(a+b\log(c(d(e+fx)^p)^q))^2}{fh^2}-\frac{2abjpqx(fi-ej)}{fh}-\frac{2abjpqx(hi-gj)}{h^2}-\frac{2b^2jpq(e+fx)(fi-ej)\log(c(d(e+fx)^p)^q)}{f^2h}-\frac{2b^2jpq(e+fx)(hi-gj)\log(c(d(e+fx)^p)^q)}{fh^2}+\frac{b^2j^2p^2q^2(e+fx)^2}{4f^2h}+\frac{2b^2jp^2q^2x(fi-ej)}{fh}+\frac{2b^2jp^2q^2x(hi-gj)}{h^2}$$

Antiderivative was successfully verified.

```
[In] Int[((i + j*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])^2)/(g + h*x),x]
```

```
[Out] (-2*a*b*j*(f*i - e*j)*p*q*x)/(f*h) - (2*a*b*j*(h*i - g*j)*p*q*x)/h^2 + (2*b
^2*j*(f*i - e*j)*p^2*q^2*x)/(f*h) + (2*b^2*j*(h*i - g*j)*p^2*q^2*x)/h^2 + (
b^2*j^2*p^2*q^2*(e + f*x)^2)/(4*f^2*h) - (2*b^2*j*(f*i - e*j)*p*q*(e + f*x)
*Log[c*(d*(e + f*x)^p)^q])/(f^2*h) - (2*b^2*j*(h*i - g*j)*p*q*(e + f*x)*Log
[c*(d*(e + f*x)^p)^q])/(f*h^2) - (b*j^2*p*q*(e + f*x)^2*(a + b*Log[c*(d*(e
+ f*x)^p)^q]))/(2*f^2*h) + (j*(f*i - e*j)*(e + f*x)*(a + b*Log[c*(d*(e + f*
x)^p)^q])^2)/(f^2*h) + (j*(h*i - g*j)*(e + f*x)*(a + b*Log[c*(d*(e + f*x)^p
)^q])^2)/(f*h^2) + (j^2*(e + f*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])^2)/(2*
f^2*h) + ((h*i - g*j)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])^2*Log[(f*(g + h*x)
)/(f*g - e*h)])/h^3 + (2*b*(h*i - g*j)^2*p*q*(a + b*Log[c*(d*(e + f*x)^p)^q
])*PolyLog[2, -((h*(e + f*x))/(f*g - e*h))])/h^3 - (2*b^2*(h*i - g*j)^2*p^2
*q^2*PolyLog[3, -((h*(e + f*x))/(f*g - e*h))])/h^3
```

Rule 2332

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2333

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2341

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_.)*(x_))^(m_.), x_Symbol] :>
Simp[(d*x)^(m + 1)*((a + b*Log[c*x^n])/(d*(m + 1))), x] - Simp[b*n*((d*x)^(
m + 1)/(d*(m + 1)^2)), x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[m, -1]
```

Rule 2342

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_.)*(x_))^(m_.), x_Symbo
l] :> Simp[(d*x)^(m + 1)*((a + b*Log[c*x^n])^p/(d*(m + 1))), x] - Dist[b*n*
(p/(m + 1)), Int[(d*x)^m*(a + b*Log[c*x^n])^(p - 1), x], x] /; FreeQ[{a, b,
 c, d, m, n}, x] && NeQ[m, -1] && GtQ[p, 0]
```

Rule 2421

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> Simp[(-PolyLog[2, (-d)*f*x^m])*((a + b*Log[c
*x^n])^p/m), x] + Dist[b*n*(p/m), Int[PolyLog[2, (-d)*f*x^m]*((a + b*Log[c*
x^n])^(p - 1)/x), x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0
] && EqQ[d*e, 1]
```

Rule 2436

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2437

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[(f*(x/d))^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2443

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d
+ e*x)^n])^p/g), x] - Dist[b*e*n*(p/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]*
((a + b*Log[c*(d + e*x)^n])^(p - 1)/(d + e*x)), x], x] /; FreeQ[{a, b, c, d
```

```
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2448

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q*(a + b*Log[c*(d
 + e*x)^n])^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f -
 d*g, 0] && IGtQ[q, 0]
```

Rule 2465

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2481

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[(k*(x/d))^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + j*(x/e))^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2495

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rule 6724

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(530+jx)^2\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)^2}{g+hx}\,dx = \text{Subst}\left(\int \frac{(530+jx)^2\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^2}{g+hx}\,dx, cd^q(e\right.$$

$$= \text{Subst}\left(\int\left(\frac{j(530h-gj)\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^2}{h^2}+\frac{(53\right.\right.$$

$$= \text{Subst}\left(\frac{j\int(530+jx)\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^2\,dx}{h}, cd^q(e\right.$$

$$= \frac{(530h-gj)^2\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)^2\log\left(\frac{f(g+hx)}{fg-eh}\right)}{h^3}+\text{S}$$

$$= \frac{j(530h-gj)(e+fx)\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)^2}{fh^2}+\frac{(530h}{}$$

$$= -\frac{2abj(530h-gj)pqx}{h^2}+\frac{j(530h-gj)(e+fx)\left(a+b\log\left(c\right.\right.}{fh^2}$$

$$= -\frac{2abj(530h-gj)pqx}{h^2}+\frac{2b^2j(530h-gj)p^2q^2x}{h^2}-\frac{2b^2j(530}{}$$

$$= -\frac{2abj(530f-ej)pqx}{fh}-\frac{2abj(530h-gj)pqx}{h^2}+\frac{2b^2j(530h}{}$$

$$= -\frac{2abj(530f-ej)pqx}{fh}-\frac{2abj(530h-gj)pqx}{h^2}+\frac{2b^2j(530f}{}$$

Mathematica [A]
time = 0.44, size = 927, normalized size = 1.79

Antiderivative was successfully verified.

```
[In] Integrate[((i + j*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])^2)/(g + h*x),x]
```

```
[Out] (4*f^2*h*j*(2*h*i - g*j)*x*(a - b*p*q*Log[e + f*x] + b*Log[c*(d*(e + f*x)^p
)^q])^2 + 2*f^2*h^2*j^2*x^2*(a - b*p*q*Log[e + f*x] + b*Log[c*(d*(e + f*x)^
p)^q])^2 + 4*f^2*(h*i - g*j)^2*(a - b*p*q*Log[e + f*x] + b*Log[c*(d*(e + f*
x)^p)^q])^2*Log[g + h*x] - 8*b*f^2*h^2*i^2*p*q*(-a + b*p*q*Log[e + f*x] - b
*Log[c*(d*(e + f*x)^p)^q])*(Log[e + f*x]*Log[(f*(g + h*x))/(f*g - e*h)] + P
olyLog[2, (h*(e + f*x))/(-(f*g) + e*h)]) - 16*b*f*h*i*j*p*q*(-a + b*p*q*Log
[e + f*x] - b*Log[c*(d*(e + f*x)^p)^q])*(-(h*(e + f*x)) + Log[e + f*x]*(e*h
 + f*h*x - f*g*Log[(f*(g + h*x))/(f*g - e*h)]) - f*g*PolyLog[2, (h*(e + f*x
))/(-(f*g) + e*h)]) + 2*b*j^2*p*q*(-a + b*p*q*Log[e + f*x] - b*Log[c*(d*(e
+ f*x)^p)^q])*(f*h*(f*x*(-4*g + h*x) - 2*e*(2*g + h*x)) + 2*Log[e + f*x]*(h
*(e + f*x)*(2*f*g + e*h - f*h*x) - 2*f^2*g^2*Log[(f*(g + h*x))/(f*g - e*h)]
) - 4*f^2*g^2*PolyLog[2, (h*(e + f*x))/(-(f*g) + e*h)]) + 8*b^2*f*h*i*j*p^2
*q^2*(h*(2*f*x - 2*(e + f*x)*Log[e + f*x] + (e + f*x)*Log[e + f*x]^2) - f*g
*(Log[e + f*x]^2*Log[(f*(g + h*x))/(f*g - e*h)] + 2*Log[e + f*x]*PolyLog[2,
 (h*(e + f*x))/(-(f*g) + e*h)] - 2*PolyLog[3, (h*(e + f*x))/(-(f*g) + e*h)]
)) - b^2*j^2*p^2*q^2*(4*f*g*h*(2*f*x - 2*(e + f*x)*Log[e + f*x] + (e + f*x)
*Log[e + f*x]^2) + h^2*(f*x*(6*e - f*x) + (-6*e^2 - 4*e*f*x + 2*f^2*x^2)*Lo
g[e + f*x] + 2*(e^2 - f^2*x^2)*Log[e + f*x]^2) - 4*f^2*g^2*(Log[e + f*x]^2*
Log[(f*(g + h*x))/(f*g - e*h)] + 2*Log[e + f*x]*PolyLog[2, (h*(e + f*x))/(-
(f*g) + e*h)] - 2*PolyLog[3, (h*(e + f*x))/(-(f*g) + e*h)])) + 4*b^2*f^2*h^
2*i^2*p^2*q^2*(Log[e + f*x]^2*Log[(f*(g + h*x))/(f*g - e*h)] + 2*Log[e + f*
x]*PolyLog[2, (h*(e + f*x))/(-(f*g) + e*h)] - 2*PolyLog[3, (h*(e + f*x))/(-
(f*g) + e*h)]))/(4*f^2*h^3)
```

Maple [F]
time = 0.35, size = 0, normalized size = 0.00

$$\int \frac{(jx+i)^2 \left(a+b\ln\left(c\left(d\left(fx+e\right)^p\right)^q\right)\right)^2}{hx+g}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((j*x+i)^2*(a+b*ln(c*(d*(f*x+e)^p)^q))^2/(h*x+g),x)
```

```
[Out] int((j*x+i)^2*(a+b*ln(c*(d*(f*x+e)^p)^q))^2/(h*x+g),x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((j*x+i)^2*(a+b*log(c*(d*(f*x+e)^p)^q))^2/(h*x+g),x, algorithm="ma
xima")
```

```
[Out] 1/2*a^2*j^2*(2*g^2*log(h*x + g)/h^3 + (h*x^2 - 2*g*x)/h^2) + 2*I*a^2*j*(x/h
 - g*log(h*x + g)/h^2) - a^2*log(h*x + g)/h + integrate(-(2*(q*log(d) + log
```

```
(c))*a*b + (q^2*log(d)^2 + 2*q*log(c)*log(d) + log(c)^2)*b^2 - (2*(j^2*q*lo
g(d) + j^2*log(c))*a*b + (j^2*q^2*log(d)^2 + 2*j^2*q*log(c)*log(d) + j^2*lo
g(c)^2)*b^2)*x^2 - (b^2*j^2*x^2 + 2*I*b^2*j*x - b^2)*log(((f*x + e)^p)^q)^2
 + 2*(2*(-I*j*q*log(d) - I*j*log(c))*a*b + (-I*j*q^2*log(d)^2 - 2*I*j*q*log
(c)*log(d) - I*j*log(c)^2)*b^2)*x + 2*((q*log(d) + log(c))*b^2 - (a*b*j^2 +
 (j^2*q*log(d) + j^2*log(c))*b^2)*x^2 + a*b + 2*((-I*j*q*log(d) - I*j*log(c
))*b^2 - I*a*b*j)*x)*log(((f*x + e)^p)^q))/(h*x + g), x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((j*x+i)^2*(a+b*log(c*(d*(f*x+e)^p)^q))^2/(h*x+g),x, algorithm="fr
icas")
```

```
[Out] integral((a^2*j^2*x^2 + 2*I*a^2*j*x + (b^2*j^2*p^2*q^2*x^2 + 2*I*b^2*j*p^2*
q^2*x - b^2*p^2*q^2)*log(f*x + e)^2 + (b^2*j^2*x^2 + 2*I*b^2*j*x - b^2)*log
(c)^2 + (b^2*j^2*q^2*x^2 + 2*I*b^2*j*q^2*x - b^2*q^2)*log(d)^2 - a^2 + 2*(a
*b*j^2*p*q*x^2 + 2*I*a*b*j*p*q*x - a*b*p*q + (b^2*j^2*p*q*x^2 + 2*I*b^2*j*p
*q*x - b^2*p*q)*log(c) + (b^2*j^2*p*q^2*x^2 + 2*I*b^2*j*p*q^2*x - b^2*p*q^2
)*log(d))*log(f*x + e) + 2*(a*b*j^2*x^2 + 2*I*a*b*j*x - a*b)*log(c) + 2*(a*
b*j^2*q*x^2 + 2*I*a*b*j*q*x - a*b*q + (b^2*j^2*q*x^2 + 2*I*b^2*j*q*x - b^2*
q)*log(c))*log(d))/(h*x + g), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(a + b\log\left(c\left(d\left(e + fx\right)^{p}\right)^{q}\right)\right)^{2}\left(i + jx\right)^{2}}{g + hx}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((j*x+i)**2*(a+b*ln(c*(d*(f*x+e)**p)**q))**2/(h*x+g),x)
```

```
[Out] Integral((a + b*log(c*(d*(e + f*x)**p)**q))**2*(i + j*x)**2/(g + h*x), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((j*x+i)^2*(a+b*log(c*(d*(f*x+e)^p)^q))^2/(h*x+g),x, algorithm="gi
ac")
```

```
[Out] integrate((j*x + I)^2*(b*log(((f*x + e)^p*d)^q*c) + a)^2/(h*x + g), x)
```

Mupad [F]

time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(i+j\,x)^2\,\left(a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)\right)^2}{g+h\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((i + j*x)^2*(a + b*log(c*(d*(e + f*x)^p)^q))^2)/(g + h*x),x)
[Out] int(((i + j*x)^2*(a + b*log(c*(d*(e + f*x)^p)^q))^2)/(g + h*x), x)
```

3.531 $\int \frac{(i+jx)(a+b\log(c(d(e+fx)^p)^q))^2}{g+hx} dx$

Optimal. Leaf size=240

$$-\frac{2abjpqx}{h}+\frac{2b^2jp^2q^2x}{h}-\frac{2b^2jpq(e+fx)\log\left(c(d(e+fx)^p)^q\right)}{fh}+\frac{j(e+fx)\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)^2}{fh}+\frac{(hi-$$

```
[Out] -2*a*b*j*p*q*x/h+2*b^2*j*p^2*q^2*x/h-2*b^2*j*p*q*(f*x+e)*ln(c*(d*(f*x+e)^p)
^q)/f/h+j*(f*x+e)*(a+b*ln(c*(d*(f*x+e)^p)^q))^2/f/h+(-g*j+h*i)*(a+b*ln(c*(d
*(f*x+e)^p)^q))^2*ln(f*(h*x+g)/(-e*h+f*g))/h^2+2*b*(-g*j+h*i)*p*q*(a+b*ln(c
*(d*(f*x+e)^p)^q))*polylog(2,-h*(f*x+e)/(-e*h+f*g))/h^2-2*b^2*(-g*j+h*i)*p^
2*q^2*polylog(3,-h*(f*x+e)/(-e*h+f*g))/h^2
```

Rubi [A]

time = 0.43, antiderivative size = 240, normalized size of antiderivative = 1.00, number of steps used = 11, number of rules used = 9, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.273$, Rules used = {2465, 2436, 2333, 2332, 2443, 2481, 2421, 6724, 2495}

$$\frac{2bpq(hi-gj)\text{PolyLog}\left(2,-\frac{h(e+fx)}{fg-eh}\right)\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)}{h^2}-\frac{2b^2p^2q^2(hi-gj)\text{PolyLog}\left(3,-\frac{h(e+fx)}{fg-eh}\right)}{h^2}+\frac{(hi-gj)\log\left(\frac{f(g+hx)}{fg-eh}\right)\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)^2}{h^2}+\frac{j(e+fx)\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)^2}{fh}-\frac{2abjpqx}{h}-\frac{2b^2jpq(e+fx)\log\left(c(d(e+fx)^p)^q\right)}{fh}+\frac{2b^2jp^2q^2x}{h}$$

Antiderivative was successfully verified.

```
[In] Int[((i + j*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^2)/(g + h*x),x]
```

```
[Out] (-2*a*b*j*p*q*x)/h + (2*b^2*j*p^2*q^2*x)/h - (2*b^2*j*p*q*(e + f*x)*Log[c*(
d*(e + f*x)^p)^q])/(f*h) + (j*(e + f*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^2)
/(f*h) + ((h*i - g*j)*(a + b*Log[c*(d*(e + f*x)^p)^q])^2*Log[(f*(g + h*x))/
(f*g - e*h)])/h^2 + (2*b*(h*i - g*j)*p*q*(a + b*Log[c*(d*(e + f*x)^p)^q])*P
olyLog[2, -((h*(e + f*x))/(f*g - e*h))])/h^2 - (2*b^2*(h*i - g*j)*p^2*q^2*P
olyLog[3, -((h*(e + f*x))/(f*g - e*h))])/h^2
```

Rule 2332

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2333

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2421

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> Simp[(-PolyLog[2, (-d)*f*x^m])*((a + b*Log[c
```

```
*x^n])^p/m), x] + Dist[b*n*(p/m), Int[PolyLog[2, (-d)*f*x^m]*((a + b*Log[c*
x^n])^(p - 1)/x), x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0
] && EqQ[d*e, 1]
```

Rule 2436

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2443

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d
+ e*x)^n])^p/g), x] - Dist[b*e*n*(p/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]*
((a + b*Log[c*(d + e*x)^n])^(p - 1)/(d + e*x)), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2465

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2481

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[(k*(x/d))^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + j*(x/e))^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2495

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rule 6724

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(531+jx)\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)^2}{g+hx}\,dx = \text{Subst}\left(\int \frac{(531+jx)\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^2}{g+hx}\,dx, cd^q(e+$$

$$= \text{Subst}\left(\int \left(\frac{j\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^2}{h} + \frac{(531h-gj)(a-}{h}\right.\right.$$

$$= \text{Subst}\left(\frac{j\int\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^2\,dx}{h}, cd^q(e+fx)^{pq}, c(\right.$$

$$= \frac{(531h-gj)\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)^2\log\left(\frac{f(g+hx)}{fg-eh}\right)}{h^2} + \text{Su}$$

$$= \frac{j(e+fx)\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)^2}{fh} + \frac{(531h-gj)(a+b}{}$$

$$= -\frac{2abjpqx}{h} + \frac{j(e+fx)\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)^2}{fh} + \frac{(531}{}$$

$$= -\frac{2abjpqx}{h} + \frac{2b^2jp^2q^2x}{h} - \frac{2b^2jpq(e+fx)\log\left(c(d(e+fx)^p\right.}{fh}$$

Mathematica [B] Leaf count is larger than twice the leaf count of optimal. 852 vs. $2(240) = 480$.

time = 0.21, size = 852, normalized size = 3.55

Antiderivative was successfully verified.

```
[In] Integrate[((i + j*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^2)/(g + h*x),x]
```

```
[Out] (-2*a*b*e*h*j*p*q + a^2*f*h*j*x - 2*a*b*f*h*j*p*q*x + 2*b^2*f*h*j*p^2*q^2*x
 + 2*a*b*e*h*j*p*q*Log[e + f*x] - b^2*e*h*j*p^2*q^2*Log[e + f*x]^2 - 2*b^2*
e*h*j*p*q*Log[c*(d*(e + f*x)^p)^q] + 2*a*b*f*h*j*x*Log[c*(d*(e + f*x)^p)^q]
```

```
 - 2*b^2*f*h*j*p*q*x*Log[c*(d*(e + f*x)^p)^q] + 2*b^2*e*h*j*p*q*Log[e + f*x
]*Log[c*(d*(e + f*x)^p)^q] + b^2*f*h*j*x*Log[c*(d*(e + f*x)^p)^q]^2 + a^2*f
*h*i*Log[g + h*x] - a^2*f*g*j*Log[g + h*x] - 2*a*b*f*h*i*p*q*Log[e + f*x]*L
og[g + h*x] + 2*a*b*f*g*j*p*q*Log[e + f*x]*Log[g + h*x] + b^2*f*h*i*p^2*q^2
*Log[e + f*x]^2*Log[g + h*x] - b^2*f*g*j*p^2*q^2*Log[e + f*x]^2*Log[g + h*x
] + 2*a*b*f*h*i*Log[c*(d*(e + f*x)^p)^q]*Log[g + h*x] - 2*a*b*f*g*j*Log[c*(
d*(e + f*x)^p)^q]*Log[g + h*x] - 2*b^2*f*h*i*p*q*Log[e + f*x]*Log[c*(d*(e +
 f*x)^p)^q]*Log[g + h*x] + 2*b^2*f*g*j*p*q*Log[e + f*x]*Log[c*(d*(e + f*x)^
p)^q]*Log[g + h*x] + b^2*f*h*i*Log[c*(d*(e + f*x)^p)^q]^2*Log[g + h*x] - b^
2*f*g*j*Log[c*(d*(e + f*x)^p)^q]^2*Log[g + h*x] + 2*a*b*f*h*i*p*q*Log[e + f
*x]*Log[(f*(g + h*x))/(f*g - e*h)] - 2*a*b*f*g*j*p*q*Log[e + f*x]*Log[(f*(g
 + h*x))/(f*g - e*h)] - b^2*f*h*i*p^2*q^2*Log[e + f*x]^2*Log[(f*(g + h*x))/
(f*g - e*h)] + b^2*f*g*j*p^2*q^2*Log[e + f*x]^2*Log[(f*(g + h*x))/(f*g - e*
h)] + 2*b^2*f*h*i*p*q*Log[e + f*x]*Log[c*(d*(e + f*x)^p)^q]*Log[(f*(g + h*x
))/(f*g - e*h)] - 2*b^2*f*g*j*p*q*Log[e + f*x]*Log[c*(d*(e + f*x)^p)^q]*Log
[(f*(g + h*x))/(f*g - e*h)] + 2*b*f*(h*i - g*j)*p*q*(a + b*Log[c*(d*(e + f*
x)^p)^q])*PolyLog[2, (h*(e + f*x))/(-(f*g) + e*h)] + 2*b^2*f*(-(h*i) + g*j)
*p^2*q^2*PolyLog[3, (h*(e + f*x))/(-(f*g) + e*h)])/(f*h^2)
```

Maple [F]
time = 0.21, size = 0, normalized size = 0.00

$$\int \frac{(jx+i)\left(a+b\ln\left(c(d(fx+e)^{p})^{q}\right)\right)^{2}}{hx+g}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((j*x+i)*(a+b*ln(c*(d*(f*x+e)^p)^q))^2/(h*x+g),x)
```

```
[Out] int((j*x+i)*(a+b*ln(c*(d*(f*x+e)^p)^q))^2/(h*x+g),x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((j*x+i)*(a+b*log(c*(d*(f*x+e)^p)^q))^2/(h*x+g),x, algorithm="maxi
ma")
```

```
[Out] a^2*j*(x/h - g*log(h*x + g)/h^2) + I*a^2*log(h*x + g)/h + integrate(-(2*(-I
*q*log(d) - I*log(c))*a*b - (I*q^2*log(d)^2 + 2*I*q*log(c)*log(d) + I*log(c
)^2)*b^2 - (b^2*j*x + I*b^2)*log(((f*x + e)^p)^q)^2 - (2*(j*q*log(d) + j*lo
g(c))*a*b + (j*q^2*log(d)^2 + 2*j*q*log(c)*log(d) + j*log(c)^2)*b^2)*x + 2*
((-I*q*log(d) - I*log(c))*b^2 - I*a*b - ((j*q*log(d) + j*log(c))*b^2 + a*b*
j)*x)*log(((f*x + e)^p)^q))/(h*x + g), x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((j*x+i)*(a+b*log(c*(d*(f*x+e)^p)^q))^2/(h*x+g),x, algorithm="fric
as")
```

```
[Out] integral((a^2*j*x + (b^2*j*p^2*q^2*x + I*b^2*p^2*q^2)*log(f*x + e)^2 + (b^2
*j*x + I*b^2)*log(c)^2 + (b^2*j*q^2*x + I*b^2*q^2)*log(d)^2 + I*a^2 + 2*(a*
b*j*p*q*x + I*a*b*p*q + (b^2*j*p*q*x + I*b^2*p*q)*log(c) + (b^2*j*p*q^2*x +
 I*b^2*p*q^2)*log(d))*log(f*x + e) + 2*(a*b*j*x + I*a*b)*log(c) + 2*(a*b*j*
q*x + I*a*b*q + (b^2*j*q*x + I*b^2*q)*log(c))*log(d))/(h*x + g), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(a + b \log \left(c \left(d \left(e + f x\right)^{p}\right)^{q}\right)\right)^{2} \left(i + j x\right)}{g + h x}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((j*x+i)*(a+b*ln(c*(d*(f*x+e)**p)**q))**2/(h*x+g),x)
```

```
[Out] Integral((a + b*log(c*(d*(e + f*x)**p)**q))**2*(i + j*x)/(g + h*x), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((j*x+i)*(a+b*log(c*(d*(f*x+e)^p)^q))^2/(h*x+g),x, algorithm="giac
")
```

```
[Out] integrate((j*x + I)*(b*log(((f*x + e)^p*d)^q*c) + a)^2/(h*x + g), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(i+j\,x\right)\,{\left(a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)\right)}^2}{g+h\,x} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((i + j*x)*(a + b*log(c*(d*(e + f*x)^p)^q))^2)/(g + h*x),x)
```

```
[Out] int(((i + j*x)*(a + b*log(c*(d*(e + f*x)^p)^q))^2)/(g + h*x), x)
```

3.532 $\int \frac{(a+b\log(c(d(e+fx)^p)^q))^2}{g+hx}\,dx$

Optimal. Leaf size=123

$$\frac{(a+b\log(c(d(e+fx)^p)^q))^2\log\left(\frac{f(g+hx)}{fg-eh}\right)}{h}+\frac{2bpq(a+b\log(c(d(e+fx)^p)^q))\operatorname{Li}_2\left(-\frac{h(e+fx)}{fg-eh}\right)}{h}-\frac{2b^2p^2q^2\operatorname{Li}_3\left(-\right.}{h}$$

```
[Out] (a+b*ln(c*(d*(f*x+e)^p)^q))^2*ln(f*(h*x+g)/(-e*h+f*g))/h+2*b*p*q*(a+b*ln(c*
(d*(f*x+e)^p)^q))*polylog(2,-h*(f*x+e)/(-e*h+f*g))/h-2*b^2*p^2*q^2*polylog(
3,-h*(f*x+e)/(-e*h+f*g))/h
```

Rubi [A]
time = 0.18, antiderivative size = 123, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}} = 0.179$, Rules used = {2443, 2481, 2421, 6724, 2495}

$$\frac{2bpq\text{PolyLog}\left(2,-\frac{h(e+fx)}{fg-eh}\right)(a+b\log(c(d(e+fx)^p)^q))}{h}-\frac{2b^2p^2q^2\text{PolyLog}\left(3,-\frac{h(e+fx)}{fg-eh}\right)}{h}+\frac{\log\left(\frac{f(g+hx)}{fg-eh}\right)(a+b\log(c(d(e+fx)^p)^q))^2}{h}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])^2/(g + h*x),x]
```

```
[Out] ((a + b*Log[c*(d*(e + f*x)^p)^q])^2*Log[(f*(g + h*x))/(f*g - e*h)])/h + (2*
b*p*q*(a + b*Log[c*(d*(e + f*x)^p)^q])*PolyLog[2, -((h*(e + f*x))/(f*g - e*
h))])/h - (2*b^2*p^2*q^2*PolyLog[3, -((h*(e + f*x))/(f*g - e*h))])/h
```

Rule 2421

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> Simp[(-PolyLog[2, (-d)*f*x^m])*((a + b*Log[c
*x^n])^p/m), x] + Dist[b*n*(p/m), Int[PolyLog[2, (-d)*f*x^m]*((a + b*Log[c*
x^n])^(p - 1)/x), x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0
] && EqQ[d*e, 1]
```

Rule 2443

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d
+ e*x)^n])^p/g), x] - Dist[b*e*n*(p/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]*
((a + b*Log[c*(d + e*x)^n])^(p - 1)/(d + e*x)), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2481

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
```

```
bol] :> Dist[1/e, Subst[Int[(k*(x/d))^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + j*(x/e))^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2495

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] && !IntegerQ[n] && !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rule 6724

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(a+b\log(c(d(e+fx)^p)^q))^2}{g+hx}\,dx = \text{Subst}\left(\int \frac{(a+b\log(cd^q(e+fx)^{pq}))^2}{g+hx}\,dx, cd^q(e+fx)^{pq}, c(d(e+fx)^p)^q\right.$$

$$= \frac{(a+b\log(c(d(e+fx)^p)^q))^2\log\left(\frac{f(g+hx)}{fg-eh}\right)}{h} - \text{Subst}\left(\frac{(2bfpq)\int \frac{(a+b\log(c}{}}{}\right.$$

$$= \frac{(a+b\log(c(d(e+fx)^p)^q))^2\log\left(\frac{f(g+hx)}{fg-eh}\right)}{h} - \text{Subst}\left(\frac{(2bpq)\text{Subst}\left(\int \frac{(a}{}\right.}{}\right.$$

$$= \frac{(a+b\log(c(d(e+fx)^p)^q))^2\log\left(\frac{f(g+hx)}{fg-eh}\right)}{h} + \frac{2bpq(a+b\log(c(d(e+fx}{h}$$

$$= \frac{(a+b\log(c(d(e+fx)^p)^q))^2\log\left(\frac{f(g+hx)}{fg-eh}\right)}{h} + \frac{2bpq(a+b\log(c(d(e+fx}{h}$$

Mathematica [B] Leaf count is larger than twice the leaf count of optimal. 313 vs. 2(123) = 246.

time = 0.16, size = 313, normalized size = 2.54

$$\frac{a^2\log(g+hx)}{h}+\frac{b\left(-2apq\log(e+fx)\log(g+hx)+bp^2q^2\log^2(e+fx)\log(g+hx)+2a\log\left(c(d(e+fx)^p)^q\right)\log(g+hx)-2bpq\log(e+fx)\log\left(c(d(e+fx)^p)^q\right)\log(g+hx)+b\log^2\left(c(d(e+fx)^p)^q\right)\log(g+hx)+2apq\log(e+fx)\log\left(\frac{f(g+hx)}{fg-eh}\right)-bp^2q^2\log^2(e+fx)\log\left(\frac{f(g+hx)}{fg-eh}\right)+2bpq\log(e+fx)\log\left(c(d(e+fx)^p)^q\right)\log\left(\frac{f(g+hx)}{fg-eh}\right)+2pq\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)\operatorname{Li}_2\left(\frac{h(e+fx)}{-fg+eh}\right)-2bp^2q^2\operatorname{Li}_3\left(\frac{h(e+fx)}{-fg+eh}\right)\right)}{h}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])^2/(g + h*x),x]
```

```
[Out] (a^2*Log[g + h*x])/h + (b*(-2*a*p*q*Log[e + f*x]*Log[g + h*x] + b*p^2*q^2*L
og[e + f*x]^2*Log[g + h*x] + 2*a*Log[c*(d*(e + f*x)^p)^q]*Log[g + h*x] - 2*
b*p*q*Log[e + f*x]*Log[c*(d*(e + f*x)^p)^q]*Log[g + h*x] + b*Log[c*(d*(e +
f*x)^p)^q]^2*Log[g + h*x] + 2*a*p*q*Log[e + f*x]*Log[(f*(g + h*x))/(f*g - e
*h)] - b*p^2*q^2*Log[e + f*x]^2*Log[(f*(g + h*x))/(f*g - e*h)] + 2*b*p*q*Lo
g[e + f*x]*Log[c*(d*(e + f*x)^p)^q]*Log[(f*(g + h*x))/(f*g - e*h)] + 2*p*q*
(a + b*Log[c*(d*(e + f*x)^p)^q])*PolyLog[2, (h*(e + f*x))/(-(f*g) + e*h)] -
 2*b*p^2*q^2*PolyLog[3, (h*(e + f*x))/(-(f*g) + e*h)]))/h
```

Maple [F]
time = 0.04, size = 0, normalized size = 0.00

$$\int \frac{\left(a+b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)\right)^{2}}{hx+g}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(d*(f*x+e)^p)^q))^2/(h*x+g),x)
```

```
[Out] int((a+b*ln(c*(d*(f*x+e)^p)^q))^2/(h*x+g),x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^2/(h*x+g),x, algorithm="maxima")
```

```
[Out] a^2*log(h*x + g)/h + integrate((b^2*log(((f*x + e)^p)^q)^2 + 2*(q*log(d) +
log(c))*a*b + (q^2*log(d)^2 + 2*q*log(c)*log(d) + log(c)^2)*b^2 + 2*((q*log
(d) + log(c))*b^2 + a*b)*log(((f*x + e)^p)^q))/(h*x + g), x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^2/(h*x+g),x, algorithm="fricas")
```

```
[Out] integral((b^2*log(((f*x + e)^p*d)^q*c)^2 + 2*a*b*log(((f*x + e)^p*d)^q*c) +
 a^2)/(h*x + g), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a+b\log(c(d(e+fx)^p)^q))^2}{g+hx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))**2/(h*x+g),x)
```

```
[Out] Integral((a + b*log(c*(d*(e + f*x)**p)**q))**2/(g + h*x), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^2/(h*x+g),x, algorithm="giac")
```

```
[Out] integrate((b*log(((f*x + e)^p*d)^q*c) + a)^2/(h*x + g), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(a+b\,\ln(c\,(d\,(e+f\,x)^p)^q))^2}{g+h\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d*(e + f*x)^p)^q))^2/(g + h*x),x)
```

```
[Out] int((a + b*log(c*(d*(e + f*x)^p)^q))^2/(g + h*x), x)
```

3.533 $\int \frac{(a+b\log(c(d(e+fx)^p)^q))^2}{(g+hx)(i+jx)}\,dx$

Optimal. Leaf size=288

$$\frac{(a+b\log(c(d(e+fx)^p)^q))^2\log\left(\frac{f(g+hx)}{fg-eh}\right)}{hi-gj}-\frac{(a+b\log(c(d(e+fx)^p)^q))^2\log\left(\frac{f(i+jx)}{fi-ej}\right)}{hi-gj}+\frac{2bpq(a+b\log(c(d(\cdots$$

```
[Out] (a+b*ln(c*(d*(f*x+e)^p)^q))^2*ln(f*(h*x+g)/(-e*h+f*g))/(-g*j+h*i)-(a+b*ln(c
*(d*(f*x+e)^p)^q))^2*ln(f*(j*x+i)/(-e*j+f*i))/(-g*j+h*i)+2*b*p*q*(a+b*ln(c*
(d*(f*x+e)^p)^q))*polylog(2,-h*(f*x+e)/(-e*h+f*g))/(-g*j+h*i)-2*b*p*q*(a+b*
ln(c*(d*(f*x+e)^p)^q))*polylog(2,-j*(f*x+e)/(-e*j+f*i))/(-g*j+h*i)-2*b^2*p^
2*q^2*polylog(3,-h*(f*x+e)/(-e*h+f*g))/(-g*j+h*i)+2*b^2*p^2*q^2*polylog(3,-
j*(f*x+e)/(-e*j+f*i))/(-g*j+h*i)
```

Rubi [A]
time = 0.60, antiderivative size = 288, normalized size of antiderivative = 1.00, number of steps used = 11, number of rules used = 6, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.171$, Rules used = {2465, 2443, 2481, 2421, 6724, 2495}

$$\frac{2bpq\,\text{PolyLog}\left(2,-\frac{h(e+fx)}{fg-eh}\right)(a+b\log(c(d(e+fx)^p)^q))}{hi-gj}-\frac{2bpq\,\text{PolyLog}\left(2,-\frac{j(e+fx)}{fi-ej}\right)(a+b\log(c(d(e+fx)^p)^q))}{hi-gj}-\frac{2b^2p^2q^2\,\text{PolyLog}\left(3,-\frac{h(e+fx)}{fg-eh}\right)}{hi-gj}+\frac{2b^2p^2q^2\,\text{PolyLog}\left(3,-\frac{j(e+fx)}{fi-ej}\right)}{hi-gj}+\frac{\log\left(\frac{f(g+hx)}{fg-eh}\right)(a+b\log(c(d(e+fx)^p)^q))^2}{hi-gj}-\frac{\log\left(\frac{f(i+jx)}{fi-ej}\right)(a+b\log(c(d(e+fx)^p)^q))^2}{hi-gj}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])^2/((g + h*x)*(i + j*x)),x]
```

```
[Out] ((a + b*Log[c*(d*(e + f*x)^p)^q])^2*Log[(f*(g + h*x))/(f*g - e*h)])/(h*i -
g*j) - ((a + b*Log[c*(d*(e + f*x)^p)^q])^2*Log[(f*(i + j*x))/(f*i - e*j)])/
(h*i - g*j) + (2*b*p*q*(a + b*Log[c*(d*(e + f*x)^p)^q])*PolyLog[2, -((h*(e
+ f*x))/(f*g - e*h))])/(h*i - g*j) - (2*b*p*q*(a + b*Log[c*(d*(e + f*x)^p)^
q])*PolyLog[2, -((j*(e + f*x))/(f*i - e*j))])/(h*i - g*j) - (2*b^2*p^2*q^2*
PolyLog[3, -((h*(e + f*x))/(f*g - e*h))])/(h*i - g*j) + (2*b^2*p^2*q^2*Poly
Log[3, -((j*(e + f*x))/(f*i - e*j))])/(h*i - g*j)
```

Rule 2421

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> Simp[(-PolyLog[2, (-d)*f*x^m])*((a + b*Log[c
*x^n])^p/m), x] + Dist[b*n*(p/m), Int[PolyLog[2, (-d)*f*x^m]*((a + b*Log[c*
x^n])^(p - 1)/x), x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0
] && EqQ[d*e, 1]
```

Rule 2443

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d
+ e*x)^n])^p/g), x] - Dist[b*e*n*(p/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]*
```

```
((a + b*Log[c*(d + e*x)^n])^(p - 1)/(d + e*x)), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2465

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2481

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[(k*(x/d))^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + j*(x/e))^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2495

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rule 6724

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(a+b\log(c(d(e+fx)^p)^q))^2}{(g+hx)(533+jx)}\,dx = \text{Subst}\left(\int \frac{(a+b\log(cd^q(e+fx)^{pq}))^2}{(g+hx)(533+jx)}\,dx, cd^q(e+fx)^{pq}, c(d(e+fx)^p)\right.$$

$$= \text{Subst}\left(\int \left(\frac{h(a+b\log(cd^q(e+fx)^{pq}))^2}{(533h-gj)(g+hx)} - \frac{j(a+b\log(cd^q(e+fx)^{pq}}{(533h-gj)(533+jx)}\right.\right.$$

$$= \text{Subst}\left(\frac{h\int \frac{(a+b\log(cd^q(e+fx)^{pq}))^2}{g+hx}\,dx}{533h-gj}, cd^q(e+fx)^{pq}, c(d(e+fx)^p)^q\right) - \text{S}$$

$$= \frac{(a+b\log(c(d(e+fx)^p)^q))^2\log\left(\frac{f(g+hx)}{fg-eh}\right)}{533h-gj} - \frac{(a+b\log(c(d(e+fx)^p)}{533h-}$$

$$= \frac{(a+b\log(c(d(e+fx)^p)^q))^2\log\left(\frac{f(g+hx)}{fg-eh}\right)}{533h-gj} - \frac{(a+b\log(c(d(e+fx)^p)}{533h-}$$

$$= \frac{(a+b\log(c(d(e+fx)^p)^q))^2\log\left(\frac{f(g+hx)}{fg-eh}\right)}{533h-gj} - \frac{(a+b\log(c(d(e+fx)^p)}{533h-}$$

$$= \frac{(a+b\log(c(d(e+fx)^p)^q))^2\log\left(\frac{f(g+hx)}{fg-eh}\right)}{533h-gj} - \frac{(a+b\log(c(d(e+fx)^p)}{533h-}$$

Mathematica [**B**] Leaf count is larger than twice the leaf count of optimal. 652 vs. 2(288) = 576.
time = 0.19, size = 652, normalized size = 2.26

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])^2/((g + h*x)*(i + j*x)),x]
```

```
[Out] (a^2*Log[g + h*x] - 2*a*b*p*q*Log[e + f*x]*Log[g + h*x] + b^2*p^2*q^2*Log[e
 + f*x]^2*Log[g + h*x] + 2*a*b*Log[c*(d*(e + f*x)^p)^q]*Log[g + h*x] - 2*b^
2*p*q*Log[e + f*x]*Log[c*(d*(e + f*x)^p)^q]*Log[g + h*x] + b^2*Log[c*(d*(e
+ f*x)^p)^q]^2*Log[g + h*x] + 2*a*b*p*q*Log[e + f*x]*Log[(f*(g + h*x))/(f*g
 - e*h)] - b^2*p^2*q^2*Log[e + f*x]^2*Log[(f*(g + h*x))/(f*g - e*h)] + 2*b^
```

```
2*p*q*Log[e + f*x]*Log[c*(d*(e + f*x)^p)^q]*Log[(f*(g + h*x))/(f*g - e*h)]
- a^2*Log[i + j*x] + 2*a*b*p*q*Log[e + f*x]*Log[i + j*x] - b^2*p^2*q^2*Log[
e + f*x]^2*Log[i + j*x] - 2*a*b*Log[c*(d*(e + f*x)^p)^q]*Log[i + j*x] + 2*b
^2*p*q*Log[e + f*x]*Log[c*(d*(e + f*x)^p)^q]*Log[i + j*x] - b^2*Log[c*(d*(e
 + f*x)^p)^q]^2*Log[i + j*x] - 2*a*b*p*q*Log[e + f*x]*Log[(f*(i + j*x))/(f*
i - e*j)] + b^2*p^2*q^2*Log[e + f*x]^2*Log[(f*(i + j*x))/(f*i - e*j)] - 2*b
^2*p*q*Log[e + f*x]*Log[c*(d*(e + f*x)^p)^q]*Log[(f*(i + j*x))/(f*i - e*j)]
 + 2*b*p*q*(a + b*Log[c*(d*(e + f*x)^p)^q])*PolyLog[2, (h*(e + f*x))/(-(f*g
) + e*h)] - 2*b*p*q*(a + b*Log[c*(d*(e + f*x)^p)^q])*PolyLog[2, (j*(e + f*x
))/(-(f*i) + e*j)] - 2*b^2*p^2*q^2*PolyLog[3, (h*(e + f*x))/(-(f*g) + e*h)]
 + 2*b^2*p^2*q^2*PolyLog[3, (j*(e + f*x))/(-(f*i) + e*j)])/(h*i - g*j)
```

Maple [**F**]
time = 0.37, size = 0, normalized size = 0.00

$$\int \frac{\left(a+b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)\right)^{2}}{\left(hx+g\right)\left(jx+i\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(d*(f*x+e)^p)^q))^2/(h*x+g)/(j*x+i),x)
```

```
[Out] int((a+b*ln(c*(d*(f*x+e)^p)^q))^2/(h*x+g)/(j*x+i),x)
```

Maxima [**F**]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^2/(h*x+g)/(j*x+i),x, algorithm="maxi
ma")
```

```
[Out] -a^2*(log(h*x + g)/(g*j - I*h) - log(j*x + I)/(g*j - I*h)) + integrate((b^2
*log(((f*x + e)^p)^q)^2 + 2*(q*log(d) + log(c))*a*b + (q^2*log(d)^2 + 2*q*l
og(c)*log(d) + log(c)^2)*b^2 + 2*((q*log(d) + log(c))*b^2 + a*b)*log(((f*x
+ e)^p)^q))/(h*j*x^2 + (g*j + I*h)*x + I*g), x)
```

Fricas [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^2/(h*x+g)/(j*x+i),x, algorithm="fric
as")
```

```
[Out] integral((b^2*p^2*q^2*log(f*x + e)^2 + b^2*q^2*log(d)^2 + b^2*log(c)^2 + 2*
a*b*log(c) + a^2 + 2*(b^2*p*q^2*log(d) + b^2*p*q*log(c) + a*b*p*q)*log(f*x
+ e) + 2*(b^2*q*log(c) + a*b*q)*log(d))/(h*j*x^2 + (g*j + I*h)*x + I*g), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a + b\log(c(d(e + fx)^p)^q))^2}{(g + hx)(i + jx)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))**2/(h*x+g)/(j*x+i),x)
[Out] Integral((a + b*log(c*(d*(e + f*x)**p)**q))**2/((g + h*x)*(i + j*x)), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^2/(h*x+g)/(j*x+i),x, algorithm="giac
")
[Out] integrate((b*log(((f*x + e)^p*d)^q*c) + a)^2/((h*x + g)*(j*x + I)), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(a + b\,\ln(c\,(d\,(e + f\,x)^p)^q))^2}{(g + h\,x)\,(i + j\,x)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d*(e + f*x)^p)^q))^2/((g + h*x)*(i + j*x)),x)
[Out] int((a + b*log(c*(d*(e + f*x)^p)^q))^2/((g + h*x)*(i + j*x)), x)
```

3.534 $\int \frac{(a+b\log(c(d(e+fx)^p)^q))^2}{(g+hx)(i+jx)^2}\,dx$

Optimal. Leaf size=463

$$-\frac{j(e+fx)\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)^2}{(fi-ej)(hi-gj)(i+jx)}+\frac{h\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)^2\log\left(\frac{f(g+hx)}{fg-eh}\right)}{(hi-gj)^2}+\frac{2bfpq(a+b\log(c(d(}{(fi-e}$$

```
[Out] -j*(f*x+e)*(a+b*ln(c*(d*(f*x+e)^p)^q))^2/(-e*j+f*i)/(-g*j+h*i)/(j*x+i)+h*(a
+b*ln(c*(d*(f*x+e)^p)^q))^2*ln(f*(h*x+g)/(-e*h+f*g))/(-g*j+h*i)^2+2*b*f*p*q
*(a+b*ln(c*(d*(f*x+e)^p)^q))*ln(f*(j*x+i)/(-e*j+f*i))/(-e*j+f*i)/(-g*j+h*i)
-h*(a+b*ln(c*(d*(f*x+e)^p)^q))^2*ln(f*(j*x+i)/(-e*j+f*i))/(-g*j+h*i)^2+2*b*
h*p*q*(a+b*ln(c*(d*(f*x+e)^p)^q))*polylog(2,-h*(f*x+e)/(-e*h+f*g))/(-g*j+h*
i)^2+2*b^2*f*p^2*q^2*polylog(2,-j*(f*x+e)/(-e*j+f*i))/(-e*j+f*i)/(-g*j+h*i)
-2*b*h*p*q*(a+b*ln(c*(d*(f*x+e)^p)^q))*polylog(2,-j*(f*x+e)/(-e*j+f*i))/(-g
*j+h*i)^2-2*b^2*h*p^2*q^2*polylog(3,-h*(f*x+e)/(-e*h+f*g))/(-g*j+h*i)^2+2*b
^2*h*p^2*q^2*polylog(3,-j*(f*x+e)/(-e*j+f*i))/(-g*j+h*i)^2
```

Rubi [A]
time = 0.81, antiderivative size = 463, normalized size of antiderivative = 1.00, number of steps used = 15, number of rules used = 10, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.286$, Rules used = {2465, 2443, 2481, 2421, 6724, 2444, 2441, 2440, 2438, 2495}

$$\frac{2bhpq\,\text{PolyLog}\left(2,-\frac{h(e+fx)}{fg-eh}\right)\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)}{(hi-gj)^2}-\frac{2bhpq\,\text{PolyLog}\left(2,-\frac{j(e+fx)}{fi-ej}\right)\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)}{(hi-gj)^2}+\frac{2b^2fp^2q^2\,\text{PolyLog}\left(2,-\frac{j(e+fx)}{fi-ej}\right)}{(fi-ej)(hi-gj)}-\frac{2b^2hp^2q^2\,\text{PolyLog}\left(3,-\frac{h(e+fx)}{fg-eh}\right)}{(hi-gj)^2}+\frac{2b^2hp^2q^2\,\text{PolyLog}\left(3,-\frac{j(e+fx)}{fi-ej}\right)}{(hi-gj)^2}+\frac{2bfpq\log\left(\frac{f(i+jx)}{fi-ej}\right)\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)}{(fi-ej)(hi-gj)}-\frac{j(e+fx)\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)^2}{(i+jx)(fi-ej)(hi-gj)}+\frac{h\log\left(\frac{f(g+hx)}{fg-eh}\right)\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)^2}{(hi-gj)^2}-\frac{h\log\left(\frac{f(i+jx)}{fi-ej}\right)\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)^2}{(hi-gj)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])^2/((g + h*x)*(i + j*x)^2),x]
```

```
[Out] -((j*(e + f*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^2)/((f*i - e*j)*(h*i - g*j)
*(i + j*x))) + (h*(a + b*Log[c*(d*(e + f*x)^p)^q])^2*Log[(f*(g + h*x))/(f*g
 - e*h)])/(h*i - g*j)^2 + (2*b*f*p*q*(a + b*Log[c*(d*(e + f*x)^p)^q])*Log[(
f*(i + j*x))/(f*i - e*j)])/((f*i - e*j)*(h*i - g*j)) - (h*(a + b*Log[c*(d*(
e + f*x)^p)^q])^2*Log[(f*(i + j*x))/(f*i - e*j)])/(h*i - g*j)^2 + (2*b*h*p*
q*(a + b*Log[c*(d*(e + f*x)^p)^q])*PolyLog[2, -((h*(e + f*x))/(f*g - e*h))]
)/(h*i - g*j)^2 + (2*b^2*f*p^2*q^2*PolyLog[2, -((j*(e + f*x))/(f*i - e*j))]
)/((f*i - e*j)*(h*i - g*j)) - (2*b*h*p*q*(a + b*Log[c*(d*(e + f*x)^p)^q])*P
olyLog[2, -((j*(e + f*x))/(f*i - e*j))])/(h*i - g*j)^2 - (2*b^2*h*p^2*q^2*P
olyLog[3, -((h*(e + f*x))/(f*g - e*h))])/(h*i - g*j)^2 + (2*b^2*h*p^2*q^2*P
olyLog[3, -((j*(e + f*x))/(f*i - e*j))])/(h*i - g*j)^2
```

Rule 2421

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> Simp[(-PolyLog[2, (-d)*f*x^m])*((a + b*Log[c
*x^n])^p/m), x] + Dist[b*n*(p/m), Int[PolyLog[2, (-d)*f*x^m]*((a + b*Log[c*
x^n])^(p - 1)/x), x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0
```

```
] && EqQ[d*e, 1]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + c*e*(x/g)])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2441

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d + e*x
)^n])/g), x] - Dist[b*e*(n/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2443

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d
+ e*x)^n])^p/g), x] - Dist[b*e*n*(p/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]*
((a + b*Log[c*(d + e*x)^n])^(p - 1)/(d + e*x)), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2444

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_))^2, x_Symbol] :> Simp[(d + e*x)*((a + b*Log[c*(d + e*x)^n])^p/((e*f
- d*g)*(f + g*x))), x] - Dist[b*e*n*(p/(e*f - d*g)), Int[(a + b*Log[c*(d +
e*x)^n])^(p - 1)/(f + g*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] &&
 NeQ[e*f - d*g, 0] && GtQ[p, 0]
```

Rule 2465

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2481

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[(k*(x/d))^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + j*(x/e))^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2495

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rule 6724

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{(g+hx)(534+jx)^2}\,dx = \text{Subst}\left(\int \frac{\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^2}{(g+hx)(534+jx)^2}\,dx, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right.\right.$$

$$= \text{Subst}\left(\int\left(\frac{h^2\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^2}{(534h-gj)^2(g+hx)} - \frac{j\left(a+b\log\left(cd^q(e+fx\right.\right.}{(534h-gj)(534+jx}\right.\right.$$

$$= \text{Subst}\left(\frac{h^2\int\frac{\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^2}{g+hx}\,dx}{(534h-gj)^2}, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right) -$$

$$= -\frac{j(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{(534f-ej)(534h-gj)(534+jx)} + \frac{h\left(a+b\log\left(c\left(d(e+fx)^p\right)\right.\right.}{(534h-gj}$$

$$= -\frac{j(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{(534f-ej)(534h-gj)(534+jx)} + \frac{h\left(a+b\log\left(c\left(d(e+fx)^p\right)\right.\right.}{(534h-gj}$$

$$= -\frac{j(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{(534f-ej)(534h-gj)(534+jx)} + \frac{h\left(a+b\log\left(c\left(d(e+fx)^p\right)\right.\right.}{(534h-gj}$$

$$= -\frac{j(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{(534f-ej)(534h-gj)(534+jx)} + \frac{h\left(a+b\log\left(c\left(d(e+fx)^p\right)\right.\right.}{(534h-gj}$$

Mathematica [A]
time = 0.46, size = 654, normalized size = 1.41

$$\frac{(fi-ej)(hi-gj)\left(a-bpq\log(e+fx)+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2+h(fi-ej)(i+jx)\left(a-bpq\log(e+fx)+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2\log(g+hx)-h(fi-ej)(i+jx)\left(a-bpq\log(e+fx)+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2\log(i+jx)-2bpq\left(a-bpq\log(e+fx)+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)\left((hi-gj)(j(e+fx)\log(e+fx)-f(i+jx)\log(i+jx))-h(fi-ej)(i+jx)\left(\log(e+fx)\log\left(\frac{f(g+hx)}{fg-eh}\right)+\text{Li}_2\left(\frac{h(e+fx)}{-fg+eh}\right)\right)+h(fi-ej)(i+jx)\left(\log(e+fx)\log\left(\frac{f(i+jx)}{fi-ej}\right)+\text{Li}_2\left(\frac{j(e+fx)}{-fi+ej}\right)\right)\right)-b^2p^2q^2\left((hi-gj)\left(\log(e+fx)\left(j(e+fx)\log(e+fx)-2f(i+jx)\log\left(\frac{f(i+jx)}{fi-ej}\right)\right)-2f(i+jx)\text{Li}_2\left(\frac{j(e+fx)}{-fi+ej}\right)\right)-h(fi-ej)(i+jx)\left(\log^2(e+fx)\log\left(\frac{f(g+hx)}{fg-eh}\right)+2\log(e+fx)\text{Li}_2\left(\frac{h(e+fx)}{-fg+eh}\right)-2\text{Li}_3\left(\frac{h(e+fx)}{-fg+eh}\right)\right)+h(fi-ej)(i+jx)\left(\log^2(e+fx)\log\left(\frac{f(i+jx)}{fi-ej}\right)+2\log(e+fx)\text{Li}_2\left(\frac{j(e+fx)}{-fi+ej}\right)-2\text{Li}_3\left(\frac{j(e+fx)}{-fi+ej}\right)\right)\right)}{(fi-ej)(hi-gj)^2(i+jx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])^2/((g + h*x)*(i + j*x)^2),x]
```

```
[Out] ((f*i - e*j)*(h*i - g*j)*(a - b*p*q*Log[e + f*x] + b*Log[c*(d*(e + f*x)^p)^
q])^2 + h*(f*i - e*j)*(i + j*x)*(a - b*p*q*Log[e + f*x] + b*Log[c*(d*(e + f
*x)^p)^q])^2*Log[g + h*x] - h*(f*i - e*j)*(i + j*x)*(a - b*p*q*Log[e + f*x]
 + b*Log[c*(d*(e + f*x)^p)^q])^2*Log[i + j*x] - 2*b*p*q*(a - b*p*q*Log[e +
f*x] + b*Log[c*(d*(e + f*x)^p)^q])*((h*i - g*j)*(j*(e + f*x)*Log[e + f*x] -
 f*(i + j*x)*Log[i + j*x]) - h*(f*i - e*j)*(i + j*x)*(Log[e + f*x]*Log[(f*(
```

```
g + h*x))/(f*g - e*h)] + PolyLog[2, (h*(e + f*x))/(-(f*g) + e*h)]) + h*(f*i
 - e*j)*(i + j*x)*(Log[e + f*x]*Log[(f*(i + j*x))/(f*i - e*j)] + PolyLog[2,
 (j*(e + f*x))/(-(f*i) + e*j)])) - b^2*p^2*q^2*((h*i - g*j)*(Log[e + f*x]*(
j*(e + f*x)*Log[e + f*x] - 2*f*(i + j*x)*Log[(f*(i + j*x))/(f*i - e*j)]) -
2*f*(i + j*x)*PolyLog[2, (j*(e + f*x))/(-(f*i) + e*j)]) - h*(f*i - e*j)*(i
+ j*x)*(Log[e + f*x]^2*Log[(f*(g + h*x))/(f*g - e*h)] + 2*Log[e + f*x]*Poly
Log[2, (h*(e + f*x))/(-(f*g) + e*h)] - 2*PolyLog[3, (h*(e + f*x))/(-(f*g) +
 e*h)]) + h*(f*i - e*j)*(i + j*x)*(Log[e + f*x]^2*Log[(f*(i + j*x))/(f*i -
e*j)] + 2*Log[e + f*x]*PolyLog[2, (j*(e + f*x))/(-(f*i) + e*j)] - 2*PolyLog
[3, (j*(e + f*x))/(-(f*i) + e*j)])))/((f*i - e*j)*(h*i - g*j)^2*(i + j*x))
```

Maple [F]
time = 0.42, size = 0, normalized size = 0.00

$$\int \frac{\left(a+b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)\right)^{2}}{\left(hx+g\right)\left(jx+i\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(d*(f*x+e)^p)^q))^2/(h*x+g)/(j*x+i)^2,x)
```

```
[Out] int((a+b*ln(c*(d*(f*x+e)^p)^q))^2/(h*x+g)/(j*x+i)^2,x)
```

Maxima [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^2/(h*x+g)/(j*x+i)^2,x, algorithm="ma
xima")
```

```
[Out] Exception raised: RuntimeError >> ECL says: THROW: The catch RAT-ERR is und
efined.
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^2/(h*x+g)/(j*x+i)^2,x, algorithm="fr
icas")
```

```
[Out] integral((b^2*p^2*q^2*log(f*x + e)^2 + b^2*q^2*log(d)^2 + b^2*log(c)^2 + 2*
a*b*log(c) + a^2 + 2*(b^2*p*q^2*log(d) + b^2*p*q*log(c) + a*b*p*q)*log(f*x
```

```
+ e) + 2*(b^2*q*log(c) + a*b*q)*log(d))/(h*j^2*x^3 + (g*j^2 + 2*I*h*j)*x^2
+ (2*I*g*j - h)*x - g), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a + b\log(c(d(e + fx)^p)^q))^2}{(g + hx)(i + jx)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))**2/(h*x+g)/(j*x+i)**2,x)
```

```
[Out] Integral((a + b*log(c*(d*(e + f*x)**p)**q))**2/((g + h*x)*(i + j*x)**2), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^2/(h*x+g)/(j*x+i)^2,x, algorithm="gi
ac")
```

```
[Out] integrate((b*log(((f*x + e)^p*d)^q*c) + a)^2/((h*x + g)*(j*x + I)^2), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(a + b\,\ln(c\,(d\,(e + f\,x)^p)^q))^2}{(g + h\,x)\,(i + j\,x)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d*(e + f*x)^p)^q))^2/((g + h*x)*(i + j*x)^2),x)
```

```
[Out] int((a + b*log(c*(d*(e + f*x)^p)^q))^2/((g + h*x)*(i + j*x)^2), x)
```

3.535 $\int \frac{(i+jx)^2(a+b\log(c(d(e+fx)^p)^q))^3}{g+hx}\,dx$

Optimal. Leaf size=742

$$\frac{6ab^2j(fi-ej)p^2q^2x}{fh}+\frac{6ab^2j(hi-gj)p^2q^2x}{h^2}-\frac{6b^3j(fi-ej)p^3q^3x}{fh}-\frac{6b^3j(hi-gj)p^3q^3x}{h^2}-\frac{3b^3j^2p^3q^3(e+fx)^2}{8f^2h}+$$

```
[Out] 6*a*b^2*j*(-e*j+f*i)*p^2*q^2*x/f/h+6*a*b^2*j*(-g*j+h*i)*p^2*q^2*x/h^2-6*b^3
*j*(-e*j+f*i)*p^3*q^3*x/f/h-6*b^3*j*(-g*j+h*i)*p^3*q^3*x/h^2-3/8*b^3*j^2*p^
3*q^3*(f*x+e)^2/f^2/h+6*b^3*j*(-e*j+f*i)*p^2*q^2*(f*x+e)*ln(c*(d*(f*x+e)^p)
^q)/f^2/h+6*b^3*j*(-g*j+h*i)*p^2*q^2*(f*x+e)*ln(c*(d*(f*x+e)^p)^q)/f/h^2+3/
4*b^2*j^2*p^2*q^2*(f*x+e)^2*(a+b*ln(c*(d*(f*x+e)^p)^q))/f^2/h-3*b*j*(-e*j+f
*i)*p*q*(f*x+e)*(a+b*ln(c*(d*(f*x+e)^p)^q))^2/f^2/h-3*b*j*(-g*j+h*i)*p*q*(f
*x+e)*(a+b*ln(c*(d*(f*x+e)^p)^q))^2/f/h^2-3/4*b*j^2*p*q*(f*x+e)^2*(a+b*ln(c
*(d*(f*x+e)^p)^q))^2/f^2/h+j*(-e*j+f*i)*(f*x+e)*(a+b*ln(c*(d*(f*x+e)^p)^q))
^3/f^2/h+j*(-g*j+h*i)*(f*x+e)*(a+b*ln(c*(d*(f*x+e)^p)^q))^3/f/h^2+1/2*j^2*(
f*x+e)^2*(a+b*ln(c*(d*(f*x+e)^p)^q))^3/f^2/h+(-g*j+h*i)^2*(a+b*ln(c*(d*(f*x
+e)^p)^q))^3*ln(f*(h*x+g)/(-e*h+f*g))/h^3+3*b*(-g*j+h*i)^2*p*q*(a+b*ln(c*(d
*(f*x+e)^p)^q))^2*polylog(2,-h*(f*x+e)/(-e*h+f*g))/h^3-6*b^2*(-g*j+h*i)^2*p
^2*q^2*(a+b*ln(c*(d*(f*x+e)^p)^q))*polylog(3,-h*(f*x+e)/(-e*h+f*g))/h^3+6*b
^3*(-g*j+h*i)^2*p^3*q^3*polylog(4,-h*(f*x+e)/(-e*h+f*g))/h^3
```

Rubi [A]
time = 1.20, antiderivative size = 742, normalized size of antiderivative = 1.00, number of steps used = 24, number of rules used = 14, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.400$, Rules used = {2465, 2436, 2333, 2332, 2443, 2481, 2421, 2430, 6724, 2448, 2437, 2342, 2341, 2495}

Antiderivative was successfully verified.

```
[In] Int[((i + j*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])^3)/(g + h*x),x]
```

```
[Out] (6*a*b^2*j*(f*i - e*j)*p^2*q^2*x)/(f*h) + (6*a*b^2*j*(h*i - g*j)*p^2*q^2*x)
/h^2 - (6*b^3*j*(f*i - e*j)*p^3*q^3*x)/(f*h) - (6*b^3*j*(h*i - g*j)*p^3*q^3
*x)/h^2 - (3*b^3*j^2*p^3*q^3*(e + f*x)^2)/(8*f^2*h) + (6*b^3*j*(f*i - e*j)*
p^2*q^2*(e + f*x)*Log[c*(d*(e + f*x)^p)^q])/(f^2*h) + (6*b^3*j*(h*i - g*j)*
p^2*q^2*(e + f*x)*Log[c*(d*(e + f*x)^p)^q])/(f*h^2) + (3*b^2*j^2*p^2*q^2*(e
 + f*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q]))/(4*f^2*h) - (3*b*j*(f*i - e*j)*
p*q*(e + f*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^2)/(f^2*h) - (3*b*j*(h*i - g
*j)*p*q*(e + f*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^2)/(f*h^2) - (3*b*j^2*p*
q*(e + f*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])^2)/(4*f^2*h) + (j*(f*i - e*j
)*(e + f*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^3)/(f^2*h) + (j*(h*i - g*j)*(e
 + f*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^3)/(f*h^2) + (j^2*(e + f*x)^2*(a +
```

```
 b*Log[c*(d*(e + f*x)^p)^q])^3)/(2*f^2*h) + ((h*i - g*j)^2*(a + b*Log[c*(d*
(e + f*x)^p)^q])^3*Log[(f*(g + h*x))/(f*g - e*h)])/h^3 + (3*b*(h*i - g*j)^2
*p*q*(a + b*Log[c*(d*(e + f*x)^p)^q])^2*PolyLog[2, -((h*(e + f*x))/(f*g - e
*h))])/h^3 - (6*b^2*(h*i - g*j)^2*p^2*q^2*(a + b*Log[c*(d*(e + f*x)^p)^q])*
PolyLog[3, -((h*(e + f*x))/(f*g - e*h))])/h^3 + (6*b^3*(h*i - g*j)^2*p^3*q^
3*PolyLog[4, -((h*(e + f*x))/(f*g - e*h))])/h^3
```

Rule 2332

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2333

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2341

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_.)*(x_))^(m_.), x_Symbol] :>
Simp[(d*x)^(m + 1)*((a + b*Log[c*x^n])/(d*(m + 1))), x] - Simp[b*n*((d*x)^(
m + 1)/(d*(m + 1)^2)), x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[m, -1]
```

Rule 2342

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_.)*(x_))^(m_.), x_Symbo
l] :> Simp[(d*x)^(m + 1)*((a + b*Log[c*x^n])^p/(d*(m + 1))), x] - Dist[b*n*
(p/(m + 1)), Int[(d*x)^m*(a + b*Log[c*x^n])^(p - 1), x], x] /; FreeQ[{a, b,
 c, d, m, n}, x] && NeQ[m, -1] && GtQ[p, 0]
```

Rule 2421

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> Simp[(-PolyLog[2, (-d)*f*x^m])*((a + b*Log[c
*x^n])^p/m), x] + Dist[b*n*(p/m), Int[PolyLog[2, (-d)*f*x^m]*((a + b*Log[c*
x^n])^(p - 1)/x), x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0
] && EqQ[d*e, 1]
```

Rule 2430

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*PolyLog[k_, (e_.)*(x_)^(q_
.)])/(x_), x_Symbol] :> Simp[PolyLog[k + 1, e*x^q]*((a + b*Log[c*x^n])^p/q)
, x] - Dist[b*n*(p/q), Int[PolyLog[k + 1, e*x^q]*((a + b*Log[c*x^n])^(p - 1
)/x), x], x] /; FreeQ[{a, b, c, e, k, n, q}, x] && GtQ[p, 0]
```

Rule 2436

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2437

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[(f*(x/d))^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2443

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d
+ e*x)^n])^p/g), x] - Dist[b*e*n*(p/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]*
((a + b*Log[c*(d + e*x)^n])^(p - 1)/(d + e*x)), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2448

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q*(a + b*Log[c*(d
 + e*x)^n])^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f -
 d*g, 0] && IGtQ[q, 0]
```

Rule 2465

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2481

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[(k*(x/d))^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + j*(x/e))^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2495

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
```

```
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rule 6724

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(535+jx)^2 \left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)^3}{g+hx}\,dx = \text{Subst}\left(\int \frac{(535+jx)^2 \left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^3}{g+hx}\,dx, cd^q(e$$

$$= \text{Subst}\left(\int \left(\frac{j(535h-gj)\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^3}{h^2} + \frac{(53}{}\right.\right.$$

$$= \text{Subst}\left(\frac{j\int (535+jx)\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^3\,dx}{h}, cd^q(e\right.$$

$$= \frac{(535h-gj)^2\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)^3\log\left(\frac{f(g+hx)}{fg-eh}\right)}{h^3} + \text{S}$$

$$= \frac{j(535h-gj)(e+fx)\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)^3}{fh^2} + \frac{(535h}{}$$

$$= -\frac{3bj(535h-gj)pq(e+fx)\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)^2}{fh^2} +$$

$$= \frac{6ab^2j(535h-gj)p^2q^2x}{h^2} - \frac{3bj(535h-gj)pq(e+fx)(a+b}{fh^2}$$

$$= \frac{6ab^2j(535h-gj)p^2q^2x}{h^2} - \frac{6b^3j(535h-gj)p^3q^3x}{h^2} + \frac{6b^3j(53}{}$$

$$= \frac{6ab^2j(535f-ej)p^2q^2x}{fh} + \frac{6ab^2j(535h-gj)p^2q^2x}{h^2} - \frac{6b^3j(5}{}$$

$$= \frac{6ab^2j(535f-ej)p^2q^2x}{fh} + \frac{6ab^2j(535h-gj)p^2q^2x}{h^2} - \frac{6b^3j(5}{}$$

Mathematica [**B**] Leaf count is larger than twice the leaf count of optimal. 4056 vs. $2(742) = 1484$.

time = 0.93, size = 4056, normalized size = 5.47

Result too large to show

Antiderivative was successfully verified.

```
[In] Integrate[((i + j*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])^3)/(g + h*x),x]
[Out] (-48*a^2*b*e*f*h^2*i*j*p*q + 24*a^2*b*e*f*g*h*j^2*p*q + 16*a^3*f^2*h^2*i*j*
x - 8*a^3*f^2*g*h*j^2*x - 48*a^2*b*f^2*h^2*i*j*p*q*x + 24*a^2*b*f^2*g*h*j^2
*p*q*x + 12*a^2*b*e*f*h^2*j^2*p*q*x + 96*a*b^2*f^2*h^2*i*j*p^2*q^2*x - 48*a
*b^2*f^2*g*h*j^2*p^2*q^2*x - 36*a*b^2*e*f*h^2*j^2*p^2*q^2*x - 96*b^3*f^2*h^
2*i*j*p^3*q^3*x + 48*b^3*f^2*g*h*j^2*p^3*q^3*x + 42*b^3*e*f*h^2*j^2*p^3*q^3
*x + 4*a^3*f^2*h^2*j^2*x^2 - 6*a^2*b*f^2*h^2*j^2*p*q*x^2 + 6*a*b^2*f^2*h^2*
j^2*p^2*q^2*x^2 - 3*b^3*f^2*h^2*j^2*p^3*q^3*x^2 + 48*a^2*b*e*f*h^2*i*j*p*q*
Log[e + f*x] - 24*a^2*b*e*f*g*h*j^2*p*q*Log[e + f*x] - 12*a^2*b*e^2*h^2*j^2
*p*q*Log[e + f*x] + 36*a*b^2*e^2*h^2*j^2*p^2*q^2*Log[e + f*x] + 96*b^3*e*f*
h^2*i*j*p^3*q^3*Log[e + f*x] - 48*b^3*e*f*g*h*j^2*p^3*q^3*Log[e + f*x] - 42
*b^3*e^2*h^2*j^2*p^3*q^3*Log[e + f*x] - 48*a*b^2*e*f*h^2*i*j*p^2*q^2*Log[e
+ f*x]^2 + 24*a*b^2*e*f*g*h*j^2*p^2*q^2*Log[e + f*x]^2 + 12*a*b^2*e^2*h^2*j
^2*p^2*q^2*Log[e + f*x]^2 - 18*b^3*e^2*h^2*j^2*p^3*q^3*Log[e + f*x]^2 + 16*
b^3*e*f*h^2*i*j*p^3*q^3*Log[e + f*x]^3 - 8*b^3*e*f*g*h*j^2*p^3*q^3*Log[e +
f*x]^3 - 4*b^3*e^2*h^2*j^2*p^3*q^3*Log[e + f*x]^3 - 96*a*b^2*e*f*h^2*i*j*p*
q*Log[c*(d*(e + f*x)^p)^q] + 48*a*b^2*e*f*g*h*j^2*p*q*Log[c*(d*(e + f*x)^p)
^q] + 48*a^2*b*f^2*h^2*i*j*x*Log[c*(d*(e + f*x)^p)^q] - 24*a^2*b*f^2*g*h*j^
2*x*Log[c*(d*(e + f*x)^p)^q] - 96*a*b^2*f^2*h^2*i*j*p*q*x*Log[c*(d*(e + f*x
)^p)^q] + 48*a*b^2*f^2*g*h*j^2*p*q*x*Log[c*(d*(e + f*x)^p)^q] + 24*a*b^2*e*
f*h^2*j^2*p*q*x*Log[c*(d*(e + f*x)^p)^q] + 96*b^3*f^2*h^2*i*j*p^2*q^2*x*Log
[c*(d*(e + f*x)^p)^q] - 48*b^3*f^2*g*h*j^2*p^2*q^2*x*Log[c*(d*(e + f*x)^p)^
q] - 36*b^3*e*f*h^2*j^2*p^2*q^2*x*Log[c*(d*(e + f*x)^p)^q] + 12*a^2*b*f^2*h
^2*j^2*x^2*Log[c*(d*(e + f*x)^p)^q] - 12*a*b^2*f^2*h^2*j^2*p*q*x^2*Log[c*(d
*(e + f*x)^p)^q] + 6*b^3*f^2*h^2*j^2*p^2*q^2*x^2*Log[c*(d*(e + f*x)^p)^q] +
 96*a*b^2*e*f*h^2*i*j*p*q*Log[e + f*x]*Log[c*(d*(e + f*x)^p)^q] - 48*a*b^2*
e*f*g*h*j^2*p*q*Log[e + f*x]*Log[c*(d*(e + f*x)^p)^q] - 24*a*b^2*e^2*h^2*j^
2*p*q*Log[e + f*x]*Log[c*(d*(e + f*x)^p)^q] + 36*b^3*e^2*h^2*j^2*p^2*q^2*Lo
g[e + f*x]*Log[c*(d*(e + f*x)^p)^q] - 48*b^3*e*f*h^2*i*j*p^2*q^2*Log[e + f*
x]^2*Log[c*(d*(e + f*x)^p)^q] + 24*b^3*e*f*g*h*j^2*p^2*q^2*Log[e + f*x]^2*L
og[c*(d*(e + f*x)^p)^q] + 12*b^3*e^2*h^2*j^2*p^2*q^2*Log[e + f*x]^2*Log[c*(
d*(e + f*x)^p)^q] - 48*b^3*e*f*h^2*i*j*p*q*Log[c*(d*(e + f*x)^p)^q]^2 + 24*
b^3*e*f*g*h*j^2*p*q*Log[c*(d*(e + f*x)^p)^q]^2 + 48*a*b^2*f^2*h^2*i*j*x*Log
[c*(d*(e + f*x)^p)^q]^2 - 24*a*b^2*f^2*g*h*j^2*x*Log[c*(d*(e + f*x)^p)^q]^2
 - 48*b^3*f^2*h^2*i*j*p*q*x*Log[c*(d*(e + f*x)^p)^q]^2 + 24*b^3*f^2*g*h*j^2
*p*q*x*Log[c*(d*(e + f*x)^p)^q]^2 + 12*b^3*e*f*h^2*j^2*p*q*x*Log[c*(d*(e +
f*x)^p)^q]^2 + 12*a*b^2*f^2*h^2*j^2*x^2*Log[c*(d*(e + f*x)^p)^q]^2 - 6*b^3*
f^2*h^2*j^2*p*q*x^2*Log[c*(d*(e + f*x)^p)^q]^2 + 48*b^3*e*f*h^2*i*j*p*q*Log
[e + f*x]*Log[c*(d*(e + f*x)^p)^q]^2 - 24*b^3*e*f*g*h*j^2*p*q*Log[e + f*x]*
```

```
Log[c*(d*(e + f*x)^p)^q]^2 - 12*b^3*e^2*h^2*j^2*p*q*Log[e + f*x]*Log[c*(d*(
e + f*x)^p)^q]^2 + 16*b^3*f^2*h^2*i*j*x*Log[c*(d*(e + f*x)^p)^q]^3 - 8*b^3*
f^2*g*h*j^2*x*Log[c*(d*(e + f*x)^p)^q]^3 + 4*b^3*f^2*h^2*j^2*x^2*Log[c*(d*(
e + f*x)^p)^q]^3 + 8*a^3*f^2*h^2*i^2*Log[g + h*x] - 16*a^3*f^2*g*h*i*j*Log[
g + h*x] + 8*a^3*f^2*g^2*j^2*Log[g + h*x] - 24*a^2*b*f^2*h^2*i^2*p*q*Log[e
+ f*x]*Log[g + h*x] + 48*a^2*b*f^2*g*h*i*j*p*q*Log[e + f*x]*Log[g + h*x] -
24*a^2*b*f^2*g^2*j^2*p*q*Log[e + f*x]*Log[g + h*x] + 24*a*b^2*f^2*h^2*i^2*p
^2*q^2*Log[e + f*x]^2*Log[g + h*x] - 48*a*b^2*f^2*g*h*i*j*p^2*q^2*Log[e + f
*x]^2*Log[g + h*x] + 24*a*b^2*f^2*g^2*j^2*p^2*q^2*Log[e + f*x]^2*Log[g + h*
x] - 8*b^3*f^2*h^2*i^2*p^3*q^3*Log[e + f*x]^3*Log[g + h*x] + 16*b^3*f^2*g*h
*i*j*p^3*q^3*Log[e + f*x]^3*Log[g + h*x] - 8*b^3*f^2*g^2*j^2*p^3*q^3*Log[e
+ f*x]^3*Log[g + h*x] + 24*a^2*b*f^2*h^2*i^2*Log[c*(d*(e + f*x)^p)^q]*Log[g
 + h*x] - 48*a^2*b*f^2*g*h*i*j*Log[c*(d*(e + f*x)^p)^q]*Log[g + h*x] + 24*a
^2*b*f^2*g^2*j^2*Log[c*(d*(e + f*x)^p)^q]*Log[g + h*x] - 48*a*b^2*f^2*h^2*i
^2*p*q*Log[e + f*x]*Log[c*(d*(e + f*x)^p)^q]*Log[g + h*x] + 96*a*b^2*f^2*g*
h*i*j*p*q*Log[e + f*x]*Log[c*(d*(e + f*x)^p)^q]*Log[g + h*x] - 48*a*b^2*f^2
*g^2*j^2*p*q*Log[e + f*x]*Log[c*(d*(e + f*x)^p)^q]*Log[g + h*x] + 24*b^3*f^
2*h^2*i^2*p^2*q^2*Log[e + f*x]^2*Log[c*(d*(e + f*x)^p)^q]*Log[g + h*x] - 48
*b^3*f^2*g*h*i*j*p^2*q^2*Log[e + f*x]^2*Log[c*(d*(e + f*x)^p)^q]*Log[g + h*
x] + 24*b^3*f^2*g^2*j^2*p^2*q^2*Log[e + f*x]^2*Log[c*(d*(e + f*x)^p)^q]*Log
[g + h*x] + 24*a*b^2*f^2*h^2*i^2*Log[c*(d*(e + f*x)^p)^q]^2*Log[g + h*x] -
48*a*b^2*f^2*g*h*i*j*Log[c*(d*(e + f*x)^p)^q]^2*Log[g + h*x] + 24*a*b^2*f^2
*g^2*j^2*Log[c*(d*(e + f*x)^p)^q]^2*Log[g + h*x] - 24*b^3*f^2*h^2*i^2*p*q*L
og[e + f*x]*Log[c*(d*(e + f*x)^p)^q]^2*Log[g + h*x] + 48*b^3*f^2*g*h*i*j*p*
q*Log[e + f*x]*Log[c*(d*(e + f*x)^p)^q]^2*Log[g + h*x] - 24*b^3*f^2*g^2*j^2
*p*q*Log[e + f*x]*Log[c*(d*(e + f*x)^p)^q]^2*Log[g + h*x] + 8*b^3*f^2*h^2*i
^2*Log[c*(d*(e + f*x)^p)^q]^3*Log[g + h*x] - 16*b^3*f^2*g*h*i*j*Log[c*(d*(e
 + f*x)^p)^q]^3*Log[g + h*x] + 8*b^3*f^2*g^2*j^2*Log[c*(d*(e + f*x)^p)^q]^3
*Log[g + h*x] + 24*a^2*b*f^2*h^2*i^2*p*q*Log[e ...
```

Maple [F]
time = 0.32, size = 0, normalized size = 0.00

$$\int \frac{(jx+i)^2 \left(a+b\ln \left(c(d(fx+e)^p)^q\right)\right)^3}{hx+g}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((j*x+i)^2*(a+b*ln(c*(d*(f*x+e)^p)^q))^3/(h*x+g),x)
[Out] int((j*x+i)^2*(a+b*ln(c*(d*(f*x+e)^p)^q))^3/(h*x+g),x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((j*x+i)^2*(a+b*log(c*(d*(f*x+e)^p)^q))^3/(h*x+g),x, algorithm="ma
xima")
```

```
[Out] 1/2*a^3*j^2*(2*g^2*log(h*x + g)/h^3 + (h*x^2 - 2*g*x)/h^2) + 2*I*a^3*j*(x/h
 - g*log(h*x + g)/h^2) - a^3*log(h*x + g)/h + integrate(-(3*(q*log(d) + log
(c))*a^2*b + 3*(q^2*log(d)^2 + 2*q*log(c)*log(d) + log(c)^2)*a*b^2 + (q^3*l
og(d)^3 + 3*q^2*log(c)*log(d)^2 + 3*q*log(c)^2*log(d) + log(c)^3)*b^3 - (b^
3*j^2*x^2 + 2*I*b^3*j*x - b^3)*log(((f*x + e)^p)^q)^3 - (3*(j^2*q*log(d) +
j^2*log(c))*a^2*b + 3*(j^2*q^2*log(d)^2 + 2*j^2*q*log(c)*log(d) + j^2*log(c
)^2)*a*b^2 + (j^2*q^3*log(d)^3 + 3*j^2*q^2*log(c)*log(d)^2 + 3*j^2*q*log(c)
^2*log(d) + j^2*log(c)^3)*b^3)*x^2 + 3*((q*log(d) + log(c))*b^3 + a*b^2 - (
a*b^2*j^2 + (j^2*q*log(d) + j^2*log(c))*b^3)*x^2 + 2*((-I*j*q*log(d) - I*j*
log(c))*b^3 - I*a*b^2*j)*x)*log(((f*x + e)^p)^q)^2 + 2*(3*(-I*j*q*log(d) -
I*j*log(c))*a^2*b + 3*(-I*j*q^2*log(d)^2 - 2*I*j*q*log(c)*log(d) - I*j*log(
c)^2)*a*b^2 + (-I*j*q^3*log(d)^3 - 3*I*j*q^2*log(c)*log(d)^2 - 3*I*j*q*log(
c)^2*log(d) - I*j*log(c)^3)*b^3)*x + 3*(2*(q*log(d) + log(c))*a*b^2 + (q^2*
log(d)^2 + 2*q*log(c)*log(d) + log(c)^2)*b^3 + a^2*b - (a^2*b*j^2 + 2*(j^2*
q*log(d) + j^2*log(c))*a*b^2 + (j^2*q^2*log(d)^2 + 2*j^2*q*log(c)*log(d) +
j^2*log(c)^2)*b^3)*x^2 + 2*(2*(-I*j*q*log(d) - I*j*log(c))*a*b^2 + (-I*j*q^
2*log(d)^2 - 2*I*j*q*log(c)*log(d) - I*j*log(c)^2)*b^3 - I*a^2*b*j)*x)*log(
((f*x + e)^p)^q))/(h*x + g), x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((j*x+i)^2*(a+b*log(c*(d*(f*x+e)^p)^q))^3/(h*x+g),x, algorithm="fr
icas")
```

```
[Out] integral((a^3*j^2*x^2 + 2*I*a^3*j*x + (b^3*j^2*p^3*q^3*x^2 + 2*I*b^3*j*p^3*
q^3*x - b^3*p^3*q^3)*log(f*x + e)^3 + (b^3*j^2*x^2 + 2*I*b^3*j*x - b^3)*log
(c)^3 + (b^3*j^2*q^3*x^2 + 2*I*b^3*j*q^3*x - b^3*q^3)*log(d)^3 - a^3 + 3*(a
*b^2*j^2*p^2*q^2*x^2 + 2*I*a*b^2*j*p^2*q^2*x - a*b^2*p^2*q^2 + (b^3*j^2*p^2
*q^2*x^2 + 2*I*b^3*j*p^2*q^2*x - b^3*p^2*q^2)*log(c) + (b^3*j^2*p^2*q^3*x^2
 + 2*I*b^3*j*p^2*q^3*x - b^3*p^2*q^3)*log(d))*log(f*x + e)^2 + 3*(a*b^2*j^2
*x^2 + 2*I*a*b^2*j*x - a*b^2)*log(c)^2 + 3*(a*b^2*j^2*q^2*x^2 + 2*I*a*b^2*j
*q^2*x - a*b^2*q^2 + (b^3*j^2*q^2*x^2 + 2*I*b^3*j*q^2*x - b^3*q^2)*log(c))*
log(d)^2 + 3*(a^2*b*j^2*p*q*x^2 + 2*I*a^2*b*j*p*q*x - a^2*b*p*q + (b^3*j^2*
p*q*x^2 + 2*I*b^3*j*p*q*x - b^3*p*q)*log(c)^2 + (b^3*j^2*p*q^3*x^2 + 2*I*b^
3*j*p*q^3*x - b^3*p*q^3)*log(d)^2 + 2*(a*b^2*j^2*p*q*x^2 + 2*I*a*b^2*j*p*q*
x - a*b^2*p*q)*log(c) + 2*(a*b^2*j^2*p*q^2*x^2 + 2*I*a*b^2*j*p*q^2*x - a*b^
2*p*q^2 + (b^3*j^2*p*q^2*x^2 + 2*I*b^3*j*p*q^2*x - b^3*p*q^2)*log(c))*log(d
))*log(f*x + e) + 3*(a^2*b*j^2*x^2 + 2*I*a^2*b*j*x - a^2*b)*log(c) + 3*(a^2
*b*j^2*q*x^2 + 2*I*a^2*b*j*q*x - a^2*b*q + (b^3*j^2*q*x^2 + 2*I*b^3*j*q*x -
```

```
b^3*q)*log(c)^2 + 2*(a*b^2*j^2*q*x^2 + 2*I*a*b^2*j*q*x - a*b^2*q)*log(c))*
log(d))/(h*x + g), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a + b\log(c(d(e+fx)^p)^q))^3 (i+jx)^2}{g+hx}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((j*x+i)**2*(a+b*ln(c*(d*(f*x+e)**p)**q))**3/(h*x+g),x)
```

```
[Out] Integral((a + b*log(c*(d*(e + f*x)**p)**q))**3*(i + j*x)**2/(g + h*x), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((j*x+i)^2*(a+b*log(c*(d*(f*x+e)^p)^q))^3/(h*x+g),x, algorithm="gi
ac")
```

```
[Out] integrate((j*x + I)^2*(b*log(((f*x + e)^p*d)^q*c) + a)^3/(h*x + g), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(i+j\,x)^2\,(a+b\,\ln(c\,(d\,(e+f\,x)^p)^q))^3}{g+h\,x}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((i + j*x)^2*(a + b*log(c*(d*(e + f*x)^p)^q))^3)/(g + h*x),x)
```

```
[Out] int(((i + j*x)^2*(a + b*log(c*(d*(e + f*x)^p)^q))^3)/(g + h*x), x)
```

3.536 $\int \frac{(i+jx)(a+b\log(c(d(e+fx)^p)^q))^3}{g+hx}\,dx$

Optimal. Leaf size=349

$$\frac{6ab^2jp^2q^2x}{h}-\frac{6b^3jp^3q^3x}{h}+\frac{6b^3jp^2q^2(e+fx)\log\left(c(d(e+fx)^p)^q\right)}{fh}-\frac{3bjpq(e+fx)\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)}{fh}$$

```
[Out] 6*a*b^2*j*p^2*q^2*x/h-6*b^3*j*p^3*q^3*x/h+6*b^3*j*p^2*q^2*(f*x+e)*ln(c*(d*(
f*x+e)^p)^q)/f/h-3*b*j*p*q*(f*x+e)*(a+b*ln(c*(d*(f*x+e)^p)^q))^2/f/h+j*(f*x
+e)*(a+b*ln(c*(d*(f*x+e)^p)^q))^3/f/h+(-g*j+h*i)*(a+b*ln(c*(d*(f*x+e)^p)^q)
)^3*ln(f*(h*x+g)/(-e*h+f*g))/h^2+3*b*(-g*j+h*i)*p*q*(a+b*ln(c*(d*(f*x+e)^p)
^q))^2*polylog(2,-h*(f*x+e)/(-e*h+f*g))/h^2-6*b^2*(-g*j+h*i)*p^2*q^2*(a+b*l
n(c*(d*(f*x+e)^p)^q))*polylog(3,-h*(f*x+e)/(-e*h+f*g))/h^2+6*b^3*(-g*j+h*i)
*p^3*q^3*polylog(4,-h*(f*x+e)/(-e*h+f*g))/h^2
```

Rubi [A]

time = 0.59, antiderivative size = 349, normalized size of antiderivative = 1.00, number of steps used = 13, number of rules used = 10, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.303$, Rules used = {2465, 2436, 2333, 2332, 2443, 2481, 2421, 2430, 6724, 2495}

$$-\frac{6b^2p^2q^2(hi-gj)\text{PolyLog}\left(3,-\frac{h(e+fx)}{fg-eh}\right)\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)}{h^2}+\frac{3bpq(hi-gj)\text{PolyLog}\left(2,-\frac{h(e+fx)}{fg-eh}\right)\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)^2}{h^2}+\frac{6b^3p^3q^3(hi-gj)\text{PolyLog}\left(4,-\frac{h(e+fx)}{fg-eh}\right)}{h^2}+\frac{6ab^2jp^2q^2x}{h}+\frac{(hi-gj)\log\left(\frac{f(g+hx)}{fg-eh}\right)\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)^3}{h^2}-\frac{3bjpq(e+fx)\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)^2}{fh}+\frac{j(e+fx)\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)^3}{fh}+\frac{6b^3jp^2q^2(e+fx)\log\left(c(d(e+fx)^p)^q\right)}{fh}-\frac{6b^3jp^3q^3x}{h}$$

Antiderivative was successfully verified.

```
[In] Int[((i + j*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^3)/(g + h*x),x]
```

```
[Out] (6*a*b^2*j*p^2*q^2*x)/h - (6*b^3*j*p^3*q^3*x)/h + (6*b^3*j*p^2*q^2*(e + f*x
)*Log[c*(d*(e + f*x)^p)^q])/(f*h) - (3*b*j*p*q*(e + f*x)*(a + b*Log[c*(d*(e
 + f*x)^p)^q])^2)/(f*h) + (j*(e + f*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^3)/
(f*h) + ((h*i - g*j)*(a + b*Log[c*(d*(e + f*x)^p)^q])^3*Log[(f*(g + h*x))/(
f*g - e*h)])/h^2 + (3*b*(h*i - g*j)*p*q*(a + b*Log[c*(d*(e + f*x)^p)^q])^2*
PolyLog[2, -((h*(e + f*x))/(f*g - e*h))])/h^2 - (6*b^2*(h*i - g*j)*p^2*q^2*
(a + b*Log[c*(d*(e + f*x)^p)^q])*PolyLog[3, -((h*(e + f*x))/(f*g - e*h))])/
h^2 + (6*b^3*(h*i - g*j)*p^3*q^3*PolyLog[4, -((h*(e + f*x))/(f*g - e*h))])/
h^2
```

Rule 2332

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2333

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2421

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> Simp[(-PolyLog[2, (-d)*f*x^m])*((a + b*Log[c
*x^n])^p/m), x] + Dist[b*n*(p/m), Int[PolyLog[2, (-d)*f*x^m]*((a + b*Log[c*
x^n])^(p - 1)/x), x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0
] && EqQ[d*e, 1]
```

Rule 2430

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*PolyLog[k_, (e_.)*(x_)^(q_
.)])/(x_), x_Symbol] :> Simp[PolyLog[k + 1, e*x^q]*((a + b*Log[c*x^n])^p/q)
, x] - Dist[b*n*(p/q), Int[PolyLog[k + 1, e*x^q]*((a + b*Log[c*x^n])^(p - 1
)/x), x], x] /; FreeQ[{a, b, c, e, k, n, q}, x] && GtQ[p, 0]
```

Rule 2436

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2443

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d
+ e*x)^n])^p/g), x] - Dist[b*e*n*(p/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]*
((a + b*Log[c*(d + e*x)^n])^(p - 1)/(d + e*x)), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2465

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2481

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[(k*(x/d))^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + j*(x/e))^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2495

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rule 6724

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(536+jx)\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)^3}{g+hx}\,dx = \text{Subst}\left(\int \frac{(536+jx)\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^3}{g+hx}\,dx, cd^q(e+\right.$$

$$= \text{Subst}\left(\int \left(\frac{j(a+b\log\left(cd^q(e+fx)^{pq}\right))^3}{h} + \frac{(536h-gj)\,(a-}{h}\right.\right.$$

$$= \text{Subst}\left(\frac{j\int \left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^3\,dx}{h}, cd^q(e+fx)^{pq}, c(\right.$$

$$= \frac{(536h-gj)\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)^3\log\left(\frac{f(g+hx)}{fg-eh}\right)}{h^2} + \text{Su}$$

$$= \frac{j(e+fx)\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)^3}{fh} + \frac{(536h-gj)\,(a+b}{}$$

$$= -\frac{3bjpq(e+fx)\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)^2}{fh} + \frac{j(e+fx)\,(a}{}$$

$$= \frac{6ab^2jp^2q^2x}{h} - \frac{3bjpq(e+fx)\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)^2}{fh} +$$

$$= \frac{6ab^2jp^2q^2x}{h} - \frac{6b^3jp^3q^3x}{h} + \frac{6b^3jp^2q^2(e+fx)\log\left(c(d(e+fx\right.}{fh}$$

Mathematica [B] Leaf count is larger than twice the leaf count of optimal. 1769 vs. $2(349) = 698$.
time = 0.42, size = 1769, normalized size = 5.07

Antiderivative was successfully verified.

```
[In] Integrate[((i + j*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^3)/(g + h*x),x]
```

```
[Out] (-3*a^2*b*e*h*j*p*q + a^3*f*h*j*x - 3*a^2*b*f*h*j*p*q*x + 6*a*b^2*f*h*j*p^2
*q^2*x - 6*b^3*f*h*j*p^3*q^3*x + 3*a^2*b*e*h*j*p*q*Log[e + f*x] + 6*b^3*e*h
*j*p^3*q^3*Log[e + f*x] - 3*a*b^2*e*h*j*p^2*q^2*Log[e + f*x]^2 + b^3*e*h*j*
p^3*q^3*Log[e + f*x]^3 - 6*a*b^2*e*h*j*p*q*Log[c*(d*(e + f*x)^p)^q] + 3*a^2
*b*f*h*j*x*Log[c*(d*(e + f*x)^p)^q] - 6*a*b^2*f*h*j*p*q*x*Log[c*(d*(e + f*x
)^p)^q] + 6*b^3*f*h*j*p^2*q^2*x*Log[c*(d*(e + f*x)^p)^q] + 6*a*b^2*e*h*j*p*
q*Log[e + f*x]*Log[c*(d*(e + f*x)^p)^q] - 3*b^3*e*h*j*p^2*q^2*Log[e + f*x]^
2*Log[c*(d*(e + f*x)^p)^q] - 3*b^3*e*h*j*p*q*Log[c*(d*(e + f*x)^p)^q]^2 + 3
*a*b^2*f*h*j*x*Log[c*(d*(e + f*x)^p)^q]^2 - 3*b^3*f*h*j*p*q*x*Log[c*(d*(e +
 f*x)^p)^q]^2 + 3*b^3*e*h*j*p*q*Log[e + f*x]*Log[c*(d*(e + f*x)^p)^q]^2 + b
^3*f*h*j*x*Log[c*(d*(e + f*x)^p)^q]^3 + a^3*f*h*i*Log[g + h*x] - a^3*f*g*j*
Log[g + h*x] - 3*a^2*b*f*h*i*p*q*Log[e + f*x]*Log[g + h*x] + 3*a^2*b*f*g*j*
p*q*Log[e + f*x]*Log[g + h*x] + 3*a*b^2*f*h*i*p^2*q^2*Log[e + f*x]^2*Log[g
+ h*x] - 3*a*b^2*f*g*j*p^2*q^2*Log[e + f*x]^2*Log[g + h*x] - b^3*f*h*i*p^3*
q^3*Log[e + f*x]^3*Log[g + h*x] + b^3*f*g*j*p^3*q^3*Log[e + f*x]^3*Log[g +
h*x] + 3*a^2*b*f*h*i*Log[c*(d*(e + f*x)^p)^q]*Log[g + h*x] - 3*a^2*b*f*g*j*
Log[c*(d*(e + f*x)^p)^q]*Log[g + h*x] - 6*a*b^2*f*h*i*p*q*Log[e + f*x]*Log[
c*(d*(e + f*x)^p)^q]*Log[g + h*x] + 6*a*b^2*f*g*j*p*q*Log[e + f*x]*Log[c*(d
*(e + f*x)^p)^q]*Log[g + h*x] + 3*b^3*f*h*i*p^2*q^2*Log[e + f*x]^2*Log[c*(d
*(e + f*x)^p)^q]*Log[g + h*x] - 3*b^3*f*g*j*p^2*q^2*Log[e + f*x]^2*Log[c*(d
*(e + f*x)^p)^q]*Log[g + h*x] + 3*a*b^2*f*h*i*Log[c*(d*(e + f*x)^p)^q]^2*Lo
g[g + h*x] - 3*a*b^2*f*g*j*Log[c*(d*(e + f*x)^p)^q]^2*Log[g + h*x] - 3*b^3*
f*h*i*p*q*Log[e + f*x]*Log[c*(d*(e + f*x)^p)^q]^2*Log[g + h*x] + 3*b^3*f*g*
j*p*q*Log[e + f*x]*Log[c*(d*(e + f*x)^p)^q]^2*Log[g + h*x] + b^3*f*h*i*Log[
c*(d*(e + f*x)^p)^q]^3*Log[g + h*x] - b^3*f*g*j*Log[c*(d*(e + f*x)^p)^q]^3*
Log[g + h*x] + 3*a^2*b*f*h*i*p*q*Log[e + f*x]*Log[(f*(g + h*x))/(f*g - e*h)
] - 3*a^2*b*f*g*j*p*q*Log[e + f*x]*Log[(f*(g + h*x))/(f*g - e*h)] - 3*a*b^2
*f*h*i*p^2*q^2*Log[e + f*x]^2*Log[(f*(g + h*x))/(f*g - e*h)] + 3*a*b^2*f*g*
j*p^2*q^2*Log[e + f*x]^2*Log[(f*(g + h*x))/(f*g - e*h)] + b^3*f*h*i*p^3*q^3
*Log[e + f*x]^3*Log[(f*(g + h*x))/(f*g - e*h)] - b^3*f*g*j*p^3*q^3*Log[e +
f*x]^3*Log[(f*(g + h*x))/(f*g - e*h)] + 6*a*b^2*f*h*i*p*q*Log[e + f*x]*Log[
c*(d*(e + f*x)^p)^q]*Log[(f*(g + h*x))/(f*g - e*h)] - 6*a*b^2*f*g*j*p*q*Log
[e + f*x]*Log[c*(d*(e + f*x)^p)^q]*Log[(f*(g + h*x))/(f*g - e*h)] - 3*b^3*f
*h*i*p^2*q^2*Log[e + f*x]^2*Log[c*(d*(e + f*x)^p)^q]*Log[(f*(g + h*x))/(f*g
 - e*h)] + 3*b^3*f*g*j*p^2*q^2*Log[e + f*x]^2*Log[c*(d*(e + f*x)^p)^q]*Log[
(f*(g + h*x))/(f*g - e*h)] + 3*b^3*f*h*i*p*q*Log[e + f*x]*Log[c*(d*(e + f*x
)^p)^q]^2*Log[(f*(g + h*x))/(f*g - e*h)] - 3*b^3*f*g*j*p*q*Log[e + f*x]*Log
[c*(d*(e + f*x)^p)^q]^2*Log[(f*(g + h*x))/(f*g - e*h)] + 3*b*f*(h*i - g*j)*
p*q*(a + b*Log[c*(d*(e + f*x)^p)^q])^2*PolyLog[2, (h*(e + f*x))/(-(f*g) + e
*h)] - 6*b^2*f*(h*i - g*j)*p^2*q^2*(a + b*Log[c*(d*(e + f*x)^p)^q])*PolyLog
[3, (h*(e + f*x))/(-(f*g) + e*h)] + 6*b^3*f*h*i*p^3*q^3*PolyLog[4, (h*(e +
f*x))/(-(f*g) + e*h)] - 6*b^3*f*g*j*p^3*q^3*PolyLog[4, (h*(e + f*x))/(-(f*g
) + e*h)])/(f*h^2)
```

Maple [F]

time = 0.21, size = 0, normalized size = 0.00

$$\int \frac{(jx+i)\left(a+b\ln\left(c(d(fx+e)^p)^q\right)\right)^3}{hx+g}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((j*x+i)*(a+b*ln(c*(d*(f*x+e)^p)^q))^3/(h*x+g),x)
```

```
[Out] int((j*x+i)*(a+b*ln(c*(d*(f*x+e)^p)^q))^3/(h*x+g),x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((j*x+i)*(a+b*log(c*(d*(f*x+e)^p)^q))^3/(h*x+g),x, algorithm="maxi
ma")
```

```
[Out] a^3*j*(x/h - g*log(h*x + g)/h^2) + I*a^3*log(h*x + g)/h + integrate(-(3*(-I
*q*log(d) - I*log(c))*a^2*b + 3*(-I*q^2*log(d)^2 - 2*I*q*log(c)*log(d) - I*
log(c)^2)*a*b^2 - (I*q^3*log(d)^3 + 3*I*q^2*log(c)*log(d)^2 + 3*I*q*log(c)^
2*log(d) + I*log(c)^3)*b^3 - (b^3*j*x + I*b^3)*log(((f*x + e)^p)^q)^3 + 3*(
(-I*q*log(d) - I*log(c))*b^3 - I*a*b^2 - ((j*q*log(d) + j*log(c))*b^3 + a*b
^2*j)*x)*log(((f*x + e)^p)^q)^2 - (3*(j*q*log(d) + j*log(c))*a^2*b + 3*(j*q
^2*log(d)^2 + 2*j*q*log(c)*log(d) + j*log(c)^2)*a*b^2 + (j*q^3*log(d)^3 + 3
*j*q^2*log(c)*log(d)^2 + 3*j*q*log(c)^2*log(d) + j*log(c)^3)*b^3)*x + 3*(2*
(-I*q*log(d) - I*log(c))*a*b^2 + (-I*q^2*log(d)^2 - 2*I*q*log(c)*log(d) - I
*log(c)^2)*b^3 - I*a^2*b - (2*(j*q*log(d) + j*log(c))*a*b^2 + (j*q^2*log(d)
^2 + 2*j*q*log(c)*log(d) + j*log(c)^2)*b^3 + a^2*b*j)*x)*log(((f*x + e)^p)^
q))/(h*x + g), x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((j*x+i)*(a+b*log(c*(d*(f*x+e)^p)^q))^3/(h*x+g),x, algorithm="fric
as")
```

```
[Out] integral((a^3*j*x + (b^3*j*p^3*q^3*x + I*b^3*p^3*q^3)*log(f*x + e)^3 + (b^3
*j*x + I*b^3)*log(c)^3 + (b^3*j*q^3*x + I*b^3*q^3)*log(d)^3 + I*a^3 + 3*(a*
b^2*j*p^2*q^2*x + I*a*b^2*p^2*q^2 + (b^3*j*p^2*q^2*x + I*b^3*p^2*q^2)*log(c
) + (b^3*j*p^2*q^3*x + I*b^3*p^2*q^3)*log(d))*log(f*x + e)^2 + 3*(a*b^2*j*x
```

```
 + I*a*b^2)*log(c)^2 + 3*(a*b^2*j*q^2*x + I*a*b^2*q^2 + (b^3*j*q^2*x + I*b^
3*q^2)*log(c))*log(d)^2 + 3*(a^2*b*j*p*q*x + I*a^2*b*p*q + (b^3*j*p*q*x + I
*b^3*p*q)*log(c)^2 + (b^3*j*p*q^3*x + I*b^3*p*q^3)*log(d)^2 + 2*(a*b^2*j*p*
q*x + I*a*b^2*p*q)*log(c) + 2*(a*b^2*j*p*q^2*x + I*a*b^2*p*q^2 + (b^3*j*p*q
^2*x + I*b^3*p*q^2)*log(c))*log(d))*log(f*x + e) + 3*(a^2*b*j*x + I*a^2*b)*
log(c) + 3*(a^2*b*j*q*x + I*a^2*b*q + (b^3*j*q*x + I*b^3*q)*log(c)^2 + 2*(a
*b^2*j*q*x + I*a*b^2*q)*log(c))*log(d))/(h*x + g), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)^3(i+jx)}{g+hx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((j*x+i)*(a+b*ln(c*(d*(f*x+e)**p)**q))**3/(h*x+g),x)
[Out] Integral((a + b*log(c*(d*(e + f*x)**p)**q))**3*(i + j*x)/(g + h*x), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((j*x+i)*(a+b*log(c*(d*(f*x+e)^p)^q))^3/(h*x+g),x, algorithm="giac
")
[Out] integrate((j*x + I)*(b*log(((f*x + e)^p*d)^q*c) + a)^3/(h*x + g), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(i+j\,x)\,\left(a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)\right)^3}{g+h\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((i + j*x)*(a + b*log(c*(d*(e + f*x)^p)^q))^3)/(g + h*x),x)
[Out] int(((i + j*x)*(a + b*log(c*(d*(e + f*x)^p)^q))^3)/(g + h*x), x)
```

3.537 $\int \frac{(a+b\log(c(d(e+fx)^p)^q))^3}{g+hx}\,dx$

Optimal. Leaf size=177

$$\frac{(a+b\log(c(d(e+fx)^p)^q))^3\log\left(\frac{f(g+hx)}{fg-eh}\right)}{h}+\frac{3bpq(a+b\log(c(d(e+fx)^p)^q))^2\operatorname{Li}_2\left(-\frac{h(e+fx)}{fg-eh}\right)}{h}-\frac{6b^2p^2q^2(a+b\mathrm{l}}{}$$

```
[Out] (a+b*ln(c*(d*(f*x+e)^p)^q))^3*ln(f*(h*x+g)/(-e*h+f*g))/h+3*b*p*q*(a+b*ln(c*
(d*(f*x+e)^p)^q))^2*polylog(2,-h*(f*x+e)/(-e*h+f*g))/h-6*b^2*p^2*q^2*(a+b*l
n(c*(d*(f*x+e)^p)^q))*polylog(3,-h*(f*x+e)/(-e*h+f*g))/h+6*b^3*p^3*q^3*poly
log(4,-h*(f*x+e)/(-e*h+f*g))/h
```

Rubi [A]

time = 0.27, antiderivative size = 177, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}} = 0.214$, Rules used = {2443, 2481, 2421, 2430, 6724, 2495}

$$-\frac{6b^2p^2q^2\text{PolyLog}\left(3,-\frac{h(e+fx)}{fg-eh}\right)(a+b\log(c(d(e+fx)^p)^q))}{h}+\frac{3bpq\text{PolyLog}\left(2,-\frac{h(e+fx)}{fg-eh}\right)(a+b\log(c(d(e+fx)^p)^q))^2}{h}+\frac{6b^3p^3q^3\text{PolyLog}\left(4,-\frac{h(e+fx)}{fg-eh}\right)}{h}+\frac{\log\left(\frac{f(g+hx)}{fg-eh}\right)(a+b\log(c(d(e+fx)^p)^q))^3}{h}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])^3/(g + h*x),x]
```

```
[Out] ((a + b*Log[c*(d*(e + f*x)^p)^q])^3*Log[(f*(g + h*x))/(f*g - e*h)])/h + (3*
b*p*q*(a + b*Log[c*(d*(e + f*x)^p)^q])^2*PolyLog[2, -((h*(e + f*x))/(f*g -
e*h))])/h - (6*b^2*p^2*q^2*(a + b*Log[c*(d*(e + f*x)^p)^q])*PolyLog[3, -((h
*(e + f*x))/(f*g - e*h))])/h + (6*b^3*p^3*q^3*PolyLog[4, -((h*(e + f*x))/(f
*g - e*h))])/h
```

Rule 2421

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> Simp[(-PolyLog[2, (-d)*f*x^m])*((a + b*Log[c
*x^n])^p/m), x] + Dist[b*n*(p/m), Int[PolyLog[2, (-d)*f*x^m]*((a + b*Log[c*
x^n])^(p - 1)/x), x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0
] && EqQ[d*e, 1]
```

Rule 2430

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*PolyLog[k_, (e_.)*(x_)^(q_
.)])/(x_), x_Symbol] :> Simp[PolyLog[k + 1, e*x^q]*((a + b*Log[c*x^n])^p/q)
, x] - Dist[b*n*(p/q), Int[PolyLog[k + 1, e*x^q]*((a + b*Log[c*x^n])^(p - 1
)/x), x], x] /; FreeQ[{a, b, c, e, k, n, q}, x] && GtQ[p, 0]
```

Rule 2443

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d
+ e*x)^n])^p/g), x] - Dist[b*e*n*(p/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]*
((a + b*Log[c*(d + e*x)^n])^(p - 1)/(d + e*x)), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2481

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[(k*(x/d))^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + j*(x/e))^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2495

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rule 6724

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(a+b\log(c(d(e+fx)^p)^q))^3}{g+hx}\,dx = \text{Subst}\left(\int \frac{(a+b\log(cd^q(e+fx)^{pq}))^3}{g+hx}\,dx, cd^q(e+fx)^{pq}, c(d(e+fx)^p)^q$$

$$= \frac{(a+b\log(c(d(e+fx)^p)^q))^3\log\left(\frac{f(g+hx)}{fg-eh}\right)}{h} - \text{Subst}\left(\frac{(3bfpq)\int \frac{(a+b\log(c}{}}{}\right.$$

$$= \frac{(a+b\log(c(d(e+fx)^p)^q))^3\log\left(\frac{f(g+hx)}{fg-eh}\right)}{h} - \text{Subst}\left(\frac{(3bpq)\text{Subst}\left(\int \frac{(a}{}\right.}{}\right.$$

$$= \frac{(a+b\log(c(d(e+fx)^p)^q))^3\log\left(\frac{f(g+hx)}{fg-eh}\right)}{h} + \frac{3bpq(a+b\log(c(d(e+fx}{h}$$

$$= \frac{(a+b\log(c(d(e+fx)^p)^q))^3\log\left(\frac{f(g+hx)}{fg-eh}\right)}{h} + \frac{3bpq(a+b\log(c(d(e+fx}{h}$$

$$= \frac{(a+b\log(c(d(e+fx)^p)^q))^3\log\left(\frac{f(g+hx)}{fg-eh}\right)}{h} + \frac{3bpq(a+b\log(c(d(e+fx}{h}$$

<u>**Mathematica**</u> [B] Leaf count is larger than twice the leaf count of optimal. 646 vs. $2(177) = 354$.

time = 0.12, size = 646, normalized size = 3.65

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])^3/(g + h*x),x]
```

```
[Out] (a^3*Log[g + h*x] - 3*a^2*b*p*q*Log[e + f*x]*Log[g + h*x] + 3*a*b^2*p^2*q^2
*Log[e + f*x]^2*Log[g + h*x] - b^3*p^3*q^3*Log[e + f*x]^3*Log[g + h*x] + 3*
a^2*b*Log[c*(d*(e + f*x)^p)^q]*Log[g + h*x] - 6*a*b^2*p*q*Log[e + f*x]*Log[
c*(d*(e + f*x)^p)^q]*Log[g + h*x] + 3*b^3*p^2*q^2*Log[e + f*x]^2*Log[c*(d*(
e + f*x)^p)^q]*Log[g + h*x] + 3*a*b^2*Log[c*(d*(e + f*x)^p)^q]^2*Log[g + h*
x] - 3*b^3*p*q*Log[e + f*x]*Log[c*(d*(e + f*x)^p)^q]^2*Log[g + h*x] + b^3*L
og[c*(d*(e + f*x)^p)^q]^3*Log[g + h*x] + 3*a^2*b*p*q*Log[e + f*x]*Log[(f*(g
```

```
 + h*x))/(f*g - e*h)] - 3*a*b^2*p^2*q^2*Log[e + f*x]^2*Log[(f*(g + h*x))/(f
*g - e*h)] + b^3*p^3*q^3*Log[e + f*x]^3*Log[(f*(g + h*x))/(f*g - e*h)] + 6*
a*b^2*p*q*Log[e + f*x]*Log[c*(d*(e + f*x)^p)^q]*Log[(f*(g + h*x))/(f*g - e*
h)] - 3*b^3*p^2*q^2*Log[e + f*x]^2*Log[c*(d*(e + f*x)^p)^q]*Log[(f*(g + h*x
))/(f*g - e*h)] + 3*b^3*p*q*Log[e + f*x]*Log[c*(d*(e + f*x)^p)^q]^2*Log[(f*
(g + h*x))/(f*g - e*h)] + 3*b*p*q*(a + b*Log[c*(d*(e + f*x)^p)^q])^2*PolyLo
g[2, (h*(e + f*x))/(-(f*g) + e*h)] - 6*b^2*p^2*q^2*(a + b*Log[c*(d*(e + f*x
)^p)^q])*PolyLog[3, (h*(e + f*x))/(-(f*g) + e*h)] + 6*b^3*p^3*q^3*PolyLog[4
, (h*(e + f*x))/(-(f*g) + e*h)])/h
```

Maple [F]
time = 0.03, size = 0, normalized size = 0.00

$$\int \frac{\left(a+b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)\right)^{3}}{hx+g}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(d*(f*x+e)^p)^q))^3/(h*x+g),x)
```

```
[Out] int((a+b*ln(c*(d*(f*x+e)^p)^q))^3/(h*x+g),x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^3/(h*x+g),x, algorithm="maxima")
```

```
[Out] a^3*log(h*x + g)/h + integrate((b^3*log(((f*x + e)^p)^q)^3 + 3*(q*log(d) +
log(c))*a^2*b + 3*(q^2*log(d)^2 + 2*q*log(c)*log(d) + log(c)^2)*a*b^2 + (q^
3*log(d)^3 + 3*q^2*log(c)*log(d)^2 + 3*q*log(c)^2*log(d) + log(c)^3)*b^3 +
3*((q*log(d) + log(c))*b^3 + a*b^2)*log(((f*x + e)^p)^q)^2 + 3*(2*(q*log(d)
 + log(c))*a*b^2 + (q^2*log(d)^2 + 2*q*log(c)*log(d) + log(c)^2)*b^3 + a^2*
b)*log(((f*x + e)^p)^q))/(h*x + g), x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^3/(h*x+g),x, algorithm="fricas")
```

```
[Out] integral((b^3*log(((f*x + e)^p*d)^q*c)^3 + 3*a*b^2*log(((f*x + e)^p*d)^q*c)
^2 + 3*a^2*b*log(((f*x + e)^p*d)^q*c) + a^3)/(h*x + g), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a + b\log (c(d(e + fx)^p)^q))^3}{g + hx}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))**3/(h*x+g),x)
[Out] Integral((a + b*log(c*(d*(e + f*x)**p)**q))**3/(g + h*x), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^3/(h*x+g),x, algorithm="giac")
[Out] integrate((b*log(((f*x + e)^p*d)^q*c) + a)^3/(h*x + g), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(a + b\,\ln (c\,(d\,(e + f\,x)^p)^q))^3}{g + h\,x}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d*(e + f*x)^p)^q))^3/(g + h*x),x)
[Out] int((a + b*log(c*(d*(e + f*x)^p)^q))^3/(g + h*x), x)
```

3.538 $\int \frac{(a+b\log(c(d(e+fx)^p)^q))^3}{(g+hx)(i+jx)}\,dx$

Optimal. Leaf size=410

$$\frac{(a+b\log(c(d(e+fx)^p)^q))^3\log\left(\frac{f(g+hx)}{fg-eh}\right)}{hi-gj}-\frac{(a+b\log(c(d(e+fx)^p)^q))^3\log\left(\frac{f(i+jx)}{fi-ej}\right)}{hi-gj}+\frac{3bpq(a+b\log(c(d(}{}$$

```
[Out] (a+b*ln(c*(d*(f*x+e)^p)^q))^3*ln(f*(h*x+g)/(-e*h+f*g))/(-g*j+h*i)-(a+b*ln(c
*(d*(f*x+e)^p)^q))^3*ln(f*(j*x+i)/(-e*j+f*i))/(-g*j+h*i)+3*b*p*q*(a+b*ln(c*
(d*(f*x+e)^p)^q))^2*polylog(2,-h*(f*x+e)/(-e*h+f*g))/(-g*j+h*i)-3*b*p*q*(a+
b*ln(c*(d*(f*x+e)^p)^q))^2*polylog(2,-j*(f*x+e)/(-e*j+f*i))/(-g*j+h*i)-6*b^
2*p^2*q^2*(a+b*ln(c*(d*(f*x+e)^p)^q))*polylog(3,-h*(f*x+e)/(-e*h+f*g))/(-g*
j+h*i)+6*b^2*p^2*q^2*(a+b*ln(c*(d*(f*x+e)^p)^q))*polylog(3,-j*(f*x+e)/(-e*j
+f*i))/(-g*j+h*i)+6*b^3*p^3*q^3*polylog(4,-h*(f*x+e)/(-e*h+f*g))/(-g*j+h*i)
-6*b^3*p^3*q^3*polylog(4,-j*(f*x+e)/(-e*j+f*i))/(-g*j+h*i)
```

Rubi [A]

time = 0.80, antiderivative size = 410, normalized size of antiderivative = 1.00, number of steps used = 13, number of rules used = 7, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.200$, Rules used = {2465, 2443, 2481, 2421, 2430, 6724, 2495}

$$-\frac{6b^2p^2q^2\text{PolyLog}\left(3,-\frac{h(e+fx)}{fg-eh}\right)(a+b\log(c(d(e+fx)^p)^q))}{hi-gj}+\frac{6b^2p^2q^2\text{PolyLog}\left(3,-\frac{j(e+fx)}{fi-ej}\right)(a+b\log(c(d(e+fx)^p)^q))}{hi-gj}+\frac{3bpq\text{PolyLog}\left(2,-\frac{h(e+fx)}{fg-eh}\right)(a+b\log(c(d(e+fx)^p)^q))^2}{hi-gj}-\frac{3bpq\text{PolyLog}\left(2,-\frac{j(e+fx)}{fi-ej}\right)(a+b\log(c(d(e+fx)^p)^q))^2}{hi-gj}+\frac{6b^3p^3q^3\text{PolyLog}\left(4,-\frac{h(e+fx)}{fg-eh}\right)}{hi-gj}-\frac{6b^3p^3q^3\text{PolyLog}\left(4,-\frac{j(e+fx)}{fi-ej}\right)}{hi-gj}+\frac{\log\left(\frac{f(g+hx)}{fg-eh}\right)(a+b\log(c(d(e+fx)^p)^q))^3}{hi-gj}-\frac{\log\left(\frac{f(i+jx)}{fi-ej}\right)(a+b\log(c(d(e+fx)^p)^q))^3}{hi-gj}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])^3/((g + h*x)*(i + j*x)),x]
```

```
[Out] ((a + b*Log[c*(d*(e + f*x)^p)^q])^3*Log[(f*(g + h*x))/(f*g - e*h)])/(h*i -
g*j) - ((a + b*Log[c*(d*(e + f*x)^p)^q])^3*Log[(f*(i + j*x))/(f*i - e*j)])/
(h*i - g*j) + (3*b*p*q*(a + b*Log[c*(d*(e + f*x)^p)^q])^2*PolyLog[2, -((h*(
e + f*x))/(f*g - e*h))])/(h*i - g*j) - (3*b*p*q*(a + b*Log[c*(d*(e + f*x)^p
)^q])^2*PolyLog[2, -((j*(e + f*x))/(f*i - e*j))])/(h*i - g*j) - (6*b^2*p^2*
q^2*(a + b*Log[c*(d*(e + f*x)^p)^q])*PolyLog[3, -((h*(e + f*x))/(f*g - e*h)
)])/(h*i - g*j) + (6*b^2*p^2*q^2*(a + b*Log[c*(d*(e + f*x)^p)^q])*PolyLog[3
, -((j*(e + f*x))/(f*i - e*j))])/(h*i - g*j) + (6*b^3*p^3*q^3*PolyLog[4, -(
(h*(e + f*x))/(f*g - e*h))])/(h*i - g*j) - (6*b^3*p^3*q^3*PolyLog[4, -((j*(
e + f*x))/(f*i - e*j))])/(h*i - g*j)
```

Rule 2421

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> Simp[(-PolyLog[2, (-d)*f*x^m])*((a + b*Log[c
*x^n])^p/m), x] + Dist[b*n*(p/m), Int[PolyLog[2, (-d)*f*x^m]*((a + b*Log[c*
x^n])^(p - 1)/x), x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0
] && EqQ[d*e, 1]
```

Rule 2430

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*PolyLog[k_, (e_.)*(x_)^(q_
.)])/(x_), x_Symbol] :> Simp[PolyLog[k + 1, e*x^q]*((a + b*Log[c*x^n])^p/q)
, x] - Dist[b*n*(p/q), Int[PolyLog[k + 1, e*x^q]*((a + b*Log[c*x^n])^(p - 1
)/x), x], x] /; FreeQ[{a, b, c, e, k, n, q}, x] && GtQ[p, 0]
```

Rule 2443

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d
+ e*x)^n])^p/g), x] - Dist[b*e*n*(p/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]*
((a + b*Log[c*(d + e*x)^n])^(p - 1)/(d + e*x)), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2465

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2481

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[(k*(x/d))^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + j*(x/e))^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2495

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rule 6724

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(a+b\log(c(d(e+fx)^p)^q))^3}{(g+hx)(538+jx)}\,dx = \text{Subst}\left(\int \frac{(a+b\log(cd^q(e+fx)^{pq}))^3}{(g+hx)(538+jx)}\,dx, cd^q(e+fx)^{pq}, c(d(e+fx)^p)\right.$$

$$= \text{Subst}\left(\int \left(\frac{h(a+b\log(cd^q(e+fx)^{pq}))^3}{(538h-gj)(g+hx)} - \frac{j(a+b\log(cd^q(e+fx)^{pq}}{(538h-gj)(538+jx)}\right.\right.$$

$$= \text{Subst}\left(\frac{h\int \frac{(a+b\log(cd^q(e+fx)^{pq}))^3}{g+hx}\,dx}{538h-gj}, cd^q(e+fx)^{pq}, c(d(e+fx)^p)^q\right) - $$

$$= \frac{(a+b\log(c(d(e+fx)^p)^q))^3\log\left(\frac{f(g+hx)}{fg-eh}\right)}{538h-gj} - \frac{(a+b\log(c(d(e+fx)^p)}{538h-}$$

$$= \frac{(a+b\log(c(d(e+fx)^p)^q))^3\log\left(\frac{f(g+hx)}{fg-eh}\right)}{538h-gj} - \frac{(a+b\log(c(d(e+fx)^p)}{538h-}$$

$$= \frac{(a+b\log(c(d(e+fx)^p)^q))^3\log\left(\frac{f(g+hx)}{fg-eh}\right)}{538h-gj} - \frac{(a+b\log(c(d(e+fx)^p)}{538h-}$$

$$= \frac{(a+b\log(c(d(e+fx)^p)^q))^3\log\left(\frac{f(g+hx)}{fg-eh}\right)}{538h-gj} - \frac{(a+b\log(c(d(e+fx)^p)}{538h-}$$

$$= \frac{(a+b\log(c(d(e+fx)^p)^q))^3\log\left(\frac{f(g+hx)}{fg-eh}\right)}{538h-gj} - \frac{(a+b\log(c(d(e+fx)^p)}{538h-}$$

Mathematica [B] Leaf count is larger than twice the leaf count of optimal. 1350 vs. 2(410) = 820.
time = 0.29, size = 1350, normalized size = 3.29

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])^3/((g + h*x)*(i + j*x)),x]
```

```
[Out] (a^3*Log[g + h*x] - 3*a^2*b*p*q*Log[e + f*x]*Log[g + h*x] + 3*a*b^2*p^2*q^2
*Log[e + f*x]^2*Log[g + h*x] - b^3*p^3*q^3*Log[e + f*x]^3*Log[g + h*x] + 3*
a^2*b*Log[c*(d*(e + f*x)^p)^q]*Log[g + h*x] - 6*a*b^2*p*q*Log[e + f*x]*Log[
c*(d*(e + f*x)^p)^q]*Log[g + h*x] + 3*b^3*p^2*q^2*Log[e + f*x]^2*Log[c*(d*(
e + f*x)^p)^q]*Log[g + h*x] + 3*a*b^2*Log[c*(d*(e + f*x)^p)^q]^2*Log[g + h*
x] - 3*b^3*p*q*Log[e + f*x]*Log[c*(d*(e + f*x)^p)^q]^2*Log[g + h*x] + b^3*L
og[c*(d*(e + f*x)^p)^q]^3*Log[g + h*x] + 3*a^2*b*p*q*Log[e + f*x]*Log[(f*(g
 + h*x))/(f*g - e*h)] - 3*a*b^2*p^2*q^2*Log[e + f*x]^2*Log[(f*(g + h*x))/(f
*g - e*h)] + b^3*p^3*q^3*Log[e + f*x]^3*Log[(f*(g + h*x))/(f*g - e*h)] + 6*
a*b^2*p*q*Log[e + f*x]*Log[c*(d*(e + f*x)^p)^q]*Log[(f*(g + h*x))/(f*g - e*
h)] - 3*b^3*p^2*q^2*Log[e + f*x]^2*Log[c*(d*(e + f*x)^p)^q]*Log[(f*(g + h*x
))/(f*g - e*h)] + 3*b^3*p*q*Log[e + f*x]*Log[c*(d*(e + f*x)^p)^q]^2*Log[(f*
(g + h*x))/(f*g - e*h)] - a^3*Log[i + j*x] + 3*a^2*b*p*q*Log[e + f*x]*Log[i
 + j*x] - 3*a*b^2*p^2*q^2*Log[e + f*x]^2*Log[i + j*x] + b^3*p^3*q^3*Log[e +
 f*x]^3*Log[i + j*x] - 3*a^2*b*Log[c*(d*(e + f*x)^p)^q]*Log[i + j*x] + 6*a*
b^2*p*q*Log[e + f*x]*Log[c*(d*(e + f*x)^p)^q]*Log[i + j*x] - 3*b^3*p^2*q^2*
Log[e + f*x]^2*Log[c*(d*(e + f*x)^p)^q]*Log[i + j*x] - 3*a*b^2*Log[c*(d*(e
+ f*x)^p)^q]^2*Log[i + j*x] + 3*b^3*p*q*Log[e + f*x]*Log[c*(d*(e + f*x)^p)^
q]^2*Log[i + j*x] - b^3*Log[c*(d*(e + f*x)^p)^q]^3*Log[i + j*x] - 3*a^2*b*p
*q*Log[e + f*x]*Log[(f*(i + j*x))/(f*i - e*j)] + 3*a*b^2*p^2*q^2*Log[e + f*
x]^2*Log[(f*(i + j*x))/(f*i - e*j)] - b^3*p^3*q^3*Log[e + f*x]^3*Log[(f*(i
+ j*x))/(f*i - e*j)] - 6*a*b^2*p*q*Log[e + f*x]*Log[c*(d*(e + f*x)^p)^q]*Lo
g[(f*(i + j*x))/(f*i - e*j)] + 3*b^3*p^2*q^2*Log[e + f*x]^2*Log[c*(d*(e + f
*x)^p)^q]*Log[(f*(i + j*x))/(f*i - e*j)] - 3*b^3*p*q*Log[e + f*x]*Log[c*(d*
(e + f*x)^p)^q]^2*Log[(f*(i + j*x))/(f*i - e*j)] + 3*b*p*q*(a + b*Log[c*(d*
(e + f*x)^p)^q])^2*PolyLog[2, (h*(e + f*x))/(-(f*g) + e*h)] - 3*b*p*q*(a +
b*Log[c*(d*(e + f*x)^p)^q])^2*PolyLog[2, (j*(e + f*x))/(-(f*i) + e*j)] - 6*
a*b^2*p^2*q^2*PolyLog[3, (h*(e + f*x))/(-(f*g) + e*h)] - 6*b^3*p^2*q^2*Log[
c*(d*(e + f*x)^p)^q]*PolyLog[3, (h*(e + f*x))/(-(f*g) + e*h)] + 6*a*b^2*p^2
*q^2*PolyLog[3, (j*(e + f*x))/(-(f*i) + e*j)] + 6*b^3*p^2*q^2*Log[c*(d*(e +
 f*x)^p)^q]*PolyLog[3, (j*(e + f*x))/(-(f*i) + e*j)] + 6*b^3*p^3*q^3*PolyLo
g[4, (h*(e + f*x))/(-(f*g) + e*h)] - 6*b^3*p^3*q^3*PolyLog[4, (j*(e + f*x))
/(-(f*i) + e*j)])/(h*i - g*j)
```

Maple [F]

time = 0.37, size = 0, normalized size = 0.00

$$\int \frac{\left(a+b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)\right)^{3}}{\left(hx+g\right)\left(jx+i\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(d*(f*x+e)^p)^q))^3/(h*x+g)/(j*x+i),x)
```

```
[Out] int((a+b*ln(c*(d*(f*x+e)^p)^q))^3/(h*x+g)/(j*x+i),x)
```

Maxima [F]

time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^3/(h*x+g)/(j*x+i),x, algorithm="maxi
ma")
```

```
[Out] -a^3*(log(h*x + g)/(g*j - I*h) - log(j*x + I)/(g*j - I*h)) + integrate((b^3
*log(((f*x + e)^p)^q)^3 + 3*(q*log(d) + log(c))*a^2*b + 3*(q^2*log(d)^2 + 2
*q*log(c)*log(d) + log(c)^2)*a*b^2 + (q^3*log(d)^3 + 3*q^2*log(c)*log(d)^2
+ 3*q*log(c)^2*log(d) + log(c)^3)*b^3 + 3*((q*log(d) + log(c))*b^3 + a*b^2)
*log(((f*x + e)^p)^q)^2 + 3*(2*(q*log(d) + log(c))*a*b^2 + (q^2*log(d)^2 +
2*q*log(c)*log(d) + log(c)^2)*b^3 + a^2*b)*log(((f*x + e)^p)^q))/(h*j*x^2 +
 (g*j + I*h)*x + I*g), x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^3/(h*x+g)/(j*x+i),x, algorithm="fric
as")
```

```
[Out] integral((b^3*p^3*q^3*log(f*x + e)^3 + b^3*q^3*log(d)^3 + b^3*log(c)^3 + 3*
a*b^2*log(c)^2 + 3*a^2*b*log(c) + a^3 + 3*(b^3*p^2*q^3*log(d) + b^3*p^2*q^2
*log(c) + a*b^2*p^2*q^2)*log(f*x + e)^2 + 3*(b^3*q^2*log(c) + a*b^2*q^2)*lo
g(d)^2 + 3*(b^3*p*q^3*log(d)^2 + b^3*p*q*log(c)^2 + 2*a*b^2*p*q*log(c) + a^
2*b*p*q + 2*(b^3*p*q^2*log(c) + a*b^2*p*q^2)*log(d))*log(f*x + e) + 3*(b^3*
q*log(c)^2 + 2*a*b^2*q*log(c) + a^2*b*q)*log(d))/(h*j*x^2 + (g*j + I*h)*x +
 I*g), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(a + b\log\left(c\left(d\left(e + fx\right)^{p}\right)^{q}\right)\right)^{3}}{\left(g + hx\right)\left(i + jx\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))**3/(h*x+g)/(j*x+i),x)
```

```
[Out] Integral((a + b*log(c*(d*(e + f*x)**p)**q))**3/((g + h*x)*(i + j*x)), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^3/(h*x+g)/(j*x+i),x, algorithm="giac
")
```

```
[Out] integrate((b*log(((f*x + e)^p*d)^q*c) + a)^3/((h*x + g)*(j*x + I)), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)\right)^3}{\left(g+h\,x\right)\,\left(i+j\,x\right)} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d*(e + f*x)^p)^q))^3/((g + h*x)*(i + j*x)),x)
```

```
[Out] int((a + b*log(c*(d*(e + f*x)^p)^q))^3/((g + h*x)*(i + j*x)), x)
```

3.539 $\int \frac{(a+b\log(c(d(e+fx)^p)^q))^3}{(g+hx)(i+jx)^2}\,dx$

Optimal. Leaf size=659

$$-\frac{j(e+fx)\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)^3}{(fi-ej)(hi-gj)(i+jx)}+\frac{h\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)^3\log\left(\frac{f(g+hx)}{fg-eh}\right)}{(hi-gj)^2}+\frac{3bfpq(a+b\log(c(\cdots}{(fi-\cdots}$$

```
[Out] -j*(f*x+e)*(a+b*ln(c*(d*(f*x+e)^p)^q))^3/(-e*j+f*i)/(-g*j+h*i)/(j*x+i)+h*(a
+b*ln(c*(d*(f*x+e)^p)^q))^3*ln(f*(h*x+g)/(-e*h+f*g))/(-g*j+h*i)^2+3*b*f*p*q
*(a+b*ln(c*(d*(f*x+e)^p)^q))^2*ln(f*(j*x+i)/(-e*j+f*i))/(-e*j+f*i)/(-g*j+h*
i)-h*(a+b*ln(c*(d*(f*x+e)^p)^q))^3*ln(f*(j*x+i)/(-e*j+f*i))/(-g*j+h*i)^2+3*
b*h*p*q*(a+b*ln(c*(d*(f*x+e)^p)^q))^2*polylog(2,-h*(f*x+e)/(-e*h+f*g))/(-g*
j+h*i)^2+6*b^2*f*p^2*q^2*(a+b*ln(c*(d*(f*x+e)^p)^q))*polylog(2,-j*(f*x+e)/(
-e*j+f*i))/(-e*j+f*i)/(-g*j+h*i)-3*b*h*p*q*(a+b*ln(c*(d*(f*x+e)^p)^q))^2*po
lylog(2,-j*(f*x+e)/(-e*j+f*i))/(-g*j+h*i)^2-6*b^2*h*p^2*q^2*(a+b*ln(c*(d*(f
*x+e)^p)^q))*polylog(3,-h*(f*x+e)/(-e*h+f*g))/(-g*j+h*i)^2-6*b^3*f*p^3*q^3*
polylog(3,-j*(f*x+e)/(-e*j+f*i))/(-e*j+f*i)/(-g*j+h*i)+6*b^2*h*p^2*q^2*(a+b
*ln(c*(d*(f*x+e)^p)^q))*polylog(3,-j*(f*x+e)/(-e*j+f*i))/(-g*j+h*i)^2+6*b^3
*h*p^3*q^3*polylog(4,-h*(f*x+e)/(-e*h+f*g))/(-g*j+h*i)^2-6*b^3*h*p^3*q^3*po
lylog(4,-j*(f*x+e)/(-e*j+f*i))/(-g*j+h*i)^2
```

Rubi [A]

time = 1.13, antiderivative size = 659, normalized size of antiderivative = 1.00, number of steps used = 18, number of rules used = 8, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.229$, Rules used = {2465, 2443, 2481, 2421, 2430, 6724, 2444, 2495}

$$\frac{6b^2fp^2q^2\text{PolyLog}\left(2,-\frac{j(e+fx)}{fi-ej}\right)\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)}{(fi-ej)(hi-gj)}-\frac{6b^2hp^2q^2\text{PolyLog}\left(3,-\frac{h(e+fx)}{fg-eh}\right)\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)}{(hi-gj)^2}+\frac{6b^2hp^2q^2\text{PolyLog}\left(3,-\frac{j(e+fx)}{fi-ej}\right)\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)}{(hi-gj)^2}+\frac{3bhpq\text{PolyLog}\left(2,-\frac{h(e+fx)}{fg-eh}\right)\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)^2}{(hi-gj)^2}-\frac{3bhpq\text{PolyLog}\left(2,-\frac{j(e+fx)}{fi-ej}\right)\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)^2}{(hi-gj)^2}-\frac{6b^3fp^3q^3\text{PolyLog}\left(3,-\frac{j(e+fx)}{fi-ej}\right)}{(fi-ej)(hi-gj)}+\frac{6b^3hp^3q^3\text{PolyLog}\left(4,-\frac{h(e+fx)}{fg-eh}\right)}{(hi-gj)^2}-\frac{6b^3hp^3q^3\text{PolyLog}\left(4,-\frac{j(e+fx)}{fi-ej}\right)}{(hi-gj)^2}+\frac{3bfpq\log\left(\frac{f(i+jx)}{fi-ej}\right)\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)^2}{(fi-ej)(hi-gj)}-\frac{j(e+fx)\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)^3}{(i+jx)(fi-ej)(hi-gj)}+\frac{h\log\left(\frac{f(g+hx)}{fg-eh}\right)\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)^3}{(hi-gj)^2}-\frac{h\log\left(\frac{f(i+jx)}{fi-ej}\right)\left(a+b\log\left(c(d(e+fx)^p)^q\right)\right)^3}{(hi-gj)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])^3/((g + h*x)*(i + j*x)^2),x]
```

```
[Out] -((j*(e + f*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^3)/((f*i - e*j)*(h*i - g*j)
*(i + j*x))) + (h*(a + b*Log[c*(d*(e + f*x)^p)^q])^3*Log[(f*(g + h*x))/(f*g
 - e*h)])/(h*i - g*j)^2 + (3*b*f*p*q*(a + b*Log[c*(d*(e + f*x)^p)^q])^2*Log
[(f*(i + j*x))/(f*i - e*j)])/((f*i - e*j)*(h*i - g*j)) - (h*(a + b*Log[c*(d
*(e + f*x)^p)^q])^3*Log[(f*(i + j*x))/(f*i - e*j)])/(h*i - g*j)^2 + (3*b*h*
p*q*(a + b*Log[c*(d*(e + f*x)^p)^q])^2*PolyLog[2, -((h*(e + f*x))/(f*g - e*
h))])/(h*i - g*j)^2 + (6*b^2*f*p^2*q^2*(a + b*Log[c*(d*(e + f*x)^p)^q])*Pol
yLog[2, -((j*(e + f*x))/(f*i - e*j))])/((f*i - e*j)*(h*i - g*j)) - (3*b*h*p
*q*(a + b*Log[c*(d*(e + f*x)^p)^q])^2*PolyLog[2, -((j*(e + f*x))/(f*i - e*j
))])/(h*i - g*j)^2 - (6*b^2*h*p^2*q^2*(a + b*Log[c*(d*(e + f*x)^p)^q])*Poly
Log[3, -((h*(e + f*x))/(f*g - e*h))])/(h*i - g*j)^2 - (6*b^3*f*p^3*q^3*Poly
Log[3, -((j*(e + f*x))/(f*i - e*j))])/((f*i - e*j)*(h*i - g*j)) + (6*b^2*h*
p^2*q^2*(a + b*Log[c*(d*(e + f*x)^p)^q])*PolyLog[3, -((j*(e + f*x))/(f*i -
```

```
e*j))])/(h*i - g*j)^2 + (6*b^3*h*p^3*q^3*PolyLog[4, -((h*(e + f*x))/(f*g -
e*h))])/(h*i - g*j)^2 - (6*b^3*h*p^3*q^3*PolyLog[4, -((j*(e + f*x))/(f*i -
e*j))])/(h*i - g*j)^2
```

Rule 2421

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> Simp[(-PolyLog[2, (-d)*f*x^m])*((a + b*Log[c
*x^n])^p/m), x] + Dist[b*n*(p/m), Int[PolyLog[2, (-d)*f*x^m]*((a + b*Log[c*
x^n])^(p - 1)/x), x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0
] && EqQ[d*e, 1]
```

Rule 2430

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*PolyLog[k_, (e_.)*(x_)^(q_
.)])/(x_), x_Symbol] :> Simp[PolyLog[k + 1, e*x^q]*((a + b*Log[c*x^n])^p/q)
, x] - Dist[b*n*(p/q), Int[PolyLog[k + 1, e*x^q]*((a + b*Log[c*x^n])^(p - 1
)/x), x], x] /; FreeQ[{a, b, c, e, k, n, q}, x] && GtQ[p, 0]
```

Rule 2443

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[Log[e*((f + g*x)/(e*f - d*g))]*((a + b*Log[c*(d
+ e*x)^n])^p/g), x] - Dist[b*e*n*(p/g), Int[Log[(e*(f + g*x))/(e*f - d*g)]*
((a + b*Log[c*(d + e*x)^n])^(p - 1)/(d + e*x)), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2444

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_))^2, x_Symbol] :> Simp[(d + e*x)*((a + b*Log[c*(d + e*x)^n])^p/((e*f
- d*g)*(f + g*x))), x] - Dist[b*e*n*(p/(e*f - d*g)), Int[(a + b*Log[c*(d +
e*x)^n])^(p - 1)/(f + g*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] &&
 NeQ[e*f - d*g, 0] && GtQ[p, 0]
```

Rule 2465

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2481

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[(k*(x/d))^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
```

```
(e*i - d*j)/e + j*(x/e))^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2495

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rule 6724

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(a+b\log(c(d(e+fx)^p)^q))^3}{(g+hx)(539+jx)^2}\,dx = \text{Subst}\left(\int \frac{(a+b\log(cd^q(e+fx)^{pq}))^3}{(g+hx)(539+jx)^2}\,dx, cd^q(e+fx)^{pq}, c(d(e+fx)^p)^q\right.$$

$$= \text{Subst}\left(\int \left(\frac{h^2(a+b\log(cd^q(e+fx)^{pq}))^3}{(539h-gj)^2(g+hx)} - \frac{j(a+b\log(cd^q(e+fx)^{pq}\right.\right.}{(539h-gj)(539+jx)^2}$$

$$= \text{Subst}\left(\frac{h^2\int \frac{(a+b\log(cd^q(e+fx)^{pq}))^3}{g+hx}\,dx}{(539h-gj)^2}, cd^q(e+fx)^{pq}, c(d(e+fx)^p)^q\right) - \text{S}$$

$$= -\frac{j(e+fx)\left(a+b\log(c(d(e+fx)^p)^q)\right)^3}{(539f-ej)(539h-gj)(539+jx)} + \frac{h(a+b\log(c(d(e+fx)^p)^q)}{(539h-gj)^2}$$

$$= -\frac{j(e+fx)\left(a+b\log(c(d(e+fx)^p)^q)\right)^3}{(539f-ej)(539h-gj)(539+jx)} + \frac{h(a+b\log(c(d(e+fx)^p)^q)}{(539h-gj)^2}$$

$$= -\frac{j(e+fx)\left(a+b\log(c(d(e+fx)^p)^q)\right)^3}{(539f-ej)(539h-gj)(539+jx)} + \frac{h(a+b\log(c(d(e+fx)^p)^q)}{(539h-gj)^2}$$

$$= -\frac{j(e+fx)\left(a+b\log(c(d(e+fx)^p)^q)\right)^3}{(539f-ej)(539h-gj)(539+jx)} + \frac{h(a+b\log(c(d(e+fx)^p)^q)}{(539h-gj)^2}$$

$$= -\frac{j(e+fx)\left(a+b\log(c(d(e+fx)^p)^q)\right)^3}{(539f-ej)(539h-gj)(539+jx)} + \frac{h(a+b\log(c(d(e+fx)^p)^q)}{(539h-gj)^2}$$

Mathematica [A]
time = 0.89, size = 1057, normalized size = 1.60

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])^3/((g + h*x)*(i + j*x)^2),x]
```

```
[Out] ((f*i - e*j)*(h*i - g*j)*(a - b*p*q*Log[e + f*x] + b*Log[c*(d*(e + f*x)^p)^
q])^3 + h*(f*i - e*j)*(i + j*x)*(a - b*p*q*Log[e + f*x] + b*Log[c*(d*(e + f
*x)^p)^q])^3*Log[g + h*x] - h*(f*i - e*j)*(i + j*x)*(a - b*p*q*Log[e + f*x]
 + b*Log[c*(d*(e + f*x)^p)^q])^3*Log[i + j*x] - 3*b*p*q*(a - b*p*q*Log[e +
f*x] + b*Log[c*(d*(e + f*x)^p)^q])^2*((h*i - g*j)*(j*(e + f*x)*Log[e + f*x]
 - f*(i + j*x)*Log[i + j*x]) - h*(f*i - e*j)*(i + j*x)*(Log[e + f*x]*Log[(f
*(g + h*x))/(f*g - e*h)] + PolyLog[2, (h*(e + f*x))/(-(f*g) + e*h)]) + h*(f
*i - e*j)*(i + j*x)*(Log[e + f*x]*Log[(f*(i + j*x))/(f*i - e*j)] + PolyLog[
2, (j*(e + f*x))/(-(f*i) + e*j)])) - 3*b^2*p^2*q^2*(a - b*p*q*Log[e + f*x]
+ b*Log[c*(d*(e + f*x)^p)^q])*((h*i - g*j)*(Log[e + f*x]*(j*(e + f*x)*Log[e
 + f*x] - 2*f*(i + j*x)*Log[(f*(i + j*x))/(f*i - e*j)]) - 2*f*(i + j*x)*Pol
yLog[2, (j*(e + f*x))/(-(f*i) + e*j)]) - h*(f*i - e*j)*(i + j*x)*(Log[e + f
*x]^2*Log[(f*(g + h*x))/(f*g - e*h)] + 2*Log[e + f*x]*PolyLog[2, (h*(e + f*
x))/(-(f*g) + e*h)] - 2*PolyLog[3, (h*(e + f*x))/(-(f*g) + e*h)]) + h*(f*i
- e*j)*(i + j*x)*(Log[e + f*x]^2*Log[(f*(i + j*x))/(f*i - e*j)] + 2*Log[e +
 f*x]*PolyLog[2, (j*(e + f*x))/(-(f*i) + e*j)] - 2*PolyLog[3, (j*(e + f*x))
/(-(f*i) + e*j)])) - b^3*p^3*q^3*((h*i - g*j)*(Log[e + f*x]^2*(j*(e + f*x)*
Log[e + f*x] - 3*f*(i + j*x)*Log[(f*(i + j*x))/(f*i - e*j)]) - 6*f*(i + j*x
)*Log[e + f*x]*PolyLog[2, (j*(e + f*x))/(-(f*i) + e*j)] + 6*f*(i + j*x)*Pol
yLog[3, (j*(e + f*x))/(-(f*i) + e*j)]) - h*(f*i - e*j)*(i + j*x)*(Log[e + f
*x]^3*Log[(f*(g + h*x))/(f*g - e*h)] + 3*Log[e + f*x]^2*PolyLog[2, (h*(e +
f*x))/(-(f*g) + e*h)] - 6*Log[e + f*x]*PolyLog[3, (h*(e + f*x))/(-(f*g) + e
*h)] + 6*PolyLog[4, (h*(e + f*x))/(-(f*g) + e*h)]) + h*(f*i - e*j)*(i + j*x
)*(Log[e + f*x]^3*Log[(f*(i + j*x))/(f*i - e*j)] + 3*Log[e + f*x]^2*PolyLog
[2, (j*(e + f*x))/(-(f*i) + e*j)] - 6*Log[e + f*x]*PolyLog[3, (j*(e + f*x))
/(-(f*i) + e*j)] + 6*PolyLog[4, (j*(e + f*x))/(-(f*i) + e*j)])))/((f*i - e*
j)*(h*i - g*j)^2*(i + j*x))
```

Maple [F]
time = 0.36, size = 0, normalized size = 0.00

$$\int \frac{\left(a + b\ln\left(c\left(d\left(fx + e\right)^{p}\right)^{q}\right)\right)^{3}}{\left(hx + g\right)\left(jx + i\right)^{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(d*(f*x+e)^p)^q))^3/(h*x+g)/(j*x+i)^2,x)
```

```
[Out] int((a+b*ln(c*(d*(f*x+e)^p)^q))^3/(h*x+g)/(j*x+i)^2,x)
```

Maxima [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^3/(h*x+g)/(j*x+i)^2,x, algorithm="ma
xima")
```

```
[Out] Exception raised: RuntimeError >> ECL says: THROW: The catch RAT-ERR is und
efined.
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^3/(h*x+g)/(j*x+i)^2,x, algorithm="fr
icas")
```

```
[Out] integral((b^3*p^3*q^3*log(f*x + e)^3 + b^3*q^3*log(d)^3 + b^3*log(c)^3 + 3*
a*b^2*log(c)^2 + 3*a^2*b*log(c) + a^3 + 3*(b^3*p^2*q^3*log(d) + b^3*p^2*q^2
*log(c) + a*b^2*p^2*q^2)*log(f*x + e)^2 + 3*(b^3*q^2*log(c) + a*b^2*q^2)*lo
g(d)^2 + 3*(b^3*p*q^3*log(d)^2 + b^3*p*q*log(c)^2 + 2*a*b^2*p*q*log(c) + a^
2*b*p*q + 2*(b^3*p*q^2*log(c) + a*b^2*p*q^2)*log(d))*log(f*x + e) + 3*(b^3*
q*log(c)^2 + 2*a*b^2*q*log(c) + a^2*b*q)*log(d))/(h*j^2*x^3 + (g*j^2 + 2*I*
h*j)*x^2 + (2*I*g*j - h)*x - g), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(a + b \log \left(c \left(d \left(e + f x\right)^{p}\right)^{q}\right)\right)^{3}}{\left(g + h x\right) \left(i + j x\right)^{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))**3/(h*x+g)/(j*x+i)**2,x)
```

```
[Out] Integral((a + b*log(c*(d*(e + f*x)**p)**q))**3/((g + h*x)*(i + j*x)**2), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^3/(h*x+g)/(j*x+i)^2,x, algorithm="gi
ac")
```

```
[Out] integrate((b*log(((f*x + e)^p*d)^q*c) + a)^3/((h*x + g)*(j*x + I)^2), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{{\left(a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)\right)}^3}{\left(g+h\,x\right)\,{\left(i+j\,x\right)}^2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d*(e + f*x)^p)^q))^3/((g + h*x)*(i + j*x)^2),x)
[Out] int((a + b*log(c*(d*(e + f*x)^p)^q))^3/((g + h*x)*(i + j*x)^2), x)
```

3.540 $\int \frac{i+jx}{(g+hx)(a+b\log(c(d(e+fx)^p)^q))} dx$

Optimal. Leaf size=36

$$\text{Int}\left(\frac{i+jx}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)},x\right)$$

```
[Out] Unintegrable((j*x+i)/(h*x+g)/(a+b*ln(c*(d*(f*x+e)^p)^q)),x)
```

Rubi [A]
time = 0.17, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int \frac{i+jx}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}\,dx$$

Verification is not applicable to the result.

```
[In] Int[(i + j*x)/((g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])),x]
[Out] Defer[Int][(i + j*x)/((g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])), x]
```

Rubi steps

$$\int \frac{540+jx}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}\,dx = \int \frac{540+jx}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}\,dx$$

Mathematica [A]
time = 0.19, size = 0, normalized size = 0.00

$$\int \frac{i+jx}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}\,dx$$

Verification is not applicable to the result.

```
[In] Integrate[(i + j*x)/((g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])),x]
[Out] Integrate[(i + j*x)/((g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])), x]
```

Maple [A]
time = 0.19, size = 0, normalized size = 0.00

$$\int \frac{jx+i}{(hx+g)\left(a+b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((j*x+i)/(h*x+g)/(a+b*ln(c*(d*(f*x+e)^p)^q)),x)
```

```
[Out] int((j*x+i)/(h*x+g)/(a+b*ln(c*(d*(f*x+e)^p)^q)),x)
```

Maxima [A]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((j*x+i)/(h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="maxima
")
```

```
[Out] integrate((j*x + I)/((h*x + g)*(b*log(((f*x + e)^p*d)^q*c) + a)), x)
```

Fricas [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((j*x+i)/(h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="fricas
")
```

```
[Out] integral((j*x + I)/(a*h*x + a*g + (b*h*p*q*x + b*g*p*q)*log(f*x + e) + (b*h
*x + b*g)*log(c) + (b*h*q*x + b*g*q)*log(d)), x)
```

Sympy [A]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{i + jx}{\left(a + b\log\left(c\left(d\left(e + fx\right)^{p}\right)^{q}\right)\right)\left(g + hx\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((j*x+i)/(h*x+g)/(a+b*ln(c*(d*(f*x+e)**p)**q)),x)
```

```
[Out] Integral((i + j*x)/((a + b*log(c*(d*(e + f*x)**p)**q))*(g + h*x)), x)
```

Giac [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((j*x+i)/(h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="giac")
```

```
[Out] integrate((j*x + I)/((h*x + g)*(b*log(((f*x + e)^p*d)^q*c) + a)), x)
```

Mupad [A]
time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{i+j\,x}{(g+h\,x)\,\left(a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)\right)} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((i + j*x)/((g + h*x)*(a + b*log(c*(d*(e + f*x)^p)^q))),x)
[Out] int((i + j*x)/((g + h*x)*(a + b*log(c*(d*(e + f*x)^p)^q))), x)
```

3.541 $\int \frac{1}{(g+hx)(a+b\log(c(d(e+fx)^p)^q))}\,dx$

Optimal. Leaf size=31

$$\text{Int}\left(\frac{1}{(g+hx)\,(a+b\log\left(c\left(d(e+fx)^p\right)^q\right))},x\right)$$

```
[Out] Unintegrable(1/(h*x+g)/(a+b*ln(c*(d*(f*x+e)^p)^q)),x)
```

Rubi [A]
time = 0.04, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int \frac{1}{(g+hx)\,(a+b\log\left(c\left(d(e+fx)^p\right)^q\right))}\,dx$$

Verification is not applicable to the result.

```
[In] Int[1/((g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])),x]
[Out] Defer[Int][1/((g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])), x]
```

Rubi steps

$$\int \frac{1}{(g+hx)\,(a+b\log\left(c\left(d(e+fx)^p\right)^q\right))}\,dx = \int \frac{1}{(g+hx)\,(a+b\log\left(c\left(d(e+fx)^p\right)^q\right))}\,dx$$

Mathematica [A]
time = 0.03, size = 0, normalized size = 0.00

$$\int \frac{1}{(g+hx)\,(a+b\log\left(c\left(d(e+fx)^p\right)^q\right))}\,dx$$

Verification is not applicable to the result.

```
[In] Integrate[1/((g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])),x]
[Out] Integrate[1/((g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])), x]
```

Maple [A]
time = 0.03, size = 0, normalized size = 0.00

$$\int \frac{1}{(hx+g)\,(a+b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right))}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(h*x+g)/(a+b*ln(c*(d*(f*x+e)^p)^q)),x)
[Out] int(1/(h*x+g)/(a+b*ln(c*(d*(f*x+e)^p)^q)),x)
```

Maxima [A]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="maxima")
[Out] integrate(1/((h*x + g)*(b*log(((f*x + e)^p*d)^q*c) + a)), x)
```

Fricas [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="fricas")
[Out] integral(1/(a*h*x + a*g + (b*h*x + b*g)*log(((f*x + e)^p*d)^q*c)), x)
```

Sympy [A]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{(a + b\log{(c(d(e+fx)^p)^q)})(g+hx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(a+b*ln(c*(d*(f*x+e)**p)**q)),x)
[Out] Integral(1/((a + b*log(c*(d*(e + f*x)**p)**q))*(g + h*x)), x)
```

Giac [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="giac")
[Out] integrate(1/((h*x + g)*(b*log(((f*x + e)^p*d)^q*c) + a)), x)
```

Mupad [A]
time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{1}{(g+h\,x)\,\left(a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((g + h*x)*(a + b*log(c*(d*(e + f*x)^p)^q))),x)
[Out] int(1/((g + h*x)*(a + b*log(c*(d*(e + f*x)^p)^q))), x)
```

3.542 $\int \frac{1}{(g+hx)(i+jx)(a+b\log(c(d(e+fx)^p)^q))}\,dx$

Optimal. Leaf size=38

$$\text{Int}\left(\frac{1}{(g+hx)(i+jx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)},x\right)$$

```
[Out] Unintegrable(1/(h*x+g)/(j*x+i)/(a+b*ln(c*(d*(f*x+e)^p)^q)),x)
```

Rubi [A]
time = 0.20, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int \frac{1}{(g+hx)(i+jx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}\,dx$$

Verification is not applicable to the result.

```
[In] Int[1/((g + h*x)*(i + j*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])),x]
[Out] Defer[Int][1/((g + h*x)*(i + j*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])), x]
```

Rubi steps

$$\int \frac{1}{(g+hx)(542+jx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}\,dx = \int \frac{1}{(g+hx)(542+jx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}\,d$$

Mathematica [A]
time = 0.46, size = 0, normalized size = 0.00

$$\int \frac{1}{(g+hx)(i+jx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}\,dx$$

Verification is not applicable to the result.

```
[In] Integrate[1/((g + h*x)*(i + j*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])),x]
[Out] Integrate[1/((g + h*x)*(i + j*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])), x]
```

Maple [A]
time = 0.36, size = 0, normalized size = 0.00

$$\int \frac{1}{(hx+g)\,(jx+i)\left(a+b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(h*x+g)/(j*x+i)/(a+b*ln(c*(d*(f*x+e)^p)^q)),x)
```

```
[Out] int(1/(h*x+g)/(j*x+i)/(a+b*ln(c*(d*(f*x+e)^p)^q)),x)
```

Maxima [A]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(j*x+i)/(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="maxi
ma")
```

```
[Out] integrate(1/((h*x + g)*(j*x + I)*(b*log(((f*x + e)^p*d)^q*c) + a)), x)
```

Fricas [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(j*x+i)/(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="fric
as")
```

```
[Out] integral(1/(a*h*j*x^2 + I*a*g + (a*g*j + I*a*h)*x + (b*h*j*p*q*x^2 + I*b*g*
p*q + (b*g*j + I*b*h)*p*q*x)*log(f*x + e) + (b*h*j*x^2 + I*b*g + (b*g*j + I
*b*h)*x)*log(c) + (b*h*j*q*x^2 + I*b*g*q + (b*g*j + I*b*h)*q*x)*log(d)), x)
```

Sympy [A]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(a + b\log\left(c\left(d\left(e + fx\right)^{p}\right)^{q}\right)\right)\left(g + hx\right)\left(i + jx\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(j*x+i)/(a+b*ln(c*(d*(f*x+e)**p)**q)),x)
```

```
[Out] Integral(1/((a + b*log(c*(d*(e + f*x)**p)**q))*(g + h*x)*(i + j*x)), x)
```

Giac [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(j*x+i)/(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="giac
")
```

```
[Out] integrate(1/((h*x + g)*(j*x + I)*(b*log((((f*x + e)^p*d)^q*c) + a)), x)
```

Mupad [A]

time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{1}{(g+h\,x)\,\left(i+j\,x\right)\,\left(a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)\right)} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((g + h*x)*(i + j*x)*(a + b*log(c*(d*(e + f*x)^p)^q))),x)
[Out] int(1/((g + h*x)*(i + j*x)*(a + b*log(c*(d*(e + f*x)^p)^q))), x)
```

3.543 $\int \frac{1}{(g+hx)(i+jx)^2(a+b\log(c(d(e+fx)^p)^q))}\,dx$

Optimal. Leaf size=38

$$\text{Int}\left(\frac{1}{(g+hx)(i+jx)^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)},x\right)$$

```
[Out] Unintegrable(1/(h*x+g)/(j*x+i)^2/(a+b*ln(c*(d*(f*x+e)^p)^q)),x)
```

Rubi [A]
time = 0.23, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int \frac{1}{(g+hx)(i+jx)^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}\,dx$$

Verification is not applicable to the result.

```
[In] Int[1/((g + h*x)*(i + j*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])),x]
[Out] Defer[Int][1/((g + h*x)*(i + j*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])), x]
```

Rubi steps

$$\int \frac{1}{(g+hx)(543+jx)^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}\,dx = \int \frac{1}{(g+hx)(543+jx)^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right.\right.}$$

Mathematica [A]
time = 2.27, size = 0, normalized size = 0.00

$$\int \frac{1}{(g+hx)(i+jx)^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}\,dx$$

Verification is not applicable to the result.

```
[In] Integrate[1/((g + h*x)*(i + j*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])),x]
[Out] Integrate[1/((g + h*x)*(i + j*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])), x]
```

Maple [A]
time = 0.39, size = 0, normalized size = 0.00

$$\int \frac{1}{(hx+g)\,(jx+i)^2\left(a+b\ln\left(c\left(d\left(fx+e\right)^p\right)^q\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(h*x+g)/(j*x+i)^2/(a+b*ln(c*(d*(f*x+e)^p)^q)),x)
```

```
[Out] int(1/(h*x+g)/(j*x+i)^2/(a+b*ln(c*(d*(f*x+e)^p)^q)),x)
```

Maxima [A]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(j*x+i)^2/(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="ma
xima")
```

```
[Out] integrate(1/((h*x + g)*(j*x + I)^2*(b*log(((f*x + e)^p*d)^q*c) + a)), x)
```

Fricas [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(j*x+i)^2/(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="fr
icas")
```

```
[Out] integral(1/(a*h*j^2*x^3 + (a*g*j^2 + 2*I*a*h*j)*x^2 - a*g + (2*I*a*g*j - a*
h)*x + (b*h*j^2*p*q*x^3 + (b*g*j^2 + 2*I*b*h*j)*p*q*x^2 - b*g*p*q + (2*I*b*
g*j - b*h)*p*q*x)*log(f*x + e) + (b*h*j^2*x^3 + (b*g*j^2 + 2*I*b*h*j)*x^2 -
 b*g + (2*I*b*g*j - b*h)*x)*log(c) + (b*h*j^2*q*x^3 + (b*g*j^2 + 2*I*b*h*j)
*q*x^2 - b*g*q + (2*I*b*g*j - b*h)*q*x)*log(d)), x)
```

Sympy [A]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(a + b \log \left(c \left(d \left(e + f x\right)^{p}\right)^{q}\right)\right) \left(g + h x\right) \left(i + j x\right)^{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(j*x+i)**2/(a+b*ln(c*(d*(f*x+e)**p)**q)),x)
```

```
[Out] Integral(1/((a + b*log(c*(d*(e + f*x)**p)**q))*(g + h*x)*(i + j*x)**2), x)
```

Giac [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(j*x+i)^2/(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="gi
ac")
```

```
[Out] integrate(1/((h*x + g)*(j*x + I)^2*(b*log(((f*x + e)^p*d)^q*c) + a)), x)
```

Mupad [A]
time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{1}{(g+h\,x)\,\left(i+j\,x\right)^2\,\left(a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((g + h*x)*(i + j*x)^2*(a + b*log(c*(d*(e + f*x)^p)^q))),x)
```

```
[Out] int(1/((g + h*x)*(i + j*x)^2*(a + b*log(c*(d*(e + f*x)^p)^q))), x)
```

3.544 $\int \frac{i+jx}{(g+hx)(a+b\log(c(d(e+fx)^p)^q))^2} dx$

Optimal. Leaf size=36

$$\text{Int}\left(\frac{i+jx}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2},x\right)$$

```
[Out] Unintegrable((j*x+i)/(h*x+g)/(a+b*ln(c*(d*(f*x+e)^p)^q))^2,x)
```

Rubi [A]
time = 0.20, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int \frac{i+jx}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2} dx$$

Verification is not applicable to the result.

```
[In] Int[(i + j*x)/((g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^2),x]
[Out] Defer[Int][(i + j*x)/((g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^2), x]
```

Rubi steps

$$\int \frac{544+jx}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2} dx = \int \frac{544+jx}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2} dx$$

Mathematica [A]
time = 1.67, size = 0, normalized size = 0.00

$$\int \frac{i+jx}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2} dx$$

Verification is not applicable to the result.

```
[In] Integrate[(i + j*x)/((g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^2),x]
[Out] Integrate[(i + j*x)/((g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^2), x]
```

Maple [A]
time = 0.21, size = 0, normalized size = 0.00

$$\int \frac{jx+i}{(hx+g)\left(a+b\ln\left(c\left(d\left(fx+e\right)^p\right)^q\right)\right)^2} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((j*x+i)/(h*x+g)/(a+b*ln(c*(d*(f*x+e)^p)^q))^2,x)
```

```
[Out] int((j*x+i)/(h*x+g)/(a+b*ln(c*(d*(f*x+e)^p)^q))^2,x)
```

Maxima [A]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((j*x+i)/(h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="maxi
ma")
```

```
[Out] -(f*j*x^2 + (j*e + I*f)*x + I*e)/(a*b*f*g*p*q + (f*g*p*q^2*log(d) + f*g*p*q
*log(c))*b^2 + (a*b*f*h*p*q + (f*h*p*q^2*log(d) + f*h*p*q*log(c))*b^2)*x +
(b^2*f*h*p*q*x + b^2*f*g*p*q)*log(((f*x + e)^p)^q)) + integrate((f*h*j*x^2
+ 2*f*g*j*x + I*f*g + (g*j - I*h)*e)/(a*b*f*g^2*p*q + (f*g^2*p*q^2*log(d) +
 f*g^2*p*q*log(c))*b^2 + (a*b*f*h^2*p*q + (f*h^2*p*q^2*log(d) + f*h^2*p*q*l
og(c))*b^2)*x^2 + 2*(a*b*f*g*h*p*q + (f*g*h*p*q^2*log(d) + f*g*h*p*q*log(c)
)*b^2)*x + (b^2*f*h^2*p*q*x^2 + 2*b^2*f*g*h*p*q*x + b^2*f*g^2*p*q)*log(((f*
x + e)^p)^q)), x)
```

Fricas [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((j*x+i)/(h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="fric
as")
```

```
[Out] -(f*j*x^2 + I*f*x + (j*x + I)*e - (a*b*f*h*p*q*x + a*b*f*g*p*q + (b^2*f*h*p
^2*q^2*x + b^2*f*g*p^2*q^2)*log(f*x + e) + (b^2*f*h*p*q*x + b^2*f*g*p*q)*lo
g(c) + (b^2*f*h*p*q^2*x + b^2*f*g*p*q^2)*log(d))*integral((f*h*j*x^2 + 2*f*
g*j*x + I*f*g + (g*j - I*h)*e)/(a*b*f*h^2*p*q*x^2 + 2*a*b*f*g*h*p*q*x + a*b
*f*g^2*p*q + (b^2*f*h^2*p^2*q^2*x^2 + 2*b^2*f*g*h*p^2*q^2*x + b^2*f*g^2*p^2
*q^2)*log(f*x + e) + (b^2*f*h^2*p*q*x^2 + 2*b^2*f*g*h*p*q*x + b^2*f*g^2*p*q
)*log(c) + (b^2*f*h^2*p*q^2*x^2 + 2*b^2*f*g*h*p*q^2*x + b^2*f*g^2*p*q^2)*lo
g(d)), x))/(a*b*f*h*p*q*x + a*b*f*g*p*q + (b^2*f*h*p^2*q^2*x + b^2*f*g*p^2*
q^2)*log(f*x + e) + (b^2*f*h*p*q*x + b^2*f*g*p*q)*log(c) + (b^2*f*h*p*q^2*x
 + b^2*f*g*p*q^2)*log(d))
```

Sympy [A]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{i + jx}{\left(a + b\log\left(c\left(d\left(e + fx\right)^{p}\right)^{q}\right)\right)^{2}\left(g + hx\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((j*x+i)/(h*x+g)/(a+b*ln(c*(d*(f*x+e)**p)**q))**2,x)
```

```
[Out] Integral((i + j*x)/((a + b*log(c*(d*(e + f*x)**p)**q))**2*(g + h*x)), x)
```

Giac [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((j*x+i)/(h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="giac
")
```

```
[Out] integrate((j*x + I)/((h*x + g)*(b*log(((f*x + e)^p*d)^q*c) + a)^2), x)
```

Mupad [A]
time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{i+j\,x}{\left(g+h\,x\right)\,{\left(a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)\right)}^2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((i + j*x)/((g + h*x)*(a + b*log(c*(d*(e + f*x)^p)^q))^2),x)
```

```
[Out] int((i + j*x)/((g + h*x)*(a + b*log(c*(d*(e + f*x)^p)^q))^2), x)
```

3.545 $\int \frac{1}{(g+hx)(a+b\log(c(d(e+fx)^p)^q))^2}\,dx$

Optimal. Leaf size=31

$$\text{Int}\left(\frac{1}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2},x\right)$$

```
[Out] Unintegrable(1/(h*x+g)/(a+b*ln(c*(d*(f*x+e)^p)^q))^2,x)
```

Rubi [A]
time = 0.04, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int \frac{1}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}\,dx$$

Verification is not applicable to the result.

```
[In] Int[1/((g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^2),x]
```

```
[Out] Defer[Int][1/((g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^2), x]
```

Rubi steps

$$\int \frac{1}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}\,dx = \int \frac{1}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}\,dx$$

Mathematica [A]
time = 0.13, size = 0, normalized size = 0.00

$$\int \frac{1}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}\,dx$$

Verification is not applicable to the result.

```
[In] Integrate[1/((g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^2),x]
```

```
[Out] Integrate[1/((g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^2), x]
```

Maple [A]
time = 0.03, size = 0, normalized size = 0.00

$$\int \frac{1}{(hx+g)\left(a+b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(h*x+g)/(a+b*ln(c*(d*(f*x+e)^p)^q))^2,x)
```

```
[Out] int(1/(h*x+g)/(a+b*ln(c*(d*(f*x+e)^p)^q))^2,x)
```

Maxima [A]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="maxima")
```

```
[Out] (f*g - h*e)*integrate(1/(a*b*f*g^2*p*q + (f*g^2*p*q^2*log(d) + f*g^2*p*q*lo
g(c))*b^2 + (a*b*f*h^2*p*q + (f*h^2*p*q^2*log(d) + f*h^2*p*q*log(c))*b^2)*x
^2 + 2*(a*b*f*g*h*p*q + (f*g*h*p*q^2*log(d) + f*g*h*p*q*log(c))*b^2)*x + (b
^2*f*h^2*p*q*x^2 + 2*b^2*f*g*h*p*q*x + b^2*f*g^2*p*q)*log(((f*x + e)^p)^q))
, x) - (f*x + e)/(a*b*f*g*p*q + (f*g*p*q^2*log(d) + f*g*p*q*log(c))*b^2 + (
a*b*f*h*p*q + (f*h*p*q^2*log(d) + f*h*p*q*log(c))*b^2)*x + (b^2*f*h*p*q*x +
 b^2*f*g*p*q)*log(((f*x + e)^p)^q))
```

Fricas [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="fricas")
```

```
[Out] integral(1/(a^2*h*x + a^2*g + (b^2*h*x + b^2*g)*log(((f*x + e)^p*d)^q*c)^2
+ 2*(a*b*h*x + a*b*g)*log(((f*x + e)^p*d)^q*c)), x)
```

Sympy [A]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(a + b \log{\left(c \left(d \left(e + f x\right)^{p}\right)^{q} \right)}\right)^{2} \left(g + h x\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(a+b*ln(c*(d*(f*x+e)**p)**q))**2,x)
```

```
[Out] Integral(1/((a + b*log(c*(d*(e + f*x)**p)**q))**2*(g + h*x)), x)
```

Giac [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="giac")
```

```
[Out] integrate(1/((h*x + g)*(b*log(((f*x + e)^p*d)^q*c) + a)^2), x)
```

Mupad [A]
time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{1}{\left(g+h\,x\right)\,{\left(a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)\right)}^2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((g + h*x)*(a + b*log(c*(d*(e + f*x)^p)^q))^2),x)
```

```
[Out] int(1/((g + h*x)*(a + b*log(c*(d*(e + f*x)^p)^q))^2), x)
```

3.546 $\int \frac{1}{(g+hx)(i+jx)(a+b\log(c(d(e+fx)^p)^q))^2}\,dx$

Optimal. Leaf size=38

$$\text{Int}\left(\frac{1}{(g+hx)(i+jx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2},x\right)$$

```
[Out] Unintegrable(1/(h*x+g)/(j*x+i)/(a+b*ln(c*(d*(f*x+e)^p)^q))^2,x)
```

Rubi [A]
time = 0.19, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int \frac{1}{(g+hx)(i+jx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}\,dx$$

Verification is not applicable to the result.

```
[In] Int[1/((g + h*x)*(i + j*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^2),x]
[Out] Defer[Int][1/((g + h*x)*(i + j*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^2), x]
```

Rubi steps

$$\int \frac{1}{(g+hx)(546+jx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}\,dx = \int \frac{1}{(g+hx)(546+jx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}$$

Mathematica [A]
time = 16.55, size = 0, normalized size = 0.00

$$\int \frac{1}{(g+hx)(i+jx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}\,dx$$

Verification is not applicable to the result.

```
[In] Integrate[1/((g + h*x)*(i + j*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^2),x]
[Out] Integrate[1/((g + h*x)*(i + j*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^2), x]
```

Maple [A]
time = 0.43, size = 0, normalized size = 0.00

$$\int \frac{1}{(hx+g)(jx+i)\left(a+b\ln\left(c\left(d\left(fx+e\right)^p\right)^q\right)\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(h*x+g)/(j*x+i)/(a+b*ln(c*(d*(f*x+e)^p)^q))^2,x)
```

```
[Out] int(1/(h*x+g)/(j*x+i)/(a+b*ln(c*(d*(f*x+e)^p)^q))^2,x)
```

Maxima [A]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(j*x+i)/(a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="ma
xima")
```

```
[Out] -(f*x + e)/(I*a*b*f*g*p*q + (I*f*g*p*q^2*log(d) + I*f*g*p*q*log(c))*b^2 + (
a*b*f*h*j*p*q + (f*h*j*p*q^2*log(d) + f*h*j*p*q*log(c))*b^2)*x^2 + ((g*j*p*
q + I*h*p*q)*a*b*f + ((g*j*p*q + I*h*p*q)*f*log(c) + (g*j*p*q^2 + I*h*p*q^2
)*f*log(d))*b^2)*x + (b^2*f*h*j*p*q*x^2 + I*b^2*f*g*p*q + (g*j*p*q + I*h*p*
q)*b^2*f*x)*log(((f*x + e)^p)^q)) - integrate(-(f*h*j*x^2 + 2*h*j*x*e - I*f
*g + (g*j + I*h)*e)/(a*b*f*g^2*p*q - (a*b*f*h^2*j^2*p*q + (f*h^2*j^2*p*q^2*
log(d) + f*h^2*j^2*p*q*log(c))*b^2)*x^4 - 2*((g*h*j^2*p*q + I*h^2*j*p*q)*a*
b*f + ((g*h*j^2*p*q + I*h^2*j*p*q)*f*log(c) + (g*h*j^2*p*q^2 + I*h^2*j*p*q^
2)*f*log(d))*b^2)*x^3 + (f*g^2*p*q^2*log(d) + f*g^2*p*q*log(c))*b^2 - ((g^2
*j^2*p*q + 4*I*g*h*j*p*q - h^2*p*q)*a*b*f + ((g^2*j^2*p*q + 4*I*g*h*j*p*q -
 h^2*p*q)*f*log(c) + (g^2*j^2*p*q^2 + 4*I*g*h*j*p*q^2 - h^2*p*q^2)*f*log(d)
)*b^2)*x^2 + 2*((-I*g^2*j*p*q + g*h*p*q)*a*b*f + ((-I*g^2*j*p*q + g*h*p*q)*
f*log(c) + (-I*g^2*j*p*q^2 + g*h*p*q^2)*f*log(d))*b^2)*x - (b^2*f*h^2*j^2*p
*q*x^4 - b^2*f*g^2*p*q + 2*(g*h*j^2*p*q + I*h^2*j*p*q)*b^2*f*x^3 + (g^2*j^2
*p*q + 4*I*g*h*j*p*q - h^2*p*q)*b^2*f*x^2 - 2*(-I*g^2*j*p*q + g*h*p*q)*b^2*
f*x)*log(((f*x + e)^p)^q)), x)
```

Fricas [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(j*x+i)/(a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="fr
icas")
```

```
[Out] -(f*x - (a*b*f*h*j*p*q*x^2 + I*a*b*f*g*p*q + (a*b*f*g*j + I*a*b*f*h)*p*q*x
+ (b^2*f*h*j*p^2*q^2*x^2 + I*b^2*f*g*p^2*q^2 + (b^2*f*g*j + I*b^2*f*h)*p^2*
q^2*x)*log(f*x + e) + (b^2*f*h*j*p*q*x^2 + I*b^2*f*g*p*q + (b^2*f*g*j + I*b
^2*f*h)*p*q*x)*log(c) + (b^2*f*h*j*p*q^2*x^2 + I*b^2*f*g*p*q^2 + (b^2*f*g*j
 + I*b^2*f*h)*p*q^2*x)*log(d))*integral(-(f*h*j*x^2 - I*f*g + (2*h*j*x + g*
```

```
j + I*h)*e)/(a*b*f*h^2*j^2*p*q*x^4 - a*b*f*g^2*p*q + 2*(a*b*f*g*h*j^2 + I*a
*b*f*h^2*j)*p*q*x^3 + (a*b*f*g^2*j^2 + 4*I*a*b*f*g*h*j - a*b*f*h^2)*p*q*x^2
 - 2*(-I*a*b*f*g^2*j + a*b*f*g*h)*p*q*x + (b^2*f*h^2*j^2*p^2*q^2*x^4 - b^2*
f*g^2*p^2*q^2 + 2*(b^2*f*g*h*j^2 + I*b^2*f*h^2*j)*p^2*q^2*x^3 + (b^2*f*g^2*
j^2 + 4*I*b^2*f*g*h*j - b^2*f*h^2)*p^2*q^2*x^2 - 2*(-I*b^2*f*g^2*j + b^2*f*
g*h)*p^2*q^2*x)*log(f*x + e) + (b^2*f*h^2*j^2*p*q*x^4 - b^2*f*g^2*p*q + 2*(
b^2*f*g*h*j^2 + I*b^2*f*h^2*j)*p*q*x^3 + (b^2*f*g^2*j^2 + 4*I*b^2*f*g*h*j -
 b^2*f*h^2)*p*q*x^2 - 2*(-I*b^2*f*g^2*j + b^2*f*g*h)*p*q*x)*log(c) + (b^2*f
*h^2*j^2*p*q^2*x^4 - b^2*f*g^2*p*q^2 + 2*(b^2*f*g*h*j^2 + I*b^2*f*h^2*j)*p*
q^2*x^3 + (b^2*f*g^2*j^2 + 4*I*b^2*f*g*h*j - b^2*f*h^2)*p*q^2*x^2 - 2*(-I*b
^2*f*g^2*j + b^2*f*g*h)*p*q^2*x)*log(d)), x) + e)/(a*b*f*h*j*p*q*x^2 + I*a*
b*f*g*p*q + (a*b*f*g*j + I*a*b*f*h)*p*q*x + (b^2*f*h*j*p^2*q^2*x^2 + I*b^2*
f*g*p^2*q^2 + (b^2*f*g*j + I*b^2*f*h)*p^2*q^2*x)*log(f*x + e) + (b^2*f*h*j*
p*q*x^2 + I*b^2*f*g*p*q + (b^2*f*g*j + I*b^2*f*h)*p*q*x)*log(c) + (b^2*f*h*
j*p*q^2*x^2 + I*b^2*f*g*p*q^2 + (b^2*f*g*j + I*b^2*f*h)*p*q^2*x)*log(d))
```

Sympy [A]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(a+b\log\left(c\left(d\left(e+fx\right)^{p}\right)^{q}\right)\right)^{2}\left(g+hx\right)\left(i+jx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(j*x+i)/(a+b*ln(c*(d*(f*x+e)**p)**q))**2,x)
[Out] Integral(1/((a + b*log(c*(d*(e + f*x)**p)**q))**2*(g + h*x)*(i + j*x)), x)
```

Giac [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(j*x+i)/(a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="gi
ac")
[Out] integrate(1/((h*x + g)*(j*x + I)*(b*log(((f*x + e)^p*d)^q*c) + a)^2), x)
```

Mupad [A]
time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{1}{\left(g+h\,x\right)\,\left(i+j\,x\right)\,{\left(a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)\right)}^2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((g + h*x)*(i + j*x)*(a + b*log(c*(d*(e + f*x)^p)^q))^2),x)
[Out] int(1/((g + h*x)*(i + j*x)*(a + b*log(c*(d*(e + f*x)^p)^q))^2), x)
```

3.547 $\int \frac{1}{(g+hx)(i+jx)^2(a+b\log(c(d(e+fx)^p)^q))^2}\,dx$

Optimal. Leaf size=38

$$\text{Int}\left(\frac{1}{(g+hx)(i+jx)^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2},x\right)$$

```
[Out] Unintegrable(1/(h*x+g)/(j*x+i)^2/(a+b*ln(c*(d*(f*x+e)^p)^q))^2,x)
```

Rubi [A]
time = 0.22, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int \frac{1}{(g+hx)(i+jx)^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}\,dx$$

Verification is not applicable to the result.

```
[In] Int[1/((g + h*x)*(i + j*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])^2),x]
[Out] Defer[Int][1/((g + h*x)*(i + j*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])^2), x]
```

Rubi steps

$$\int \frac{1}{(g+hx)(547+jx)^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}\,dx = \int \frac{1}{(g+hx)(547+jx)^2\left(a+b\log\left(c\left(d(e+fx)^p\right)\right.\right.}$$

Mathematica [A]
time = 23.59, size = 0, normalized size = 0.00

$$\int \frac{1}{(g+hx)(i+jx)^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}\,dx$$

Verification is not applicable to the result.

```
[In] Integrate[1/((g + h*x)*(i + j*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])^2),x]
[Out] Integrate[1/((g + h*x)*(i + j*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])^2), x]
```

Maple [A]
time = 0.35, size = 0, normalized size = 0.00

$$\int \frac{1}{(hx+g)\,(jx+i)^2\left(a+b\ln\left(c\left(d\,(fx+e)^p\right)^q\right)\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(h*x+g)/(j*x+i)^2/(a+b*ln(c*(d*(f*x+e)^p)^q))^2,x)
```

```
[Out] int(1/(h*x+g)/(j*x+i)^2/(a+b*ln(c*(d*(f*x+e)^p)^q))^2,x)
```

Maxima [A]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(j*x+i)^2/(a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="
maxima")
```

```
[Out] (f*x + e)/(a*b*f*g*p*q - (a*b*f*h*j^2*p*q + (f*h*j^2*p*q^2*log(d) + f*h*j^2
*p*q*log(c))*b^2)*x^3 + (f*g*p*q^2*log(d) + f*g*p*q*log(c))*b^2 - ((g*j^2*p
*q + 2*I*h*j*p*q)*a*b*f + ((g*j^2*p*q + 2*I*h*j*p*q)*f*log(c) + (g*j^2*p*q^
2 + 2*I*h*j*p*q^2)*f*log(d))*b^2)*x^2 - ((2*I*g*j*p*q - h*p*q)*a*b*f + ((2*
I*g*j*p*q - h*p*q)*f*log(c) + (2*I*g*j*p*q^2 - h*p*q^2)*f*log(d))*b^2)*x -
(b^2*f*h*j^2*p*q*x^3 - b^2*f*g*p*q + (g*j^2*p*q + 2*I*h*j*p*q)*b^2*f*x^2 +
(2*I*g*j*p*q - h*p*q)*b^2*f*x)*log(((f*x + e)^p)^q)) - integrate((2*f*h*j*x
^2 - I*f*g + (f*g*j + 3*h*j*e)*x + (2*g*j + I*h)*e)/(-I*a*b*f*g^2*p*q + (a*
b*f*h^2*j^3*p*q + (f*h^2*j^3*p*q^2*log(d) + f*h^2*j^3*p*q*log(c))*b^2)*x^5
+ ((2*g*h*j^3*p*q + 3*I*h^2*j^2*p*q)*a*b*f + ((2*g*h*j^3*p*q + 3*I*h^2*j^2*
p*q)*f*log(c) + (2*g*h*j^3*p*q^2 + 3*I*h^2*j^2*p*q^2)*f*log(d))*b^2)*x^4 +
((g^2*j^3*p*q + 6*I*g*h*j^2*p*q - 3*h^2*j*p*q)*a*b*f + ((g^2*j^3*p*q + 6*I*
g*h*j^2*p*q - 3*h^2*j*p*q)*f*log(c) + (g^2*j^3*p*q^2 + 6*I*g*h*j^2*p*q^2 -
3*h^2*j*p*q^2)*f*log(d))*b^2)*x^3 + (-I*f*g^2*p*q^2*log(d) - I*f*g^2*p*q*lo
g(c))*b^2 + ((3*I*g^2*j^2*p*q - 6*g*h*j*p*q - I*h^2*p*q)*a*b*f + ((3*I*g^2*
j^2*p*q - 6*g*h*j*p*q - I*h^2*p*q)*f*log(c) + (3*I*g^2*j^2*p*q^2 - 6*g*h*j*
p*q^2 - I*h^2*p*q^2)*f*log(d))*b^2)*x^2 - ((3*g^2*j*p*q + 2*I*g*h*p*q)*a*b*
f + ((3*g^2*j*p*q + 2*I*g*h*p*q)*f*log(c) + (3*g^2*j*p*q^2 + 2*I*g*h*p*q^2)
*f*log(d))*b^2)*x + (b^2*f*h^2*j^3*p*q*x^5 + (2*g*h*j^3*p*q + 3*I*h^2*j^2*p
*q)*b^2*f*x^4 - I*b^2*f*g^2*p*q + (g^2*j^3*p*q + 6*I*g*h*j^2*p*q - 3*h^2*j*
p*q)*b^2*f*x^3 + (3*I*g^2*j^2*p*q - 6*g*h*j*p*q - I*h^2*p*q)*b^2*f*x^2 - (3
*g^2*j*p*q + 2*I*g*h*p*q)*b^2*f*x)*log(((f*x + e)^p)^q)), x)
```

Fricas [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(j*x+i)^2/(a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="
fricas")
```

```
[Out] -(f*x - (a*b*f*h*j^2*p*q*x^3 - a*b*f*g*p*q + (a*b*f*g*j^2 + 2*I*a*b*f*h*j)*
p*q*x^2 + (2*I*a*b*f*g*j - a*b*f*h)*p*q*x + (b^2*f*h*j^2*p^2*q^2*x^3 - b^2*
f*g*p^2*q^2 + (b^2*f*g*j^2 + 2*I*b^2*f*h*j)*p^2*q^2*x^2 + (2*I*b^2*f*g*j -
b^2*f*h)*p^2*q^2*x)*log(f*x + e) + (b^2*f*h*j^2*p*q*x^3 - b^2*f*g*p*q + (b^
2*f*g*j^2 + 2*I*b^2*f*h*j)*p*q*x^2 + (2*I*b^2*f*g*j - b^2*f*h)*p*q*x)*log(c
) + (b^2*f*h*j^2*p*q^2*x^3 - b^2*f*g*p*q^2 + (b^2*f*g*j^2 + 2*I*b^2*f*h*j)*
p*q^2*x^2 + (2*I*b^2*f*g*j - b^2*f*h)*p*q^2*x)*log(d))*integral(-(2*f*h*j*x
^2 + f*g*j*x - I*f*g + (3*h*j*x + 2*g*j + I*h)*e)/(a*b*f*h^2*j^3*p*q*x^5 -
I*a*b*f*g^2*p*q + (2*a*b*f*g*h*j^3 + 3*I*a*b*f*h^2*j^2)*p*q*x^4 + (a*b*f*g^
2*j^3 + 6*I*a*b*f*g*h*j^2 - 3*a*b*f*h^2*j)*p*q*x^3 + (3*I*a*b*f*g^2*j^2 - 6
*a*b*f*g*h*j - I*a*b*f*h^2)*p*q*x^2 - (3*a*b*f*g^2*j + 2*I*a*b*f*g*h)*p*q*x
 + (b^2*f*h^2*j^3*p^2*q^2*x^5 - I*b^2*f*g^2*p^2*q^2 + (2*b^2*f*g*h*j^3 + 3*
I*b^2*f*h^2*j^2)*p^2*q^2*x^4 + (b^2*f*g^2*j^3 + 6*I*b^2*f*g*h*j^2 - 3*b^2*f
*h^2*j)*p^2*q^2*x^3 + (3*I*b^2*f*g^2*j^2 - 6*b^2*f*g*h*j - I*b^2*f*h^2)*p^2
*q^2*x^2 - (3*b^2*f*g^2*j + 2*I*b^2*f*g*h)*p^2*q^2*x)*log(f*x + e) + (b^2*f
*h^2*j^3*p*q*x^5 - I*b^2*f*g^2*p*q + (2*b^2*f*g*h*j^3 + 3*I*b^2*f*h^2*j^2)*
p*q*x^4 + (b^2*f*g^2*j^3 + 6*I*b^2*f*g*h*j^2 - 3*b^2*f*h^2*j)*p*q*x^3 + (3*
I*b^2*f*g^2*j^2 - 6*b^2*f*g*h*j - I*b^2*f*h^2)*p*q*x^2 - (3*b^2*f*g^2*j + 2
*I*b^2*f*g*h)*p*q*x)*log(c) + (b^2*f*h^2*j^3*p*q^2*x^5 - I*b^2*f*g^2*p*q^2
+ (2*b^2*f*g*h*j^3 + 3*I*b^2*f*h^2*j^2)*p*q^2*x^4 + (b^2*f*g^2*j^3 + 6*I*b^
2*f*g*h*j^2 - 3*b^2*f*h^2*j)*p*q^2*x^3 + (3*I*b^2*f*g^2*j^2 - 6*b^2*f*g*h*j
 - I*b^2*f*h^2)*p*q^2*x^2 - (3*b^2*f*g^2*j + 2*I*b^2*f*g*h)*p*q^2*x)*log(d)
), x) + e)/(a*b*f*h*j^2*p*q*x^3 - a*b*f*g*p*q + (a*b*f*g*j^2 + 2*I*a*b*f*h*
j)*p*q*x^2 + (2*I*a*b*f*g*j - a*b*f*h)*p*q*x + (b^2*f*h*j^2*p^2*q^2*x^3 - b
^2*f*g*p^2*q^2 + (b^2*f*g*j^2 + 2*I*b^2*f*h*j)*p^2*q^2*x^2 + (2*I*b^2*f*g*j
 - b^2*f*h)*p^2*q^2*x)*log(f*x + e) + (b^2*f*h*j^2*p*q*x^3 - b^2*f*g*p*q +
(b^2*f*g*j^2 + 2*I*b^2*f*h*j)*p*q*x^2 + (2*I*b^2*f*g*j - b^2*f*h)*p*q*x)*lo
g(c) + (b^2*f*h*j^2*p*q^2*x^3 - b^2*f*g*p*q^2 + (b^2*f*g*j^2 + 2*I*b^2*f*h*
j)*p*q^2*x^2 + (2*I*b^2*f*g*j - b^2*f*h)*p*q^2*x)*log(d))
```

Sympy [A]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(a + b\log\left(c\left(d\left(e + fx\right)^{p}\right)^{q}\right)\right)^{2}\left(g + hx\right)\left(i + jx\right)^{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(j*x+i)**2/(a+b*ln(c*(d*(f*x+e)**p)**q))**2,x)
```

```
[Out] Integral(1/((a + b*log(c*(d*(e + f*x)**p)**q))**2*(g + h*x)*(i + j*x)**2),
x)
```

Giac [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(j*x+i)^2/(a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="
giac")
```

```
[Out] integrate(1/((h*x + g)*(j*x + I)^2*(b*log(((f*x + e)^p*d)^q*c) + a)^2), x)
```

Mupad [A]
time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{1}{(g+h\,x)\,\left(i+j\,x\right)^2\,\left(a+b\,\ln\left(c\,\left(d\,\left(e+f\,x\right)^p\right)^q\right)\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((g + h*x)*(i + j*x)^2*(a + b*log(c*(d*(e + f*x)^p)^q))^2),x)
```

```
[Out] int(1/((g + h*x)*(i + j*x)^2*(a + b*log(c*(d*(e + f*x)^p)^q))^2), x)
```

Chapter 4

Appendix

Local contents

4.1 Download section

The following zip files contain the raw integrals used in this test.

Mathematica format Mathematica_syntax.zip

Maple and Mupad format Maple_syntax.zip

Sympy format SYMPY_syntax.zip

Sage math format SAGE_syntax.zip

4.2 Listing of Grading functions

The following are the current version of the grading functions used for grading the quality of the antiderivative with reference to the optimal antiderivative included in the test suite.

There is a version for Maple and for Mathematica/Rubi. There is a version for grading Sympy and version for use with Sagemath.

The following are links to the current source code.

The following are the listings of source code of the grading functions.

4.2.1 Mathematica and Rubi grading function

```
(* Original version thanks to Albert Rich emailed on 03/21/2017 *)
(* ::Package:: *)

(* Nasser: April 7,2022. add second output which gives reason for the grade *)
(*                       Small rewrite of logic in main function to make it*)
(*                       match Maple's logic. No change in functionality otherwise*)

(* ::Subsection:: *)
(*GradeAntiderivative[result,optimal]*)


(* ::Text:: *)
(*If result and optimal are mathematical expressions, *)
(*         GradeAntiderivative[result,optimal] returns*)
(*  "F" if the result fails to integrate an expression that*)
(*      is integrable*)
(*  "C" if result involves higher level functions than necessary*)
(*  "B" if result is more than twice the size of the optimal*)
(*      antiderivative*)
(*  "A" if result can be considered optimal*)
```

```
GradeAntiderivative[result_,optimal_] := Module[{expnResult,expnOptimal,leafCountResult,leafC
    expnResult  = ExpnType[result];
    expnOptimal = ExpnType[optimal];
    leafCountResult = LeafCount[result];
    leafCountOptimal = LeafCount[optimal];

    (*Print["expnResult=",expnResult," expnOptimal=",expnOptimal];*)
    If[expnResult<=expnOptimal,
        If[Not[FreeQ[result,Complex]], (*result contains complex*)
            If[Not[FreeQ[optimal,Complex]], (*optimal contains complex*)
                If[leafCountResult<=2*leafCountOptimal,
                    finalresult={"A","none"}
                    ,(*ELSE*)
                    finalresult={"B","Both result and optimal contain complex but leaf count
                  ]
            ,(*ELSE*)
                finalresult={"C","Result contains complex when optimal does not."}
            ]
        ,(*ELSE*)(*result does not contains complex*)
            If[leafCountResult<=2*leafCountOptimal,
               finalresult={"A","none"}
            ,(*ELSE*)
               finalresult={"B","Leaf count is larger than twice the leaf count of optimal. $
              ]
        ]
    ,(*ELSE*) (*expnResult>expnOptimal*)
        If[FreeQ[result,Integrate] && FreeQ[result,Int],
            finalresult={"C","Result contains higher order function than in optimal. Order "<
            ,
            finalresult={"F","Contains unresolved integral."}
        ]
    ];

    finalresult
]

(* ::Text:: *)
(*The following summarizes the type number assigned an *)
(*expression based on the functions it involves*)
(*1 = rational function*)
(*2 = algebraic function*)
(*3 = elementary function*)
(*4 = special function*)
(*5 = hyperpergeometric function*)
(*6 = appell function*)
(*7 = rootsum function*)
(*8 = integrate function*)
```

```
(*9 = unknown function*)


ExpnType[expn_] :=
  If[AtomQ[expn],
    1,
  If[ListQ[expn],
    Max[Map[ExpnType,expn]],
  If[Head[expn]===Power,
    If[IntegerQ[expn[[2]]],
      ExpnType[expn[[1]]],
    If[Head[expn[[2]]]===Rational,
      If[IntegerQ[expn[[1]]] || Head[expn[[1]]]===Rational,
        1,
      Max[ExpnType[expn[[1]]],2]],
    Max[ExpnType[expn[[1]]],ExpnType[expn[[2]]],3]]],
  If[Head[expn]===Plus || Head[expn]===Times,
    Max[ExpnType[First[expn]],ExpnType[Rest[expn]]],
  If[ElementaryFunctionQ[Head[expn]],
    Max[3,ExpnType[expn[[1]]]],
  If[SpecialFunctionQ[Head[expn]],
    Apply[Max,Append[Map[ExpnType,Apply[List,expn]],4]],
  If[HypergeometricFunctionQ[Head[expn]],
    Apply[Max,Append[Map[ExpnType,Apply[List,expn]],5]],
  If[AppellFunctionQ[Head[expn]],
    Apply[Max,Append[Map[ExpnType,Apply[List,expn]],6]],
  If[Head[expn]===RootSum,
    Apply[Max,Append[Map[ExpnType,Apply[List,expn]],7]],
  If[Head[expn]===Integrate || Head[expn]===Int,
    Apply[Max,Append[Map[ExpnType,Apply[List,expn]],8]],
  9]]]]]]]]]]


ElementaryFunctionQ[func_] :=
  MemberQ[{
  Exp,Log,
  Sin,Cos,Tan,Cot,Sec,Csc,
  ArcSin,ArcCos,ArcTan,ArcCot,ArcSec,ArcCsc,
  Sinh,Cosh,Tanh,Coth,Sech,Csch,
  ArcSinh,ArcCosh,ArcTanh,ArcCoth,ArcSech,ArcCsch
},func]


SpecialFunctionQ[func_] :=
  MemberQ[{
  Erf, Erfc, Erfi,
  FresnelS, FresnelC,
```

```
  ExpIntegralE, ExpIntegralEi, LogIntegral,
  SinIntegral, CosIntegral, SinhIntegral, CoshIntegral,
  Gamma, LogGamma, PolyGamma,
  Zeta, PolyLog, ProductLog,
  EllipticF, EllipticE, EllipticPi
},func]


HypergeometricFunctionQ[func_] :=
  MemberQ[{Hypergeometric1F1,Hypergeometric2F1,HypergeometricPFQ},func]


AppellFunctionQ[func_] :=
  MemberQ[{AppellF1},func]
```

4.2.2 Maple grading function

```
# File: GradeAntiderivative.mpl
# Original version thanks to Albert Rich emailed on 03/21/2017

#Nasser 03/22/2017  Use Maple leaf count instead since buildin
#Nasser 03/23/2017  missing 'ln' for ElementaryFunctionQ added
#Nasser 03/24/2017  corrected the check for complex result
#Nasser 10/27/2017  check for leafsize and do not call ExpnType()
#                   if leaf size is "too large". Set at 500,000
#Nasser 12/22/2019  Added debug flag, added 'dilog' to special functions
#                   see problem 156, file Apostol_Problems
#Nasser 4/07/2022   add second output which gives reason for the grade

GradeAntiderivative := proc(result,optimal)
local leaf_count_result,
        leaf_count_optimal,
        ExpnType_result,
        ExpnType_optimal,
        debug:=false;

        leaf_count_result:=leafcount(result);
        #do NOT call ExpnType() if leaf size is too large. Recursion problem
        if leaf_count_result > 500000 then
            return "B","result has leaf size over 500,000. Avoiding possible recursion issues
        fi;

        leaf_count_optimal := leafcount(optimal);
        ExpnType_result  := ExpnType(result);
        ExpnType_optimal := ExpnType(optimal);
```

```
        if debug then
            print("ExpnType_result",ExpnType_result," ExpnType_optimal=",ExpnType_optimal);
        fi;

# If result and optimal are mathematical expressions,
#  GradeAntiderivative[result,optimal] returns
#   "F" if the result fails to integrate an expression that
#       is integrable
#   "C" if result involves higher level functions than necessary
#   "B" if result is more than twice the size of the optimal
#       antiderivative
#   "A" if result can be considered optimal

    #This check below actually is not needed, since I only
    #call this grading only for passed integrals. i.e. I check
    #for "F" before calling this. But no harm of keeping it here.
    #just in case.


    if not type(result,freeof('int')) then
        return "F","Result contains unresolved integral";
    fi;


    if ExpnType_result<=ExpnType_optimal then
        if debug then
             print("ExpnType_result<=ExpnType_optimal");
        fi;
        if is_contains_complex(result) then
            if is_contains_complex(optimal) then
                if debug then
                        print("both result and optimal complex");
                fi;
                if leaf_count_result<=2*leaf_count_optimal then
                    return "A","";
                else
                   return "B",cat("Both result and optimal contain complex but leaf count of re
                                convert(leaf_count_result,string)," vs. $2 (",
                                convert(leaf_count_optimal,string)," ) = ",convert(2*leaf_co
                end if
            else #result contains complex but optimal is not
                if debug then
                        print("result contains complex but optimal is not");
                fi;
                return "C","Result contains complex when optimal does not.";
            fi;
        else # result do not contain complex
```

```
             # this assumes optimal do not as well. No check is needed here.
            if debug then
                   print("result do not contain complex, this assumes optimal do not as well"
            fi;
            if leaf_count_result<=2*leaf_count_optimal then
                if debug then
                    print("leaf_count_result<=2*leaf_count_optimal");
                fi;
                return "A","";
            else
                if debug then
                    print("leaf_count_result>2*leaf_count_optimal");
                fi;
                return "B",cat("Leaf count of result is larger than twice the leaf count of o
                               convert(leaf_count_result,string),"$ vs. $2(",
                               convert(leaf_count_optimal,string),")=",convert(2*leaf_cou
            fi;
        fi;
    else #ExpnType(result) > ExpnType(optimal)
        if debug then
            print("ExpnType(result) > ExpnType(optimal)");
        fi;
        return "C",cat("Result contains higher order function than in optimal. Order ",
                       convert(ExpnType_result,string)," vs. order ",
                       convert(ExpnType_optimal,string),".");
    fi;

end proc:

#
# is_contains_complex(result)
# takes expressions and returns true if it contains "I" else false
#
#Nasser 032417
is_contains_complex:= proc(expression)
  return (has(expression,I));
end proc:

# The following summarizes the type number assigned an expression
# based on the functions it involves
# 1 = rational function
# 2 = algebraic function
# 3 = elementary function
# 4 = special function
# 5 = hyperpergeometric function
# 6 = appell function
# 7 = rootsum function
```

```
# 8 = integrate function
# 9 = unknown function

ExpnType := proc(expn)
  if type(expn,'atomic') then
    1
  elif type(expn,'list') then
    apply(max,map(ExpnType,expn))
  elif type(expn,'sqrt') then
    if type(op(1,expn),'rational') then
       1
    else
       max(2,ExpnType(op(1,expn)))
    end if
  elif type(expn,'`^`') then
    if type(op(2,expn),'integer') then
      ExpnType(op(1,expn))
    elif type(op(2,expn),'rational') then
      if type(op(1,expn),'rational') then
         1
      else
         max(2,ExpnType(op(1,expn)))
      end if
    else
         max(3,ExpnType(op(1,expn)),ExpnType(op(2,expn)))
    end if
  elif type(expn,'`+`') or type(expn,'`*`') then
    max(ExpnType(op(1,expn)),max(ExpnType(rest(expn))))
  elif ElementaryFunctionQ(op(0,expn)) then
    max(3,ExpnType(op(1,expn)))
  elif SpecialFunctionQ(op(0,expn)) then
    max(4,apply(max,map(ExpnType,[op(expn)])))
  elif HypergeometricFunctionQ(op(0,expn)) then
    max(5,apply(max,map(ExpnType,[op(expn)])))
  elif AppellFunctionQ(op(0,expn)) then
    max(6,apply(max,map(ExpnType,[op(expn)])))
  elif op(0,expn)='int' then
    max(8,apply(max,map(ExpnType,[op(expn)]))) else
  9
  end if
end proc:


ElementaryFunctionQ := proc(func)
  member(func,[
        exp,log,ln,
        sin,cos,tan,cot,sec,csc,
```

```
        arcsin,arccos,arctan,arccot,arcsec,arccsc,
        sinh,cosh,tanh,coth,sech,csch,
        arcsinh,arccosh,arctanh,arccoth,arcsech,arccsch])
end proc:

SpecialFunctionQ := proc(func)
  member(func,[
        erf,erfc,erfi,
        FresnelS,FresnelC,
        Ei,Ei,Li,Si,Ci,Shi,Chi,
        GAMMA,lnGAMMA,Psi,Zeta,polylog,dilog,LambertW,
        EllipticF,EllipticE,EllipticPi])
end proc:

HypergeometricFunctionQ := proc(func)
  member(func,[Hypergeometric1F1,hypergeom,HypergeometricPFQ])
end proc:

AppellFunctionQ := proc(func)
  member(func,[AppellF1])
end proc:

# u is a sum or product.  rest(u) returns all but the
# first term or factor of u.
rest := proc(u) local v;
  if nops(u)=2 then
     op(2,u)
  else
     apply(op(0,u),op(2..nops(u),u))
  end if
end proc:

#leafcount(u) returns the number of nodes in u.
#Nasser 3/23/17  Replaced by build-in leafCount from package in Maple
leafcount := proc(u)
   MmaTranslator[Mma][LeafCount](u);
end proc:
```

4.2.3 Sympy grading function

```
#Dec 24, 2019. Nasser M. Abbasi:
#             Port of original Maple grading function by
#             Albert Rich to use with Sympy/Python
#Dec 27, 2019  Nasser. Added `RootSum`. See problem 177, Timofeev file
#             added 'exp_polar'
from sympy import *

def leaf_count(expr):
   #sympy do not have leaf count function. This is approximation
   return round(1.7*count_ops(expr))

def is_sqrt(expr):
   if isinstance(expr,Pow):
      if expr.args[1] == Rational(1,2):
         return True
      else:
         return False
   else:
      return False

def is_elementary_function(func):
   return func in [exp,log,ln,sin,cos,tan,cot,sec,csc,
         asin,acos,atan,acot,asec,acsc,sinh,cosh,tanh,coth,sech,csch,
         asinh,acosh,atanh,acoth,asech,acsch
      ]

def is_special_function(func):
   return func in [ erf,erfc,erfi,
          fresnels,fresnelc,Ei,Ei,Li,Si,Ci,Shi,Chi,
          gamma,loggamma,digamma,zeta,polylog,LambertW,
          elliptic_f,elliptic_e,elliptic_pi,exp_polar
       ]

def is_hypergeometric_function(func):
   return func in [hyper]

def is_appell_function(func):
   return func in [appellf1]

def is_atom(expn):
   try:
      if expn.isAtom or isinstance(expn,int) or isinstance(expn,float):
        return True
      else:
        return False
```

```
    except AttributeError as error:
        return False

def expnType(expn):
    debug=False
    if debug:
        print("expn=",expn,"type(expn)=",type(expn))

    if is_atom(expn):
       return 1
    elif isinstance(expn,list):
        return max(map(expnType, expn))    #apply(max,map(ExpnType,expn))
    elif  is_sqrt(expn):
        if isinstance(expn.args[0],Rational): #type(op(1,expn),'rational')
            return 1
        else:
            return max(2,expnType(expn.args[0]))   #max(2,ExpnType(op(1,expn)))
    elif isinstance(expn,Pow):   #type(expn,'`^`')
        if isinstance(expn.args[1],Integer):   #type(op(2,expn),'integer')
            return expnType(expn.args[0])    #ExpnType(op(1,expn))
        elif isinstance(expn.args[1],Rational):   #type(op(2,expn),'rational')
            if isinstance(expn.args[0],Rational): #type(op(1,expn),'rational')
                return 1
            else:
                return max(2,expnType(expn.args[0]))   #max(2,ExpnType(op(1,expn)))
        else:
            return max(3,expnType(expn.args[0]),expnType(expn.args[1])) #max(3,ExpnType(op(1,expn)),ExpnT
    elif isinstance(expn,Add) or isinstance(expn,Mul): #type(expn,'`+`') or type(expn,'`*`')
        m1 = expnType(expn.args[0])
        m2 = expnType(list(expn.args[1:]))
        return max(m1,m2)  #max(ExpnType(op(1,expn)),max(ExpnType(rest(expn))))
    elif is_elementary_function(expn.func):  #ElementaryFunctionQ(op(0,expn))
        return max(3,expnType(expn.args[0]))  #max(3,ExpnType(op(1,expn)))
    elif is_special_function(expn.func): #SpecialFunctionQ(op(0,expn))
        m1 = max(map(expnType, list(expn.args)))
        return max(4,m1)    #max(4,apply(max,map(ExpnType,[op(expn)])))
    elif is_hypergeometric_function(expn.func): #HypergeometricFunctionQ(op(0,expn))
        m1 = max(map(expnType, list(expn.args)))
        return max(5,m1)    #max(5,apply(max,map(ExpnType,[op(expn)])))
    elif is_appell_function(expn.func):
        m1 = max(map(expnType, list(expn.args)))
        return max(6,m1)    #max(5,apply(max,map(ExpnType,[op(expn)])))
    elif isinstance(expn,RootSum):
        m1 = max(map(expnType, list(expn.args))) #Apply[Max,Append[Map[ExpnType,Apply[List,expn]],7]],
        return max(7,m1)
    elif str(expn).find("Integral") != -1:
```

```
        m1 = max(map(expnType, list(expn.args)))
        return max(8,m1)    #max(5,apply(max,map(ExpnType,[op(expn)])))
    else:
        return 9

#main function
def grade_antiderivative(result,optimal):

    #print ("Enter grade_antiderivative for sagemath")
    #print("Enter grade_antiderivative, result=",result," optimal=",optimal)

    leaf_count_result  = leaf_count(result)
    leaf_count_optimal = leaf_count(optimal)

    #print("leaf_count_result=",leaf_count_result)
    #print("leaf_count_optimal=",leaf_count_optimal)

    expnType_result  = expnType(result)
    expnType_optimal = expnType(optimal)

    if str(result).find("Integral") != -1:
        grade = "F"
        grade_annotation =""
    else:
        if expnType_result <= expnType_optimal:
            if result.has(I):
                if optimal.has(I): #both result and optimal complex
                    if leaf_count_result <= 2*leaf_count_optimal:
                        grade = "A"
                        grade_annotation =""
                    else:
                        grade = "B"
                        grade_annotation ="Both result and optimal contain complex but leaf count of result is larger
                else: #result contains complex but optimal is not
                    grade = "C"
                    grade_annotation ="Result contains complex when optimal does not."
            else: # result do not contain complex, this assumes optimal do not as well
                if leaf_count_result <= 2*leaf_count_optimal:
                    grade = "A"
                    grade_annotation =""
                else:
                    grade = "B"
                    grade_annotation ="Leaf count of result is larger than twice the leaf count of optimal. "+str(lea
        else:
            grade = "C"
            grade_annotation ="Result contains higher order function than in optimal. Order "+str(ExpnType_re
```

```
    #print("Before returning. grade=",grade, " grade_annotation=",grade_annotation)

    return grade, grade_annotation
```

4.2.4 SageMath grading function

```
#Dec 24, 2019. Nasser: Ported original Maple grading function by
#              Albert Rich to use with Sagemath. This is used to
#              grade Fricas, Giac and Maxima results.
#Dec 24, 2019. Nasser: Added 'exp_integral_e' and 'sng', 'sin_integral'
#              'arctan2','floor','abs','log_integral'
#June 4, 2022  Made default grade_annotation "none" instead of "" due
#              issue later when reading the file.
#July 14, 2022. Added ellipticF. This is until they fix sagemath, then remove it.

from sage.all import *
from sage.symbolic.operators import add_vararg, mul_vararg

debug=False;

def tree_size(expr):
    r"""
    Return the tree size of this expression.
    """
    #print("Enter tree_size, expr is ",expr)

    if expr not in SR:
        # deal with lists, tuples, vectors
        return 1 + sum(tree_size(a) for a in expr)
    expr = SR(expr)
    x, aa = expr.operator(), expr.operands()
    if x is None:
        return 1
    else:
        return 1 + sum(tree_size(a) for a in aa)

def is_sqrt(expr):
    if expr.operator() == operator.pow:   #isinstance(expr,Pow):
        if expr.operands()[1]==1/2: #expr.args[1] == Rational(1,2):
            if debug: print ("expr is sqrt")
            return True
        else:
            return False
    else:
        return False
```

```
def is_elementary_function(func):
    #debug=False
    m = func.name() in ['exp','log','ln',
            'sin','cos','tan','cot','sec','csc',
            'arcsin','arccos','arctan','arccot','arcsec','arccsc',
            'sinh','cosh','tanh','coth','sech','csch',
            'arcsinh','arccosh','arctanh','arccoth','arcsech','arccsch','sgn',
        'arctan2','floor','abs'
        ]
    if debug:
        if m:
            print ("func ", func , " is elementary_function")
        else:
            print ("func ", func , " is NOT elementary_function")


    return m

def is_special_function(func):
    #debug=False
    if debug:
        print ("type(func)=", type(func))

    m= func.name() in ['erf','erfc','erfi','fresnel_sin','fresnel_cos','Ei',
          'Ei','Li','Si','sin_integral','Ci','cos_integral','Shi','sinh_integral'
          'Chi','cosh_integral','gamma','log_gamma','psi,zeta',
          'polylog','lambert_w','elliptic_f','elliptic_e','ellipticF',
          'elliptic_pi','exp_integral_e','log_integral']

    if debug:
        print ("m=",m)
        if m:
            print ("func ", func ," is special_function")
        else:
            print ("func ", func ," is NOT special_function")


    return m


def is_hypergeometric_function(func):
    return func.name() in ['hypergeometric','hypergeometric_M','hypergeometric_U']

def is_appell_function(func):
    return func.name() in ['hypergeometric']    #[appellf1] can't find this in sagemath
```

```
def is_atom(expn):

   #debug=False
   if debug:
       print ("Enter is_atom, expn=",expn)

   if not hasattr(expn, 'parent'):
      return False


   #thanks to answer at https://ask.sagemath.org/question/49179/what-is-sagemath-equivalent-to-atomic-
   try:
      if expn.parent() is SR:
         return expn.operator() is None
      if expn.parent() in (ZZ, QQ, AA, QQbar):
         return expn in expn.parent() # Should always return True
      if hasattr(expn.parent(),"base_ring") and hasattr(expn.parent(),"gens"):
         return expn in expn.parent().base_ring() or expn in expn.parent().gens()

      return False

   except AttributeError as error:
      print("Exception,AttributeError in  is_atom")
      print ("cought exception" , type(error).__name__ )
      return False


def expnType(expn):

   if debug:
      print (">>>>>Enter expnType, expn=", expn)
      print (">>>>>is_atom(expn)=", is_atom(expn))

   if is_atom(expn):
      return 1
   elif type(expn)==list:   #isinstance(expn,list):
      return max(map(expnType, expn))    #apply(max,map(ExpnType,expn))
   elif  is_sqrt(expn):
      if  type(expn.operands()[0])==Rational:  #type(isinstance(expn.args[0],Rational):
         return 1
      else:
         return max(2,expnType(expn.operands()[0]))   #max(2,expnType(expn.args[0]))
   elif expn.operator() == operator.pow:   #isinstance(expn,Pow)
      if type(expn.operands()[1])==Integer:   #isinstance(expn.args[1],Integer)
         return expnType(expn.operands()[0])   #expnType(expn.args[0])
      elif type(expn.operands()[1])==Rational:   #isinstance(expn.args[1],Rational)
         if type(expn.operands()[0])==Rational:  #isinstance(expn.args[0],Rational)
```

```
            return 1
         else:
            return max(2,expnType(expn.operands()[0]))  #max(2,expnType(expn.args[0]))
      else:
         return max(3,expnType(expn.operands()[0]),expnType(expn.operands()[1])) #max(3,expnType(expn.op
   elif expn.operator() == add_vararg or expn.operator() == mul_vararg: #isinstance(expn,Add) or isinstan
      m1 = expnType(expn.operands()[0]) #expnType(expn.args[0])
      m2 = expnType(expn.operands()[1:]) #expnType(list(expn.args[1:]))
      return max(m1,m2)  #max(ExpnType(op(1,expn)),max(ExpnType(rest(expn))))
   elif is_elementary_function(expn.operator()):  #is_elementary_function(expn.func)
      return max(3,expnType(expn.operands()[0]))
   elif is_special_function(expn.operator()): #is_special_function(expn.func)
      m1 = max(map(expnType, expn.operands()))      #max(map(expnType, list(expn.args)))
      return max(4,m1)   #max(4,m1)
   elif is_hypergeometric_function(expn.operator()): #is_hypergeometric_function(expn.func)
      m1 = max(map(expnType, expn.operands()))       #max(map(expnType, list(expn.args)))
      return max(5,m1)   #max(5,m1)
   elif is_appell_function(expn.operator()):
      m1 = max(map(expnType, expn.operands()))       #max(map(expnType, list(expn.args)))
      return max(6,m1)   #max(6,m1)
   elif str(expn).find("Integral") != -1: #this will never happen, since it
            #is checked before calling the grading function that is passed.
            #but kept it here.
      m1 = max(map(expnType, expn.operands()))       #max(map(expnType, list(expn.args)))
      return max(8,m1)   #max(5,apply(max,map(ExpnType,[op(expn)])))
   else:
      return 9

#main function
def grade_antiderivative(result,optimal):


   if debug:
      print ("Enter grade_antiderivative for sagemath")
      print("Enter grade_antiderivative, result=",result)
      print("Enter grade_antiderivative, optimal=",optimal)
      print("type(anti)=",type(result))
      print("type(optimal)=",type(optimal))

   leaf_count_result  = tree_size(result) #leaf_count(result)
   leaf_count_optimal = tree_size(optimal) #leaf_count(optimal)

   #if debug: print ("leaf_count_result=", leaf_count_result, "leaf_count_optimal=",leaf_count_optimal)


   expnType_result  = expnType(result)
   expnType_optimal = expnType(optimal)
```

```
if debug: print ("expnType_result=", expnType_result, "expnType_optimal=",expnType_optimal)

if expnType_result <= expnType_optimal:
    if result.has(I):
        if optimal.has(I): #both result and optimal complex
            if leaf_count_result <= 2*leaf_count_optimal:
                grade = "A"
                grade_annotation ="none"
            else:
                grade = "B"
                grade_annotation ="Both result and optimal contain complex but leaf count of result is larger t
        else: #result contains complex but optimal is not
            grade = "C"
            grade_annotation ="Result contains complex when optimal does not."
    else: # result do not contain complex, this assumes optimal do not as well
        if leaf_count_result <= 2*leaf_count_optimal:
            grade = "A"
            grade_annotation ="none"
        else:
            grade = "B"
            grade_annotation ="Leaf count of result is larger than twice the leaf count of optimal. "+str(leaf_
else:
    grade = "C"
    grade_annotation ="Result contains higher order function than in optimal. Order "+str(expnType_resu


print("Before returning. grade=",grade, " grade_annotation=",grade_annotation)

return grade, grade_annotation
```